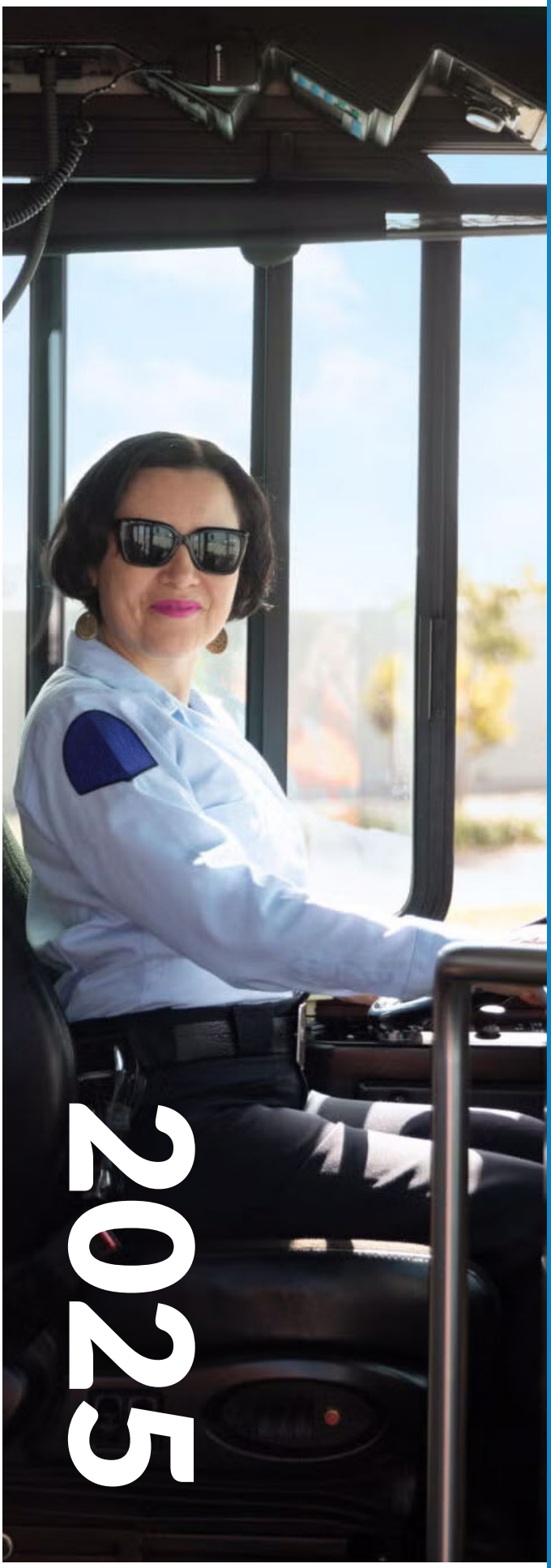

2025

CCTA
CONTRA COSTA TRANSPORTATION AUTHORITY

GOMENTUM INNOVATION ALLIANCE

# Gaps & Needs
# **Initial Report**

Prepared for:

**Contra Costa Transportation Authority**
**Gomentum Innovation Alliance**

Prepared by:

**The PLUM Catalyst**

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# About the Contra Costa Transportation Authority

The Contra Costa Transportation Authority (CCTA) plans, funds, and delivers innovative transportation solutions that improve mobility and strengthen communities. A national leader in advancing smart infrastructure and emerging technologies, CCTA operates GoMentum Station, one of the largest secure testing facilities for connected and automated vehicle technology in the country. CCTA accelerates the deployment of forward-looking solutions that address congestion, climate goals, and safety. The agency is committed to performance-based outcomes that create a more efficient, equitable, and sustainable transportation future.

# About GoMentum Station

GoMentum Station, the nation's largest dedicated secure testing facility for connected and automated vehicle technology was created by the Contra Costa Transportation Authority to gain insight into the fast-changing mobility landscape, and provide innovative companies and organizations the ability to test in a secure, safe environment.

The 2,100 acre GoMentum Station is the center of cutting-edge transportation research. The innovative technology being explored and tested at GoMentum Station will redefine the next generation of transportation, bring unprecedented mobility options to people, and help advance traffic safety.

CCTA's leadership in the autonomous and connected vehicle space laid the groundwork for the GoMentum Innovation Alliance (GIA), which brings together stakeholders across sectors to ensure California's workforce is prepared for the future of mobility.

# About the GoMentum Innovation Alliance

The GoMentum Innovation Alliance is building a future-ready workforce by aligning cutting-edge mobility innovation with real-world job opportunities — ensuring no one is left behind in the shift to next-generation transportation.

The GoMentum Innovation Alliance is committed to shaping the future of workforce development in the mobility sector. Its mission is guided by several key objectives. First, the Alliance aims to create high-wage, high-tech, and high-demand jobs that support the evolving needs of the mobility industry. As innovation accelerates, the GoMentum Innovation Alliance recognizes the importance of ensuring that the workforce is prepared and positioned to take advantage of these emerging opportunities. Second, the GoMentum Innovation Alliance seeks to empower the current workforce through upskilling and reskilling initiatives that support transitions into new and advanced mobility roles. The goal is to ensure an approach where no one is left behind in the shift toward next-generation transportation technologies. The Alliance builds strong partnerships at the local, regional, and national levels to deliver meaningful outcomes. The GoMentum Innovation Alliance brings together public, private, labor, and academic sectors to explore, attract, and accelerate workforce development opportunities and career pathways in the evolving transportation industry.

To help operationalize its vision, the Alliance convenes a Regional Workforce Council, which ensures that strategic goals are translated into actionable, locally tailored programs that can be scalable nationally. The Council supports GoMentum Station by aligning its work with the Bay Area's broader mobility technology workforce development objectives. It identifies key resources including funding, partnerships, and tools

needed to activate local workforce programs and advocates for the support necessary to implement them. In this way, the Council ensures that workforce development efforts remain focused, adaptive, and relevant to the needs of local communities and employers.

Complementing this effort is the Strategic Advisory Board, which serves as GoMentum's ambassador to state and national stakeholders. Advisory Board members introduce decision-makers to the Alliance's innovative work, amplify GoMentum's alignment with statewide priorities, and extend its reach on a national level. Through its advocacy and outreach, the Strategic Advisory Board helps create new opportunities for investment, collaboration, and impact.

Together, the Strategic Advisory Board and the Regional Workforce Council ensure that the GoMentum Innovation Alliance remains a leading force in building a future-ready workforce for the transportation and mobility sector.

The PLUM Catalyst is a Strategy and Social Innovation consulting firm focused on advancing research and deployment of emerging mobility solutions, with a specific emphasis on building resilient communities through new transportation options. The PLUM Catalyst was selected as the strategic partner to lead the development of the GoMentum Innovation Alliance and conduct the Gaps & Needs Assessment. With a mission to bring projects and teams together to bring the future in mobility to people faster, the PLUM Catalyst brings a unique set of strengths that align precisely with the goals of this work.

With years of expertise in ecosystem building and strategic project delivery the PLUM Catalyst worked with Contra Costa Transportation Authority to convene a diverse coalition of public agencies, private companies, academic institutions, labor partners, and community-based organizations in advancing workforce readiness for emerging mobility technologies. The firm's proven track record in workforce development guided the creation of the Gaps & Needs Assessment. The PLUM Catalyst offers both the flexibility to tailor local solutions and the rigor required to co-design the GoMentum Innovation Alliance and subsequent workforce development efforts in the region.

# Executive Summary

## ADVANCING WORKFORCE DEVELOPMENT FOR CALIFORNIA'S EMERGING MOBILITY ECOSYSTEM

As the transportation industry transitions to a mobility future defined by electrification, automation, connectivity and other emerging technologies, workforce readiness is increasingly critical. The GoMentum Innovation Alliance conducted a comprehensive Gaps and Needs Assessment to understand current challenges and identify opportunities for workforce development innovation in preparing the California East Bay region's workforce to meet emerging transportation technology demands.

To inform this assessment, a survey was designed to gather insights from a diverse group of stakeholders across the public, private, nonprofit, labor, and education sectors. The survey included both quantitative and open-ended questions to assess workforce gaps, gauge sector engagement, and surface potential solutions. Thirty stakeholders responded, offering a rich cross-section of perspectives on how to better align workforce development systems with the needs of an evolving transportation ecosystem.

## KEY FINDINGS

**High Industry Demand, Misaligned Training Supply:** Over 75% of respondents indicated that their organizations have created new jobs related to emerging transportation technologies. Across the public and private sectors, employers report workforce needs across all education levels: from technicians and operators to engineers and planners. Yet many current training and education programs do not commonly include courses or even modules that can expose students or trainees to the new technologies, let alone install, maintain, or repair them. The limited alignment between educational content and technical and operational requirements results in a workforce that is not fully prepared to step into new roles that are being created.

**Sector Engagement is Key:** Collaboration between sectors is perceived to be stronger in the Bay Area (rated 8/10), statewide efforts are seen as weaker (5/10). Respondents highlighted the need for deeper, more consistent engagement across sectors especially with labor, community organizations, and education providers. The public, private, and education sectors are most often seen as responsible for training and formal education, while labor's role is especially critical in apprenticeships. However, labor stakeholders expressed a desire for greater engage-

ment in all phases of workforce program design.

**Persistent Barriers to Updating Workforce Development Efforts:** Academic institutions face slow curriculum changes, inflexible accreditation, and insufficient funding. Misaligned job classifications, non-transferable certifications, and requirements further restrict jobseekers access to certain roles. Current workforce development efforts earned an average rating of 5.2 out of 10, while public awareness of job opportunities was rated just 2 out of 10. There is a clear need for targeted, accessible messaging to expand awareness and create more robust talent pipelines.

## STRATEGIC LEVERS FOR WORKFORCE DEVELOPMENT INNOVATION

- **Strengthen Sector Collaboration:** Build adaptive, co-led ecosystems by deepening partnerships among employers, education providers, labor, and community-based organizations.
- **Modernize Training Systems for Agility:** Prioritize modular, stackable credentials and short-term programs that can rapidly respond to technological changes and industry needs.
- **Leverage Labor Market Data:** Develop better job outlooks, salary benchmarks, and skill forecasts to inform workforce investments and align training with job opportunities.
- **Invest in Public Awareness and Access:** Use social media, community partnerships, and hands-on programs to make mobility careers more visible and accessible, especially in underserved communities.
- **Embed Non-Technical Skills:** Beyond technical expertise, adaptability, communication, and critical thinking must be emphasized to ensure workforce resilience as mobility technologies evolve.

California's East Bay region has a unique opportunity to lead in building a future-ready mobility workforce. While there are clear challenges there is a path forward that requires engagement across sectors that train, hire, or represent the transportation workforce. By strengthening cross-sector collaboration, modernizing training models, and expanding visibility into transportation careers, the region can create a more resilient workforce that supports transportation innovation.

# Introduction

The GoMentum Innovation Alliance is focused on shaping the future of workforce development in the mobility sector through a clear set of objectives. The primary goal is to create high-wage, high-tech, and high-demand jobs that align with the evolving needs of the mobility industry. As innovation accelerates across the sector, it is critical to ensure the workforce is prepared to access and thrive in these emerging opportunities.

A second objective is to empower the current workforce by supporting upskilling and reskilling initiatives. Facilitating smooth transitions for workers as the industry shifts toward more advanced technologies ensures that individuals are not left behind in the changing economy.

Building strong partnerships at the local, regional, and national levels is also a key priority. Collaboration across sectors is essential for achieving sustainable and impactful workforce outcomes. Strategic alliances like the GoMentum Innovation Alliance convene public, private, non-profit, education, and labor stakeholders to collaborate to advance workforce development efforts which contribute to job creation and long-term economic growth for the East Bay region. Additionally, GoMentum Innovation Alliance is committed to removing barriers to seeking a career in the transportation sector and expanding access to these careers is central to building a resilient workforce.

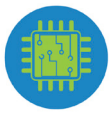
Through these efforts, the GoMentum Innovation Alliance aims to drive regional economic growth and establish itself as a leader in shaping the workforce of the future, ensuring that both individuals and the broader economy thrive as the mobility sector continues to evolve.

## GOMENTUM TECHNOLOGY SPACES

The GoMentum Innovation Alliance is focused on leveraging cutting-edge technologies to redefine the future of mobility, exploring workforce development for five critical areas: automation, connectivity, digitization, electrification/zero-emission vehicles, and system interoperability.

**Automation** refers to vehicles capable of operating with little to no human intervention, fundamentally transforming how people travel and how goods are delivered.

**Connectivity** enables seamless communication between vehicles, pedestrians, cyclists, and infrastructure, resulting in safer and more efficient transportation networks.



**Digitization** involves capturing physical elements and converting them into digital data, creating new opportunities for governments and transportation agencies to manage operations, analyze information, and communicate policies more effectively.

**Zero-emission powered transportation** centers on vehicles that produce no tailpipe emissions, such as those powered by electricity or hydrogen rather than conventional internal combustion engines

**System compatibility and interoperability** ensure that diverse technologies and data systems work together seamlessly, fostering innovation, collaboration, and greater efficiency across the mobility ecosystem.

## GAPS & NEEDS ASSESSMENT

The Gaps & Needs Assessment was developed to identify skill gaps and workforce development needs in the transportation technology sector for the technology spaces outlined in the previous section. By identifying gaps and unmet needs, the assessment provides a foundational understanding of where current workforce development programs meet industry demands and where they fall short. As the sector undergoes rapid transformation due to emerging technologies, it is critical to align education, training, and employment pathways with the evolving needs of the industry. Further, the workforce needs can differ by location, so the survey focuses on labor market needs in the East Bay area of California.

This report sought the expertise of stakeholders in the public, private, labor, non-profit and education to offer their insights into the skills, credentials, and competencies that are increasingly needed in the mobility technology workforce. By identifying both immediate and future gaps, the assessment provides a foundation for strategic investments in training, policy reform, and program development.

## SURVEY METHODOLOGY

The Gaps & Needs Assessment used an expert elicitation and mixed-methods approach to capture both quantitative and qualitative insights from stakeholders across the mobility technology ecosystem. The overall design was informed by best practices from similar workforce studies, including the Michigan Middle Skills Report, but adapted to reflect the specific workforce challenges emerging in California's transportation technology sector.

### Outreach Efforts & Data Collection

Data collection efforts focused on gathering input from a broad cross-section of stakeholders, including industry leaders, academic institutions, workforce development representatives, labor, and public sector organizations. Participants were selected to ensure that the insights reflected a range of perspectives and were geographically aligned with the intended focus areas. To vet participants and maintain the relevance of the responses, a preliminary interest survey was used for individuals who engaged through open outreach channels.

Survey participation was supported through multiple outreach strategies. Flyers were distributed at conferences—CES, TRB, AV America, CoMotion. A podcast featuring Tim Haile and Tammy Meehan Russell was used to promote participation (listen here). Personal invitations were also sent to targeted stakeholders. In addition, several partner organizations amplified the survey through newsletters and email lists. Social media promotion further extended the survey's reach across professional networks. This layered outreach approach was designed to maximize both the breadth and the depth of responses, ensuring a balance between open engagement and the specific insights needed for this assessment.

As a result of the outreach efforts, thirty (N=30) survey respondents participated in 75 minute semi-structured interviews. Prior to the interview a 6-minute video primer (linked here) was sent to each participant to provide an overview of the GoMentum Innovation Alliance and baseline definition of the technology domains. If participants had not watched the video before the scheduled interview, the video was screen shared prior to doing the interview.

## Survey Design

The Gaps & Needs Assessment survey instrument itself was designed to explore multiple dimensions of workforce development challenges and opportunities.Survey participants were asked a series of questions around nine core sections:

- **Technical Skill Gaps:** Identification of current deficits and projected needs over the next 3–5 years
- **Non-Technical Skills:** Assessment of soft skills and cross-cutting competencies essential for success in the sector
- **Sector Perspective:** Analysis of what different sectors (private sector, education, public sector, labor) are doing well and where improvement is needed
- **Sector Ownership of the Talent Pipeline:** Mapping responsibility and accountability across sectors for activities such as training development, apprenticeships, upskilling, and certification programs
- **Organizational Change Readiness and Retirement Preparedness:** Assessment of organizations' readiness to adapt to changing workforce needs and succession planning
- **New Roles in the Mobility Technology Industry:** Exploration of role creation, recruitment, and hiring challenges associated with emerging mobility technologies
- **Existing Training Programs:** Review of current programs and their efficacy relative to industry standards and needs.
- **Public Awareness and Equity:** Identification of effective strategies to raise awareness of new career opportunities and expand awareness and access to the careers.

Each section combined quantitative rating scales with open-ended qualitative questions, allowing respondents to elaborate on their perspectives and share examples where relevant. These insights collectively inform the strategic recommendations presented later in the report. They are intended to guide future workforce development initiatives, support targeted program design, and shape policy actions that enable a more responsive mobility workforce ecosystem. This methodology also establishes a baseline for continued data collection and analysis as the mobility sector evolves.

## SURVEY SAMPLE SNAPSHOT

### Sector Representation

Survey respondents represented a range of sectors, including public, private, education, and non-profit organizations. At this stage of data collection, labor sector representation remains limited, however the results shared in this report are preliminary, and outreach efforts are ongoing to engage additional voices from the labor community to ensure a more comprehensive perspective. The majority of respondents are physically located in the Bay Area or elsewhere within California. Respondents located outside of the state nonetheless have organizational ties to the Bay Area or broader California mobility ecosystem.

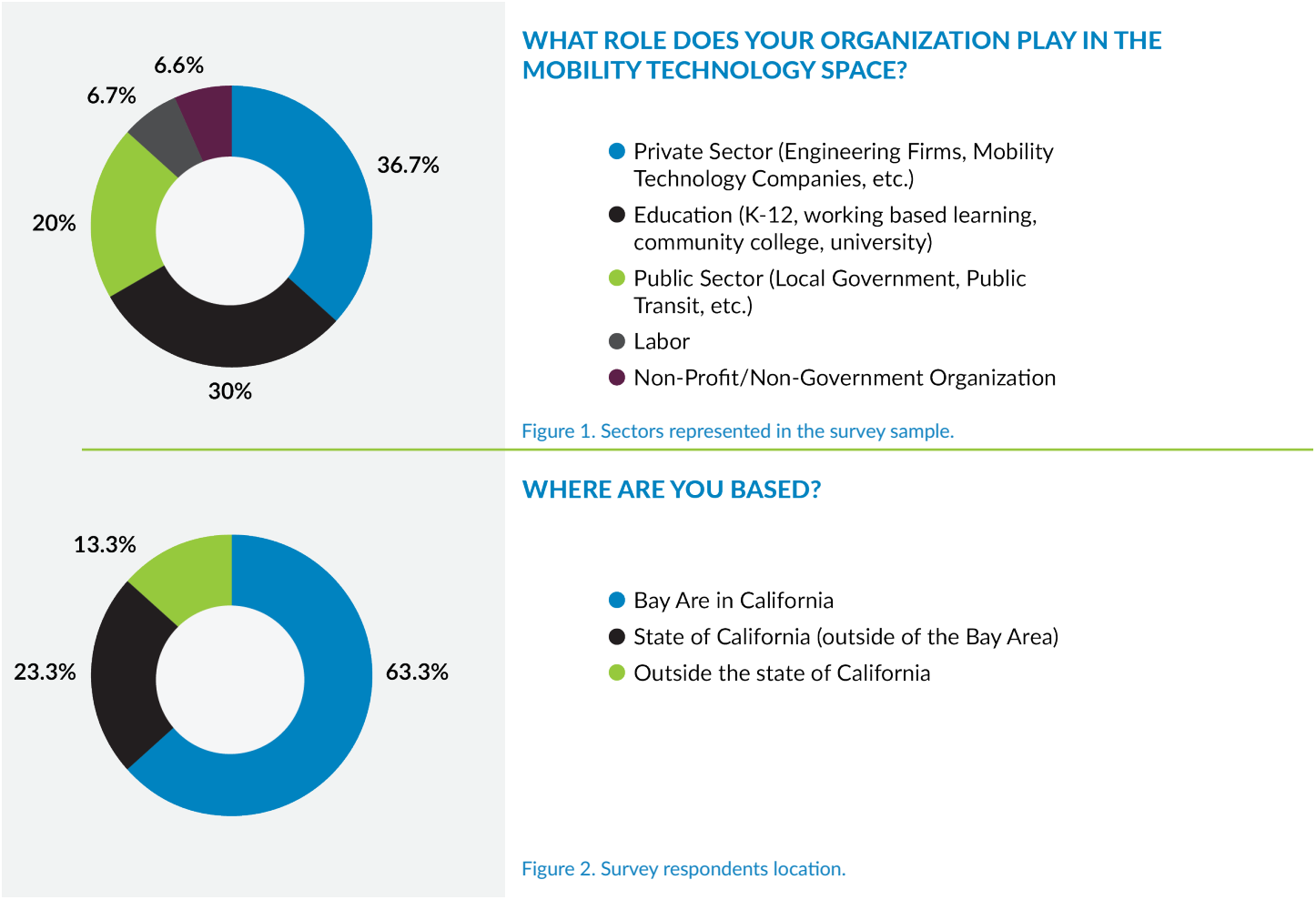



Figure 1. Sectors represented in the survey sample.

Figure 2. Survey respondents location.

## Survey Respondents' Role at Organization

The survey respondents represented a broad cross-section of leadership and strategic roles across the mobility ecosystem. Participants included senior executives such as CEOs, Executive Directors, and Vice Presidents from both the private and public sectors. Academic leaders were also well-represented, including Senior Deans, Executive Vice Chancellors, Professors, and Directors affiliated with university research centers focused on mobility and engineering. Workforce Specialists and Program Managers at different workforce development organizations provided their perspectives. Additional respondents included senior advisors, policy leads, business development directors, and human resources leaders. This range of participants ensured that the assessment captured insights from those shaping education, workforce strategy, policy, and industry innovation.

## Technology Domain Familiarity

Survey respondents were asked to assess their familiarity with key transportation technology domains. The aggregated scores revealed that respondents were most familiar with electrification, followed by automation, connectivity, digitization, and system interoperability. This order of familiarity aligns with broader industry trends: California has the largest stock of plug-in electric vehicles (EVs) in the United States, making electrification a particularly well-known area. The pattern also reflects the general maturity and public awareness of these technologies, with electrification being the most established and system interoperability still emerging.

# State of Workforce Development Efforts

The first series of questions in the assessment explores the current state of workforce development efforts within the transportation technology sector. These questions were designed to uncover demand for a workforce equipped to meet the needs of emerging technologies. Specifically, this section seeks to answer:

- Is there an appetite for an emerging transportation technology workforce? If so, what are the anticipated roles and responsibilities?
- Who is currently responsible for carrying out workforce development programming, and how effective are these efforts in preparing workers for new transportation technologies?

The insights gathered from these questions help establish a baseline understanding of both current activities and future opportunities for building a robust mobility technology workforce.

## ORGANIZATIONAL READINESS

Respondents completed an exercise in which they self-reported scores for their organizations' readiness to adapt to changes in the transportation sector. The purpose was to gauge whether organizations are actively considering the impact of emerging technologies and how those changes may affect future labor needs. Table 1 displays the elements and their most frequently reported scores.

Senior leadership received the highest ratings, indicating broad alignment and support at the executive level for innovation and transformation efforts. Resistance to change, organizational culture, employee involvement, and capacity for change followed, suggesting a culture that is relatively open to innovation and actively engages employees in change efforts. Employee awareness and communication channels received the lowest scores, though these were still moderate (typically a 3 out of 5). This suggests that while organizations are poised for change at a leadership and cultural level, there is room for improvement in how change-related information is shared and understood across the workforce. Overall, the responses reflect a general sense of organizational readiness to embrace emerging transportation technologies, with the greatest opportunity for growth in internal communication and employee engagement.

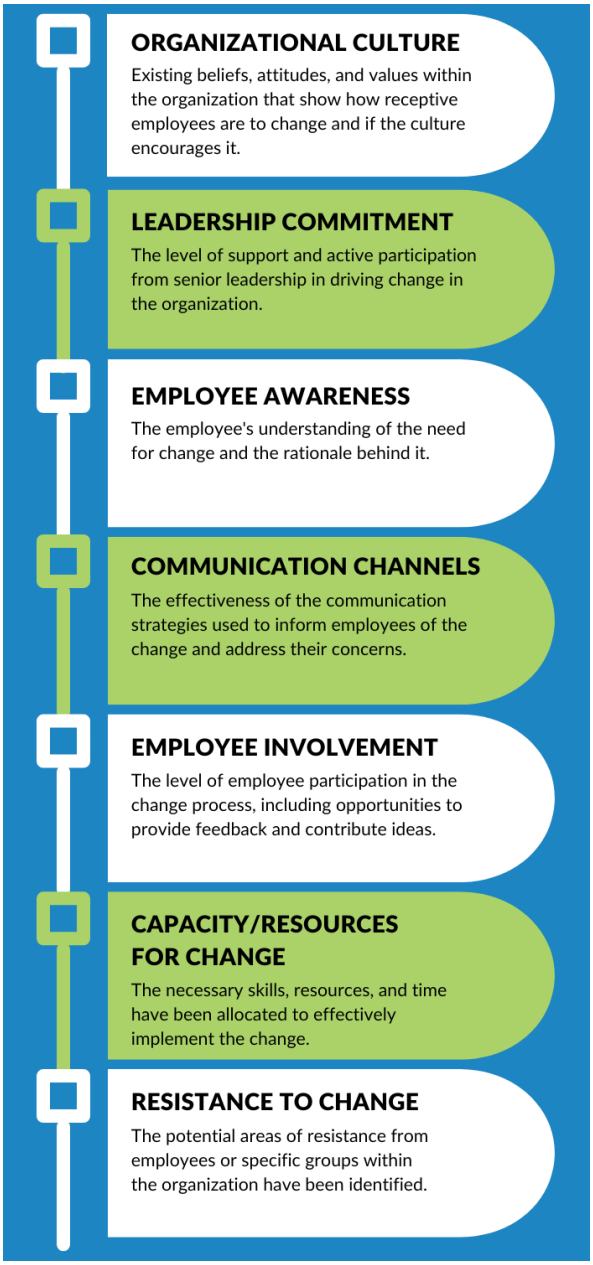



Figure 3. Change Readiness Model graphic to help survey respondents determine organization readiness to embrace emerging transportation technology

## TABLE 1. SELF-REPORTED ORGANIZATIONAL READINESS FOR THE EVOLVING TRANSPORTATION INDUSTRY

| Change Readiness Factors | Most Frequent Score (1=lowest score, 5 = highest score) |
|---|---|
| Leadership | 5 |
| Resistance to Change | 4 |
| Organizational Culture | 4 |
| Employee Involvement | 4 |
| Capacity/Resources for Change | 4 |
| Employee Awareness | 3 |
| Communication Channels | 3 |

Senior leadership received the highest ratings, indicating broad alignment and support at the executive level for innovation and transformation efforts. Resistance to change, organizational culture, employee involvement, and capacity for change followed, suggesting a culture that is relatively open to innovation and actively engages employees in change efforts. Employee awareness and communication channels received the lowest scores, though these were still moderate (typically a 3 out of 5). This suggests that while organizations are poised for change at a leadership and cultural level, there is room for improvement in how change-related information is shared and understood across the workforce. Overall, the responses reflect a general sense of organizational readiness to embrace emerging transportation technologies, with the greatest opportunity for growth in internal communication and employee engagement.

## New Roles for Emerging Transportation Technology

The survey results indicate that organizational change readiness is supported by evidence of new role creation within the mobility sector. When asked whether their organizations had developed new mobility or emerging transportation roles, 70% of respondents answered "yes" as shown in Figure 1. Among those who reported new roles, nearly 80% confirmed that these positions were formally recognized within their organizations (see Figure 3). Table 2 provides examples of the new job titles that were shared.

At the same time, approximately 30% of respondents indicated that no new job titles or roles had been created at their organizations (see Figure 4). When asked why new titles had not been developed, 55% of this group explained that their organizations already had sufficient flexibility within existing structures to update or add positions as needed, suggesting a level of internal adaptability even without formal title changes. Overall, the data suggest that the mobility sector is actively responding to evolving technology demands by creating and formalizing new roles, while also demonstrating organizational flexibility to accommodate future workforce needs.

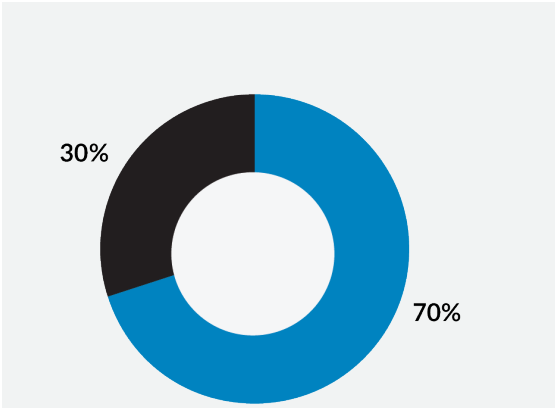



Figure 4. Survey responses when asked about new job titles at their respective organizations.

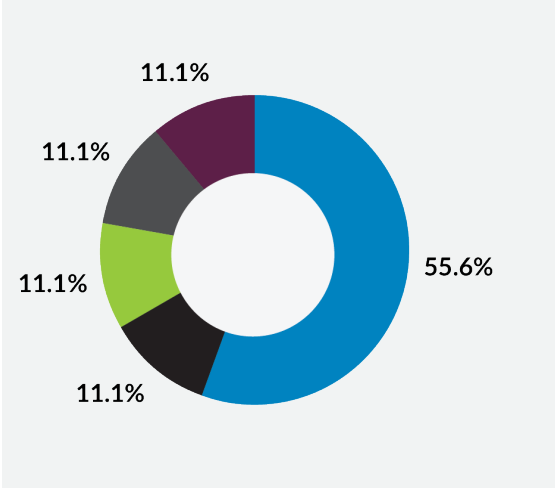



Figure 5. Survey respondents, who answered that they do not have new rules at the organization. The blue slice of the chart represents 55% of participants that have ample flexibility to create new positions at their organizations.

## SAMPLE OF TITLES IN EMERGING TRANSPORTATION TECHNOLOGY

| | |
|---|---|
| Software Developer | Automated Driving System Technician |
| General Project Manager | Commissioning Personnel (for routing and mapping) |
| AV Operator | Safety Technician |
| Head of Perception & Machine Learning | IOT Repair Technicians |
| Senior Autonomy Engineer | Back-End Developer |
| High Voltage Battery Technician | Supply Chain Technologists |
| On-board Ambassador | Autonomous Vehicle Engineer |
| Front-End Developer | Professor of Autonomous Vehicles |
| Hydrogen Battery Technician | Machinist |
| New Mobility Faculty | Integrated Urban Design (tenure-track faculty position) |
| Battery Electric Bus Technician | Database Developer |
| Engineer | Senior Manager, Connectivity |
| Electric Bus Mechanic | Road Supervisor |
| IT Support | Director of New Mobility |
| Maintenance Supervisor | EV Technicians |

Table 2. Survey Sample Title Roles

## CURRENT WORKFORCE DEVELOPMENT PROGRAMS IN CALIFORNIA

### Common Education Requirements

When asked about the basic education requirements for emerging roles and functions, survey respondents identified two common trends. First, technician, operator, and mechanic roles generally require a high school diploma or GED certification. Second, roles beyond technical operations such as those involving management, analysis, or specialized expertise, typically require a bachelor's degree along with relevant work experience. Finally, for academic and research-focused positions, a Ph.D. was cited as the basic requirement.These findings highlight a clear distinction between operational roles and knowledge-based or research roles within the evolving mobility workforce, suggesting that a broad range of educational pathways will be necessary to meet future talent needs.

### Available Workforce Development Programs

When asked about the existing workforce development programming available to support emerging transportation technologies, responses varied widely. Some respondents named specific programs and institutions, such as CSU-Sacramento and the Mineta Transportation Institute. Others provided more general responses, referencing trade schools, K–12 educational outreach activities, and two- and four-year college-level programs.

List of Reported Workforce Development Programs:

- CSU-Sacramento Graduate Transportation program
- Mineta Transportation Institute
- Data Science Programs (B.S. and M.S. degrees)
- Transportation Engineering programs (college-level, post-baccalaureate certification)
- Vocation Schools
- Public Agency internal trainings (e.g. Journeyman training and certification)
- Travel Training
- Post-Baccalaureate Certification
- K-12 Outreach & Education

Overall, the responses reflect a broad but uneven landscape of workforce development efforts, spanning both specialized and general education pathways. When asked to rate how well current workforce development programming meets industry needs, the most common score reported was a **six out of ten**. While this suggests that existing programs are not failing, it also indicates clear room for improvement to better align training with the evolving demands of the transportation technology sector. This report finds that a primary gap in current workforce development offerings is the misalignment between local program curricula and the specific skills needed by the transportation technology industry.

When asked to rate how well current workforce development programming meets industry needs, the most common score reported was a six out of ten. While this suggests that existing programs are not failing, it also indicates clear room for improvement to better align training with the evolving demands of the transportation technology sector.

Respondents from the education sector acknowledged this disconnect and emphasized that adapting academic programs is a slow and incremental process—often described as updating coursework and curriculum as "a matter of inches." In particular, representatives from the college level noted that curriculum changes require extended timelines and must navigate institutional barriers, delaying the responsiveness of programs to industry shifts.

This analysis begins to shape an understanding of the current state of workforce development in the region. First, organizations report that they are preparing for the emerging transportation technology industry across all education levels.New and evolving roles are being created to meet industry demands, and hiring is underway. However, a critical issue remains: current workforce development programming has not kept pace with the changes underway in the industry. As a result, the pool of available candidates is not trained or equipped with the skills required to readily step into these new and evolving roles.

# Skill Gaps in Emerging Mobility Roles

Individuals must first understand emerging transportation technologies, specifically what they are and how they work, before acquiring more specialized skills.

In the previous section, the focus was on a broader program development gap, highlighting the larger issue of misalignment between available educational and training programs and current industry needs. Survey participants were asked more questions regarding the technical and non-technical skills required by the industry. By identifying the skills needed by individual workers, targeted workforce development efforts can be prioritized and ensure that workers are prepared for the evolving demands of the industry.

Before addressing specific technical skills, many respondents identified a foundational knowledge gap: understanding the technology. Technology competency emerged as the most frequently cited technical workforce development need.

Following the observation about technology competencies, there were seven themes that came out the responses from the participants. Table 3 below provides an overview of the skill gaps mentioned.

| RANK | SKILLS NEEDED | KEY DETAILS |
|---|---|---|
| 1 | Electric Powered Transportation | EV maintenance, hydrogen fuel cells, battery chemistry, EV infrastructure installation |
| 2 | Cybersecurity | Protecting AV systems, transit cybersecurity readiness |
| 3 | Data Analytics and Data Science | Managing mobility datasets, geospatial data analysis |
| 4 | Installation, Integration, and Maintenance of Emerging Technologies | Skills for installing and maintaining transportation technology hardware |
| 5 | Operations and Incident Management Skills | Operational protocols, incident response |
| 6 | Command Center Operations | Dispatching AVs, centralized remote dispatching skills |

Table 3. Current Technical Skills Needed

### Zero-Emission Transportation Technologies

One of the most critical technical skill areas identified is zero-emission transportation technologies. As the industry rapidly transitions toward cleaner mobility solutions, there is a growing need for workers who can maintain and service zero-emission vehicles (ZEVs), including both light- and heavy-duty models. This includes hands-on skills related to battery electric vehicles (BEVs) and hydrogen fuel cell vehicles (FCEVs), each of which requires a specialized understanding of emerging technologies and safety protocols. Additionally, the evolving complexity of battery chemistry demands a deeper technical foundation to ensure proper maintenance, repair, and safe handling. Beyond vehicle maintenance, there is a parallel workforce demand for individuals trained in the installation and upkeep of ZEV infrastructure, such as charging and hydrogen fueling stations, which is vital for supporting the widespread deployment of zero-emission transportation.

### Cybersecurity

Cybersecurity was consistently identified as a top technical priority across the mobility technology sector. Vehicles and transportation systems are becoming increasingly connected and automated, so protecting these systems from cyber threats is critical. The industry faces growing risks from potential attacks on autonomous vehicle (AV) systems, including vulnerabilities that could jeopardize public safety. There is an urgent need to build a workforce skilled in cybersecurity practices, risk management, and system protection that can safeguard future connected and automated mobility.

### Data Analysis and Data Literacy

The third most frequently identified skill need centers on data analysis in its many forms. Respondents noted a broad spectrum of need, from basic data interpretation and Excel-based analysis to advanced analytical techniques and coding. As mobility technologies generate increasingly large and complex datasets, the ability to interpret and act on this information is becoming essential across a wide range of roles. Developing a pipeline of workers who are comfortable working with data, whether to monitor system performance, diagnose issues, or inform planning and decision-making, will be critical to the success of future mobility systems.

### Installation, Integration, and Maintenance of Emerging Technologies

Across both the public and private sectors, respondents emphasized a need for individuals who can install, repair, and maintain emerging mobility technologies. As new technologies come online, they often involve critical hardware components that must be physically deployed and integrated into existing infrastructure. However, there is a notable shortage of skilled labor capable of supporting this work at scale. Integration is another key challenge; new technologies must operate seamlessly with both legacy physical systems (e.g., roadways, transit assets) and evolving digital infrastructure (e.g., fiber optics, sensor networks). Several respondents suggested that an effective strategy may be to train workers with experience in conventional or legacy infrastructure, equipping them with the knowledge and skills necessary to adapt to new technologies. Once technologies are installed and integrated and small-scale pilots transition into full-scale deployments repair and maintenance will become an ongoing and critical workforce need.

### Operations and Incident Management Skills

As the transportation industry increasingly integrates advanced technologies, the demand for skilled personnel in operations and incident management has grown. Workers in this field must be well-versed in operational protocols and incident response procedures to handle a variety of scenarios, from vehicle malfunctions to emergency situations on the road. Effective incident management requires the ability to swiftly assess situations, make critical decisions, and coordinate responses with various stakeholders, ensuring that safety and efficiency is prioritized. Having trained personnel capable of managing and resolving incidents in real-time becomes essential to maintaining public trust and operational integrity.

### Command Center Operations

The rise of autonomous and connected mobility is accompanied by the rise of centralized command centers for some technology stacks. These command centers are responsible for overseeing the operation of fleets, monitoring real-time data, dispatching vehicles, and responding to incidents remotely. One respondent compared these positions to air traffic control jobs which require high situational awareness, digital fluency, and specialized training.

## PRIORITY TECHNICAL SKILL AREAS FOR THE NEXT 3–5 YEARS

Many of the priority technical skills projected for the next 3–5 years reflect the same core skill gaps already identified in today's workforce. Maintenance, operations, cybersecurity, electric vehicles (EVs), and teleoperations were all repeatedly mentioned as current areas of need. Respondents emphasized that the urgency around these domains is likely to increase significantly as the technologies mature and scale. For example, as more cities and agencies move beyond pilots and into full deployment of AVs or EV fleets, the demand for technicians who can install, service, and integrate these systems into existing infrastructure will grow. Similarly, teleoperations and command center roles may need to expand as vehicle volumes increase and remote oversight becomes more complex. Cybersecurity, too, will shift from being a specialized concern to a standard requirement across most technical functions.

One technical domain that stood out as a new and emerging need, but not yet fully captured as a current skill gap and anticipated to have widespread influence, is Artificial Intelligence (AI). While AI itself is not yet a stand-alone competency commonly required across today's transportation workforce, its impact is expected to ripple across all five of the foundational technology domains the GoMentum Innovation Alliance is grappling with: automation, connectivity, digitization, system interoperability, and electrification. From predictive maintenance and adaptive signal control to AV perception and cybersecurity threat detection, AI will increasingly shape how systems are designed, managed, and operated. Respondents noted that preparing a workforce that understands how AI works and can apply it responsibly within these domains will be critical.

## NON-TECHNICAL SKILLS

In addition to technical skills, non-technical skills are critical for supporting the deployment and maintenance of emerging transportation technologies. Survey respondents were asked to rank a set of non-technical skills in order of importance. The importance of non-technical skills cannot be understated, it often was mentioned during the technical skill gap questions. One respondent shared, "Bring us people with soft skills then we can give them the technical, mechanical, civil [skills]..." The results were as follows:

"Bring us people with soft skills then we can give them the technical, mechanical, civil [skills]..."

The results were as follows:

- Critical Thinking
- Adaptability
- Oral Communication
- Reading Comprehension
- Written Communication
- Visual Communication

Critical thinking was identified most frequently as the top non-technical skill needed in the workforce. Adaptability and oral communication skills were also ranked highly, highlighting the importance of workers who can navigate complexity, adjust to rapid changes, and clearly articulate ideas. Visual communication was ranked lowest among the skills listed, although it remains valuable, particularly as transportation systems increasingly rely on data visualization and user interface design.

# Needs for Workforce Development

As California and the Bay Area experience rapid transitions in mobility technologies, it is important to assess how public-private partnerships (P3s) are adapting to this evolving landscape. When asked to rate public-private collaboration, survey respondents most frequently assigned a score of 5 out of 10 for California overall. In contrast, public-private collaboration in the Bay Area received a score of 8 out of 10 most often, suggesting that the Bay Area is perceived to have stronger public-private partnerships compared to the state as a whole. However, as previously noted, workforce preparedness remains a critical and fragmented challenge. To address this and to advance collaboration and innovation in California, several strategies and actions were identified through the Gaps and Needs Assessment. These key levers will be discussed in this section.

| Needs & Strategic Levers | Summary |
|---|---|
| Sector Engagement | Effective workforce development in the mobility technology sector will require clear coordination across sectors with shared accountability.<br>• The Public sector is a key actor<br>• The Education sector is critical for program development and delivery<br>• The Private sector can invest in training, upskilling, and reskilling programs that reflect their needs<br>• The Labor sector is seen as a partner in apprenticeships and program development, however labor sector respondents expressed a desire to be more involved |
| Data & Resources | To accelerate workforce development in California's mobility sector, stakeholders emphasized the need for better data to inform decision-making.<br>• Job Market Forecasts<br>• Industry-aligned credentials<br>• Clearer "on-ramps" to new career opportunities |

| | |
|---|---|
| Enablers | • Strong industry-academic partnerships and advisory boards<br>• Flexible, non-traditional training models (e.g., certificates, workshops)<br>• On-the-job training through pilot programs and deployments<br>• Active employer and labor involvement in program design |
| Barriers | • Rigid accreditation and slow curriculum change processes<br>• Regulatory and licensing hurdles (e.g., CDLs, degree requirements)<br>• Limited transferability of certifications across employers |
| Public Awareness | • Lack of clear, relatable information about mobility careers<br>• Need for early engagement in K–12 education<br>• Importance of using accessible platforms (e.g., TikTok, YouTube)<br>• Community-based outreach and storytelling needed to build interest |

## LEVER: SECTOR ENGAGEMENT

As part of the Gaps & Needs Assessment, survey respondents were asked to reflect on the strengths and areas for improvement within both the public and private sectors. Their responses offer valuable insights into how different sectors are supporting workforce development in the mobility technology industry and where opportunities exist to strengthen and expand these efforts. The following summarizes the key themes identified through their feedback.

### Sector Roles & Responsibilities for Workforce Development

To better understand how different sectors should contribute to workforce development in the context of emerging mobility technologies, respondents were asked to weigh in on sector responsibility through two exercises: one using a RACI matrix applied to various educational experiences, and another focused on responsibility for upskilling and reskilling pathways, program development, and funding.

In the first exercise, participants used a RACI (Responsible, Accountable, Consulted, Informed) framework to determine which sectors should lead or support across key educational experiences, including training, externships, apprenticeships, internships, and formal education. **A consistent pattern emerged: the public sector, private sector, and education sector were most frequently assigned responsibility and accountability for implementing training, externships, internships, and formal education programs.**

The exception to this trend was apprenticeships where the labor sector was viewed as a key accountable partner, alongside the public and education sectors. The widest variety of responses was found in the "consulted" category, indicating that consultation needs may vary significantly depending on the type of educational experience. The nonprofit and labor sectors were generally viewed as sectors that should be informed, rather than directly responsible or accountable. This contrasts with the perspective of one of the labor survey participants, who stated, "Ideally, labor should be accountable, consulted, and informed. Labor desires more engagement before being consulted and informed."

The nonprofit and labor sectors were generally viewed as sectors that should be informed, rather than directly responsible or accountable. This contrasts with the perspective of one of the labor survey participants, who stated, "Ideally, labor should be accountable, consulted, and informed. Labor desires more engagement before being consulted and informed."

In the second exercise, respondents were asked which sectors should take responsibility for pathway development, program development, and funding related to upskilling and reskilling the workforce. For reskilling, pathway creation was most frequently assigned to the public sector and education sector. Program development was seen primarily as the role of the education sector, followed by the labor sector. Funding responsibilities fell primarily to the public sector, with the private sector playing a secondary role. For upskilling, the patterns shifted slightly. Pathway creation was seen as a shared responsibility between the public sector and the private sector. Program development remained primarily the responsibility of the education and labor sectors, with additional mention of the public sector. Funding for upskilling, like reskilling, was attributed mainly to the private and public sectors.

These two exercises, taken together, offer a nuanced view of the ecosystem of workforce development. While the public sector consistently emerges as a key actor across nearly every category, the education sector is clearly seen as central to program development and delivery. Meanwhile, the private sector's role is most prominent in funding and upskilling in response

to rapidly changing transportation technologies. The labor sector stands out primarily in relation to apprenticeships and program development, highlighting its traditional role in hands-on training and workforce transition, along with expressing a desire to be more involved. Overall, effective workforce development in the mobility technology sector will require clear coordination across sectors with shared accountability, especially as roles evolve in response to technological advancement and shifting labor market demands. Improved coordination leads to stronger talent pipelines, more equitable access to opportunities, and better job outcomes.

## Key Findings: Sector Roles in Workforce Development

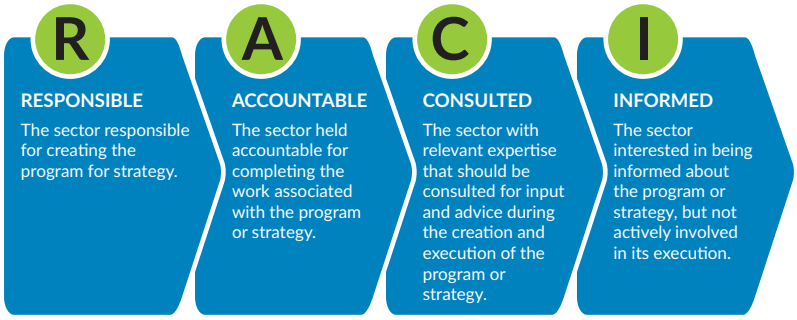



Figure 6. This RACI graphic was used to help survey respondents determine sector involvement and role in workforce development efforts

- Public, Private, and Education Sectors are consistently seen as responsible and accountable for most educational experiences (training, internships, externships, formal education).
- The Labor Sector is uniquely identified as a key partner for apprenticeships and program development, especially in hands-on training contexts.
- Consulting roles vary widely by program type, indicating the need for flexible partnerships based on context and expertise
- Nonprofit and Labor Sectors are most often viewed as needing to be informed rather than leading or managing programming.
- Reskilling Pathways are primarily a public and education sector responsibility, while upskilling pathways lean more on the public and private sectors
- Program Development is led by the education sector, with support from labor and public partners
- Funding is expected to come from a combination of public and private sector investment, reflecting a shared responsibility to support workforce transitions

## LEVER: DATA & RESOURCES TO SUPPORT WORKFORCE DEVELOPMENT

A key lever identified is the need for stronger data and resources to advance workforce development across California. Stakeholders highlighted the following priorities:

### Performance metrics

- Establish clear metrics to track workforce development programs' progress and impact over time

### Job market outlooks and forecasts

- Develop forecasts for both the private and public sectors
- Include salary information to support informed career decision-making

### Industry-aligned credentials

- Create and promote certifications that match real-world job requirements

### Education and training pathways

- Build clear "career on-ramps" that connect existing skillset, education, or training directly to job opportunities

### Non-Technical skill development

- Integrate critical non-technical skills like critical thinking, adaptability, and communication into workforce training programs

### Upskill and reskill mapping

- Identify segments of the current workforce best suited for upskilling and reskilling based on existing skills and experience

## LEVER: SYSTEM-WIDE BARRIERS & ENABLERS

As part of the research, respondents were asked whether there are existing policy or implementation barriers that make job training, education, or certification in mobility technology less accessible. Several consistent themes emerged around both the barriers that limit accessibility and the enablers that could support more responsive and effective workforce development programming.

### Barriers

A key theme across responses was the rigidity of higher education systems, particularly four-year universities, which often lack the agility to quickly adapt curricula to match the pace of technological change in the mobility sector. Faculty time, expertise, and bureaucratic hurdles around curriculum development make it difficult to launch new programs or update existing ones. While some institutions are exploring certificate and continuing education offerings, respondents noted that technical skills needed today may be better addressed through community colleges and alternative training providers.

Funding limitations were also widely cited. Programs frequently lack the upfront investment needed to build courses, hire qualified instructors, or provide access to equipment for hands-on learning. In some cases, even when funding is available, slow execution timelines make it difficult to act quickly on emerging needs. Respondents also noted that current federal policies, such as Pell Grant restrictions, often exclude shorter-term or non-degree programs that are better suited for upskilling and rapid workforce entry.

Several regulatory and credentialing issues were identified as additional barriers. Licensing requirements, such as those related to CDLs or proposed DMV rules, can limit access to job opportunities, especially when eligibility criteria exclude individuals with nontraditional backgrounds. State-level policy decisions (e.g., California legislation) were also noted for inadvertently slowing workforce development in the mobility space. Other barriers, such outdated hiring norms in the public sector (e.g., requiring four-year degrees for technical or field roles), were seen as out of step with the skills truly needed on the ground.

In addition, a number of respondents pointed to public misperception and low awareness of career opportunities in this space. Some individuals hesitate to pursue training in emerging technologies out of concern that the industry may not be sustainable long-term. Without tangible access to technology or clear, accessible career pathways, potential workers may opt out before they begin.

**Implementation barriers (e.g., accreditation, credentialing) in Education**

Survey respondents shared mixed experiences regarding how institutional-level accreditation, program-level accreditation, and teacher-level credentialing impact their ability to adapt courses, curriculum, or programs to meet evolving industry needs.

At the high school level, accreditation and credentialing requirements do create challenges:

- Technical teachers must hold specific credentials, but districts often struggle to find qualified candidates.
- Career and Technical Education (CTE) programs are managed separately, adding another layer of complexity.

At the higher education level, accreditation has a more significant impact:

- Accreditation requirements—especially discipline-specific ones like Accreditation Board for Engineering and Technology (ABET)—can slow down curriculum updates, particularly at the undergraduate level.
- University academic senates and curriculum committees prioritize maintaining academic fidelity, further reinforcing a cautious pace of change.
- Instructors have some flexibility to make minor course adjustments, such as tailoring lectures within the established course description and outline of record. However, formal curriculum changes still require a time-consuming approval process.

Some institutions, however, are designed with flexibility in mind and reported fewer barriers to adjusting coursework when needed.

Additional Insights: Differences in job classifications, such as mechanics, can lead to discrepancies across employers. For example, agencies have proprietary certifications (e.g., for AC techs) that are not transferable between organizations, requiring recertification when employees move between organizations. This creates additional barriers to career mobility for technical workers.

## Enablers

Despite these barriers, several promising enablers were identified. Respondents emphasized the value of strong industry-academic partnerships, especially advisory boards composed of employers that can inform and refine training curricula in real time. These relationships ensure that education and training programs align with the current and projected demands of the workforce.

Continuing education programs and non-traditional learning models, including certificate programs, professional development workshops, and short courses, were also seen as high-potential enablers. These formats are often more nimble, require less bureaucratic oversight, and can be developed and delivered quickly when there is a clear signal from the labor market.


Figure 7. In 2024, CCTA partnered with its local bus operator, County Connection, and May Mobility to deploy an autonomous vehicle pilot that trained current drivers (represented by the Amalgamated Transit Union) as autonomous vehicle operators (AVO).

Other enablers include on-the-job training opportunities and pilot deployments that allow workers to engage with new technologies directly. Training that is embedded within pilot programs or local implementation efforts can provide critical hands-on experience while also supporting local buy-in and talent development.

Finally, early exposure and consistent private-sector engagement were mentioned as vital to building a sustainable talent pipeline. When companies invest time in developing training content or partnering with education providers accessibility improves and more people are able to see themselves in these emerging careers.

In conclusion, while there is growing momentum around building a mobility technology workforce, current systems for training and education remain misaligned with the speed and specificity of industry needs. Barriers such as institutional rigidity, funding limitations, regulatory constraints, and low public awareness continue to hinder broader access to high-quality, timely programming. In particular, complex accreditation processes and non-transferable certifications further complicate efforts to scale and sustain training across geographies and employers. At the same time, the presence of responsive enablers such as industry-informed curricula, flexible credentialing models, continuing education programs, and early employer engagement, demonstrates that progress is possible. Accelerating workforce development in this sector will require policy adjustments, greater institutional adaptability, and deeper collaboration between education providers, employers, and policymakers.

## LEVER: PUBLIC AWARENESS OF WORKFORCE OPPORTUNITIES

**The most frequently given score for public awareness of career opportunities in emerging transportation technologies was 2 out of 10**, underscoring a widespread recognition that the public lacks a clear understanding of the pathways and potential jobs in this space. This low rating highlights a significant opportunity to expand outreach and engagement strategies that make these careers more visible and accessible to a broader audience. The respondents emphasized that improving access to the jobs and career opportunities in emerging transportation technologies will require early and sustained outreach, strong partnerships, better storytelling, and practical opportunities that are visibly connected to real jobs.

To increase awareness, respondents suggested focusing efforts in the following areas:

- Early Education and K–12 Engagement: Begin career exploration and technical exposure in elementary, middle, and high schools to build long-term awareness and interest
- Targeted Marketing and Messaging: Use platforms like Instagram, YouTube Shorts, and TikTok to reach younger audiences. Shift messaging away from complex engineering jargon toward plain, relatable language
- Partnerships with Local and Community-Based Organizations: Collaborate with junior colleges, HBCUs, community colleges, workforce development boards, re-entry programs, and nonprofits to reach broader audiences and build trust
- Hands-On Career Exposure: Provide paid internships, externships, job shadowing opportunities, and employer-hosted events like hackathons or pitch competitions to offer tangible entry points into the field
- Labor-Focused Leadership: Actively engage labor organizations and workforce partners in both designing and promoting workforce program
- Reskilling and Upskilling Initiatives: Invest in short-term credentialing programs and upskilling pathways for mid-level and frontline workers to bridge gaps between existing skills and future job requirements
- Localized Recruitment and Messaging: Use regional data and community insights to target recruitment more effectively, especially in areas underserved by current mobility initiatives.

Together, these strategies can support efforts to increase public understanding of mobility technology careers.

# Opportunities for Workforce Development Innovation

This assessment highlights a pressing need to evolve California's workforce development systems to match the pace, complexity, and cross-sector nature of innovation in the mobility sector. Employers across the state are ready to hire and roles span all education levels—from technical to operational to knowledge-based—there remains a core misalignment between current training offerings and the specific skills required to implement, manage, and scale emerging transportation technologies.

At a high level, the workforce gap is not a lack of interest, roles or educational framework. Current programs don't align with real-world demands in areas like zero-emission vehicle technology, systems integration, maintenance, and safety. This signals a vital opportunity to refresh curricula, develop specialized credentials, and embed both technical and essential soft skills across all training models.

To meet this moment, the GoMentum Innovation Alliance and its partners can focus on the following opportunities:

- **Strengthen Sector Collaboration:** Public-private collaboration is perceived to be stronger in the Bay Area than in the rest of California. Actively engaging labor, education, and community-based organizations can create more accurate and adaptive workforce ecosystems.
- **Modernize Training Systems for Agility:** Many institutions remain constrained by rigid accreditation processes, outdated credentialing, and slow curriculum changes. Emerging mobility technologies require agile, modular, and stackable credentials that allow for rapid skill acquisition. Institutions should prioritize non-degree credentials that can be quickly developed in partnership with industry and adapted to changing technical requirements.
- **Leverage Data to Align Supply and Demand:** More granular market intelligence—forecasts, salary benchmarks, skills mapping—will be essential to guide investments, shape policy, and inform career decisions. Workforce strategies must be dynamic and data-informed to respond effectively to industry shifts.
- **Increase Public Awareness and Access:** Public understanding of mobility technology careers is strikingly low. Early education, digital outreach, storytelling, and hands-on exposure (e.g., internships, shadowing, pilot deployments) are all critical to build awareness and career interest which can support a more robust talent pipeline.

# Author Highlights

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The PLUM Catalyst team would like to thank Danielle Elkins and Brittanie Hernandez for their invaluable support throughout this research. Their expertise and contributions were essential to the success of this research and the development of this report.

# More Information on GIA

The GoMentum Innovation Alliance (GIA) is a coalition of public, private, and academic partners committed to shaping the future of mobility through innovation, workforce development, and inclusive economic growth. GIA was created to catalyze progress at the intersection of transportation technology and talent development—ensuring that emerging jobs in electrification, automation, and connectivity are accessible to all communities.

Through its partnerships and initiatives, GIA works to:

- Build and scale high-wage, high-skill workforce opportunities
- Support upskilling and reskilling of today's workforce
- Promote new and emerging mobility careers
- Align training and education with industry demands
- Foster cross-sector collaboration to strengthen the regional mobility ecosystem

Together with its strategic partners and stakeholders across sectors,the GoMentum Innovation Alliance is committed to ensuring that as the mobility sector evolves, the workforce evolves with it.

For more information, visit https://gomentum.org/innovation-alliance.

# Appendix

## APPENDIX A. GAPS & NEEDS ASSESSMENT SURVEY QUESTIONS

The main source of information on current workforce development gaps and needs in the East Bay region in California was surveying a cross-section of stakeholders across the relevant sectors. The Gaps & Needs assessment was organized as a questionnaire which is reproduced below.

### Part 1

Prior to the assessment, respondents were sent a 6 minute primer video that explained the GoMentum Innovation Alliance and the technology domains of interest for the survey.

Link to Primer Video

1. Rank the terms explained in the primer video in order of familiarity or understanding.

### Part 2. Skill Gaps and Workforce Needs:

2. Based on your experience, what are the top three technical skill gaps currently affecting the mobility technology industry overall?
3. What technical skills do you anticipate will be critical in the next 3-5 years?
4. Sector Perspective Questions

| | Primarily Public Sector Career | Primarily Private Sector Career | Both Public & Private Sector Career | Primarily Labor Sector |
|---|---|---|---|---|
| a | What is the public sector doing well and what can the private sector learn from the public sector? | What is the private sector doing well and what can the public sector learn from the private sector? | What is the private sector doing well and what can the public sector learn from the private sector? | What is the labor sector doing well and what can the public and private learn from them? |
| b | What can the public sector do better to address workforce development needs? | What can the private sector do better to address workforce development needs? | What can the private sector do better to address workforce development needs? | What can the labor sector do better to address workforce development needs? |
| c | Does your organization have any performance management metrics (e.g. KPIs) for workforce development? If yes, please share what they are in the "Other" Selection below. | Does your organization have any performance management metrics (e.g. KPIs) for workforce development? If yes, please share what they are in the "Other" Selection below. | What is the public sector doing well and what can the private sector learn from the public sector? | What data are you currently seeing from the private and public sectors that supports your organization's workforce development efforts? |
| d | Are the current metrics effective? If so, why? If not, please share what metric(s) would reach more successful outcomes. | Are the current metrics effective? If so, why? If not, please share what metric(s) would reach more successful outcomes. | What can the public sector do better to address workforce development needs? | What data would you like to see from the private and public sectors that would aid in your workforce development efforts? |
| e | | | Does your organization have any performance management metrics (e.g. KPIs) for workforce development? If yes, please share what they are in the "Other" Selection below. | |
| f | | | Are the current metrics effective? If so, why? If not, please share what metric(s) would reach more successful outcomes. | |

Table A1. Sector Perspective Questions Organized by professional experience.

## Part 3. Level of Collaboration in the Bay Area and California & Change Management

5. On a scale of 1 to 10, how would you rank the level of collaboration in California between public and private sectors to address the current gaps in mobility technology workforce development?

6. On a scale of 1 to 10, how would you rank the level of collaboration in the Bay Area between technology areas in the private sectors to address the current gaps in mobility technology workforce development?


Figure A1. RACI Matrix decision tool to support survey respondents answer Question 7 through Question 12

7. Based on the RACI Matrix, what role(s) should each entity take in strategic vision, program management, and/or change management?

8. Based on the RACI Matrix, what role(s) should each entity take in training?

9. Based on the RACI Matrix, what role(s) should each entity take in apprenticeships?

10. Based on the RACI Matrix, what role(s) should each entity take in externships (job shadowing)?

11. Based on the RACI Matrix, what role(s) should each entity take internships?

12. Based on the RACI Matrix, what role(s) should each entity take in formal education?

## Part 4. Preparing for New Roles in the Mobility Technology Industry

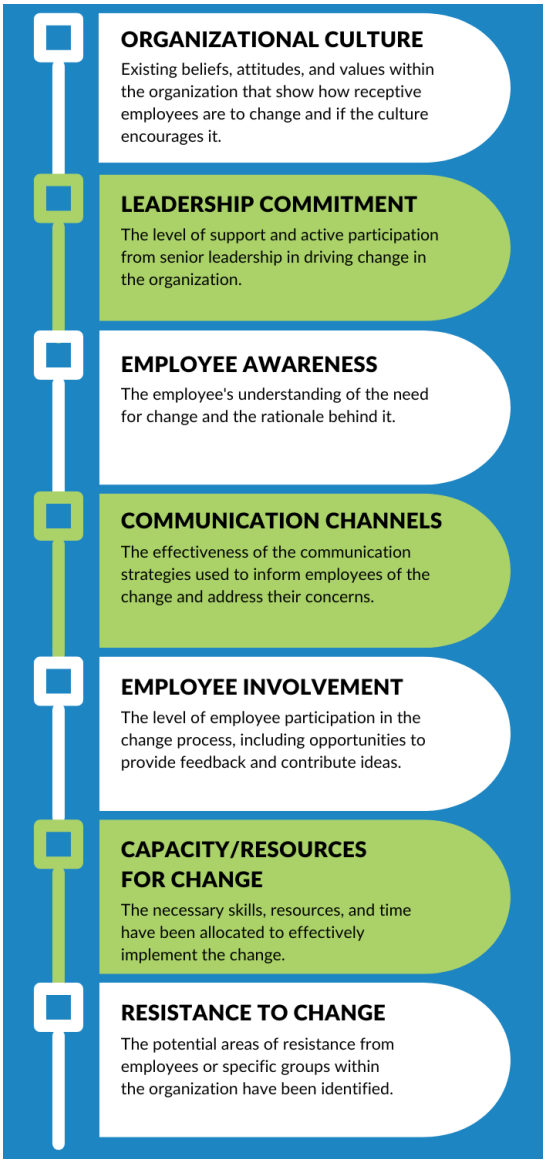


Figure A2. Change Readiness Model graphic to help survey respondents determine organization readiness to embrace emerging transportation technology

13. Based on the Change Readiness Model above, how would you rank your organization's readiness for the mobility technology industry (and its needs?)
14. [YES OR NO] Is your senior leadership actively investing resources into updating their knowledge/skills to reflect the evolving mobility technology industry?
15. How are the change readiness factors and senior leadership knowledge impacting the hiring, recruiting, and training process at your organization?
16. [YES OR NO] Are there new job titles or roles in your organization that would be considered a part of or relevant to the mobility technology industry?
17. Emerging Roles Questions

| | Question 16 Answer - Yes | Question 16 Answer - No |
|---|---|---|
| a | Are the roles formally recognized? | You indicated that there are no emerging roles or titles at your organization. Please select the option below that best explains why. |
| b | Can you provide examples of the emerging job titles or roles? | If there are significant barriers, how are you navigating these challenges? |
| c | Are there any challenges with creating/developing emerging roles in your organization? | |
| d | If yes, what are they and how are you navigating any challenges that exist in formalizing these roles? | |

Table A2. Conditional Questions based on the answer to Question 16

18. What roles in your organization do you find difficult for recruiting new employees or training existing staff?
19. Are there any specific roles where the line between technician and engineer is becoming blurred?
20. If so, please describe the role and its impact on the recruiting or hiring process.
21. [On a scale 1 to 10] How prepared is your organization for the retirement of key technical staff?
22. What are your succession plans or strategies to ensure that retiring staff are training and adequately preparing the next generation of leadership to pass on skills and knowledge?
23. a) [RANKING EXERCISE] What non-technical skills are most critical for your workforce as the mobility technology industry evolves?

    b) What skills overlap across technology domains?
24. What are some best practices or cultural company values that you've seen at your organization that encourage creativity and the skills listed above?

## Part 5. Education Sector Specific Questions

25. [YES OR NO] Are you in the Education or Labor Sector? If yes, continue.

| | Education | Labor |
|---|---|---|
| a | Are there emerging education programs or training for mobility technology that are not yet formally recognized? | |
| b | If so, what are they and how are you addressing this? | |
| c | If not, how do you plan to add or create these programs? Are there barriers to that implementation? If yes, please describe. | |
| d | How does the existing institutional-level accreditation, program-level accreditation, teacher-level credential impact your ability to change courses, curriculum, or programs to respond to evolving industry needs? | Does your organization or membership experience any challenges around certification ownership?<br><br>Example 1: Certificate at one company does not transfer with the employee to another company, even though they possess the skills they do not keep/claim certification on their resume. The companies argue that the training information is proprietary.<br><br>Example 2: Certification opportunity is only available to current employees of certain employers. Only employees of Company A can access training and secure certification. |

Table A3. Additional questions developed for survey respondents in the Education or Labor Sector.

## Part 6. Pathways

26. What current training/education/certification programs are available?

27. a) On a scale of 1-10, how would you rate current training/education/certification programs to meet industry needs?

    b) If you chose a score less than 5 for Question 30, what technical and non-technical skill development is missing from current programming?


Figure A3. Graphic explaining Upskilling vs. Reskilling to support Questions 28 and 29.

28. Who should be developing programming and funding for reskilling?
29. Who should be developing programming and funding for upskilling?
30. What other components (e.g. datasets, skill gap information, job descriptions, etc.) are needed for pathway development?
31. n/a
32. Have you developed and documented a pathway to these new roles? Why or why not?
33. On a scale of 1-10, how aware are people of the opportunities and the current pathways to this new workforce?
34. How would you improve equity and increase awareness in career opportunities in the mobility technology space?
35. [YES OR NO] Are there existing policy or implementation barriers that make mobility technology job training/education/certification programming less accessible?
36. If you answered yes, please indicate the barrier(s) to accessibility.

## [OPTIONAL] Infrastructure Digitization and Systems Integration:

37. Are you comfortable answering questions about infrastructure digitization and systems integration?

    a) Explain your understanding of infrastructure digitalization.

    b) How are roles and responsibilities changing as infrastructure becomes more digitized?

### Conclusion and Next Steps:

38. Is there anything we missed or overlooked in this assessment?
39. What additional resources or support does your organization need to effectively address the identified gaps and needs in the mobility technology workforce?
40. Please list any potential partners or stakeholders you believe should be involved in this assessment.
41. What other organizations do you feel are leading in this space currently and/or are you also involved with? Do you have an official role with that organization?

## APPENDIX B. AGGREGATED SURVEY RESPONSES

This appendix presents the aggregated findings from the GoMentum Innovation Alliance's Gaps and Needs Assessment survey. The charts and graphs included here reflect quantitative responses collected from participants across the public, private, labor, nonprofit, and education sectors. To protect respondent confidentiality and maintain data clarity, only aggregated results are shown. Individual responses and interview transcripts are not included in this appendix.

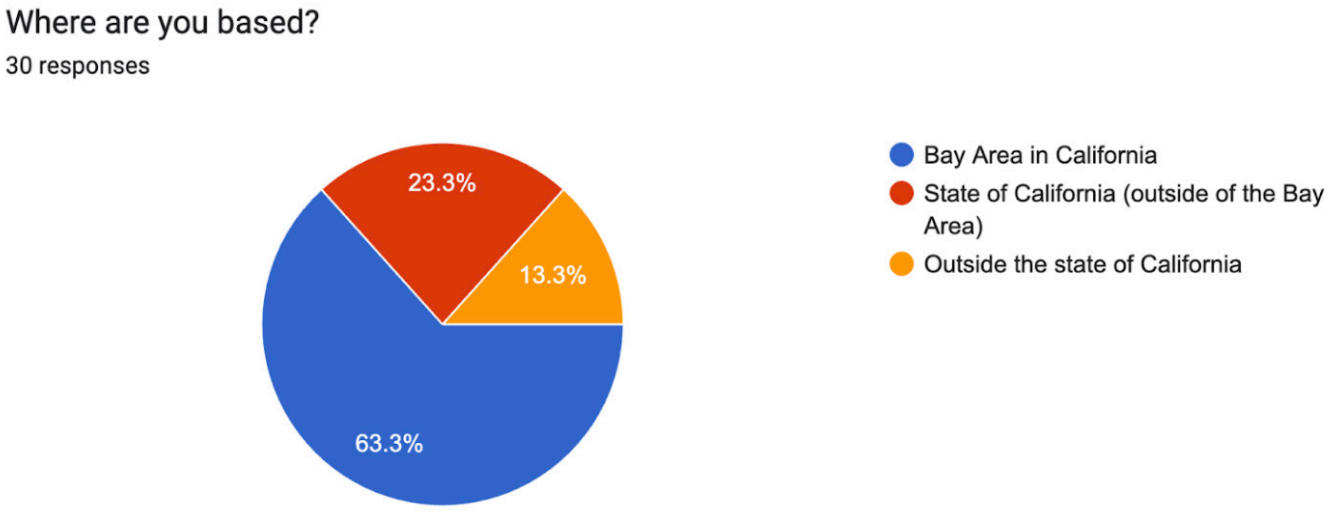


Figure B1. Survey Respondents' Geographic Location

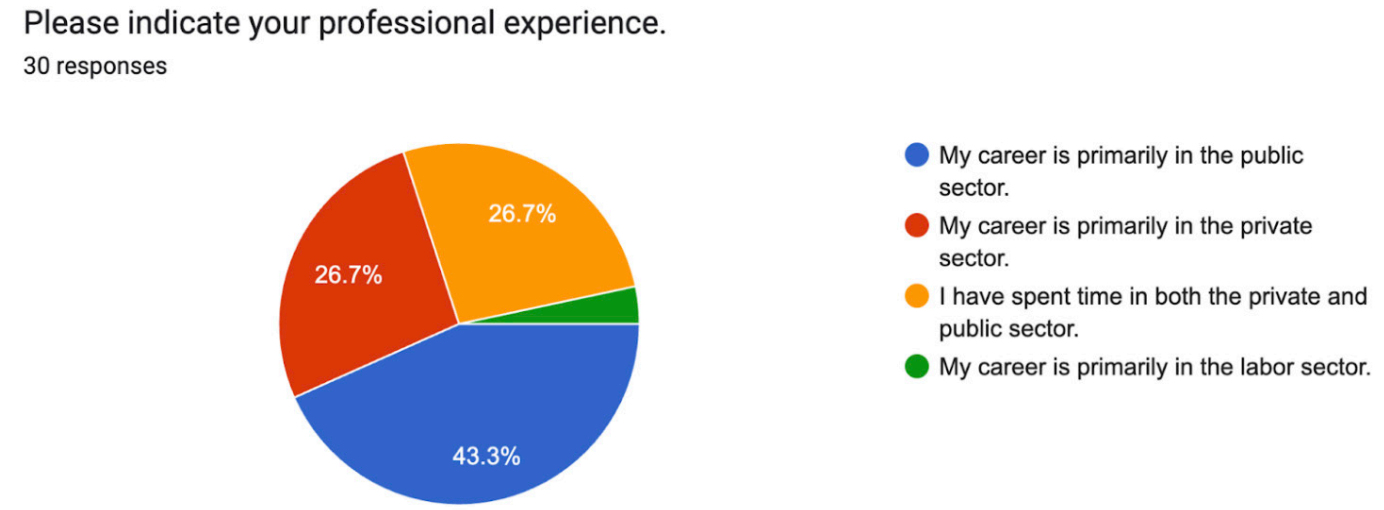


Figure B2. Survey Respondents' Professional Experience

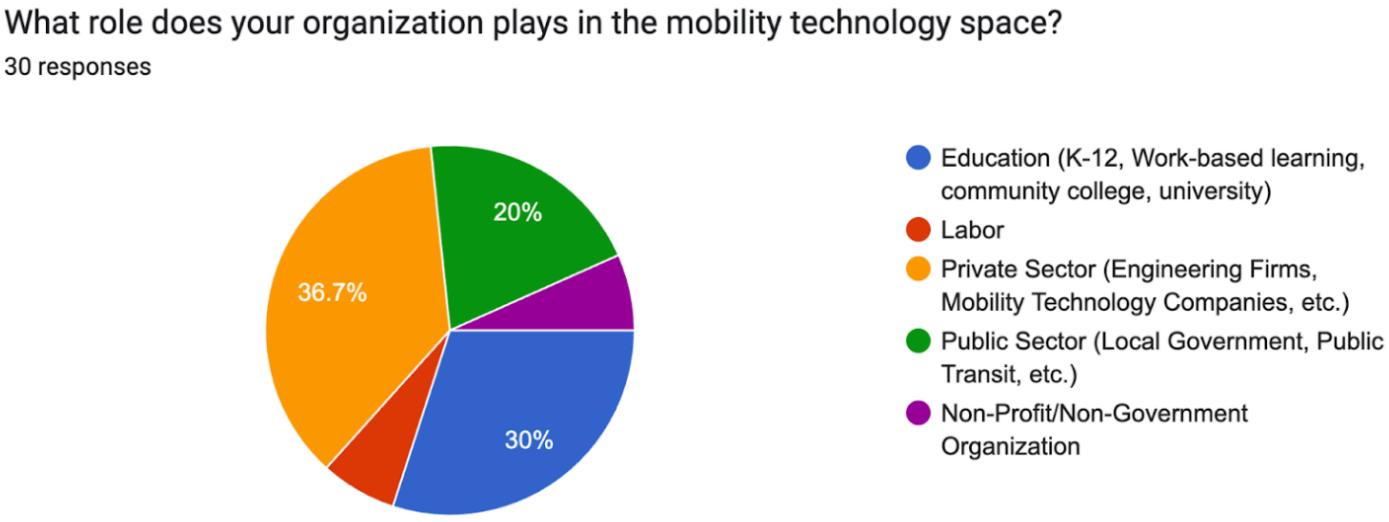


Figure B3. Survey Respondents' Sector Representation

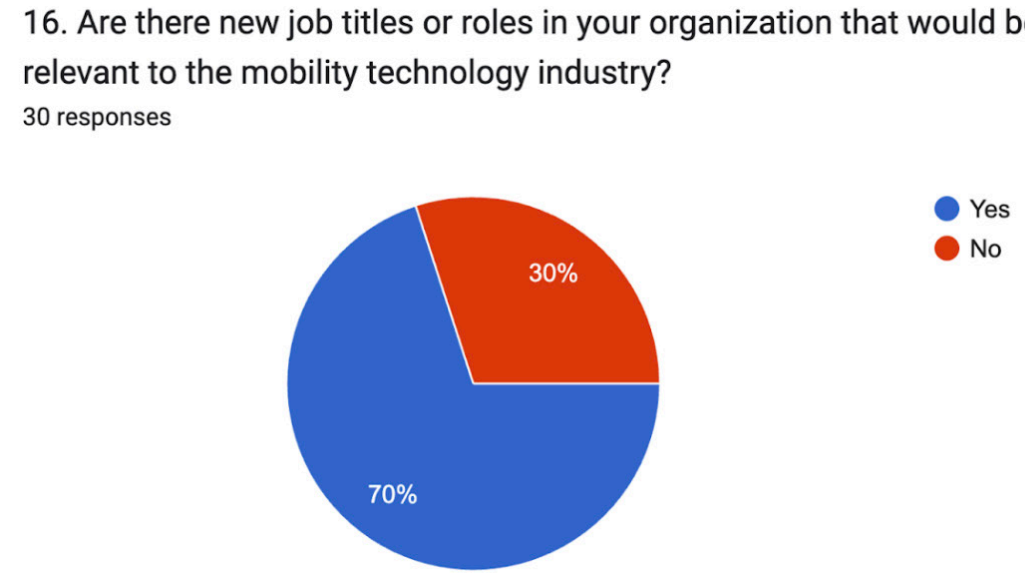


Figure B4. Creation of New Jobs for Emerging Transportation Technologies

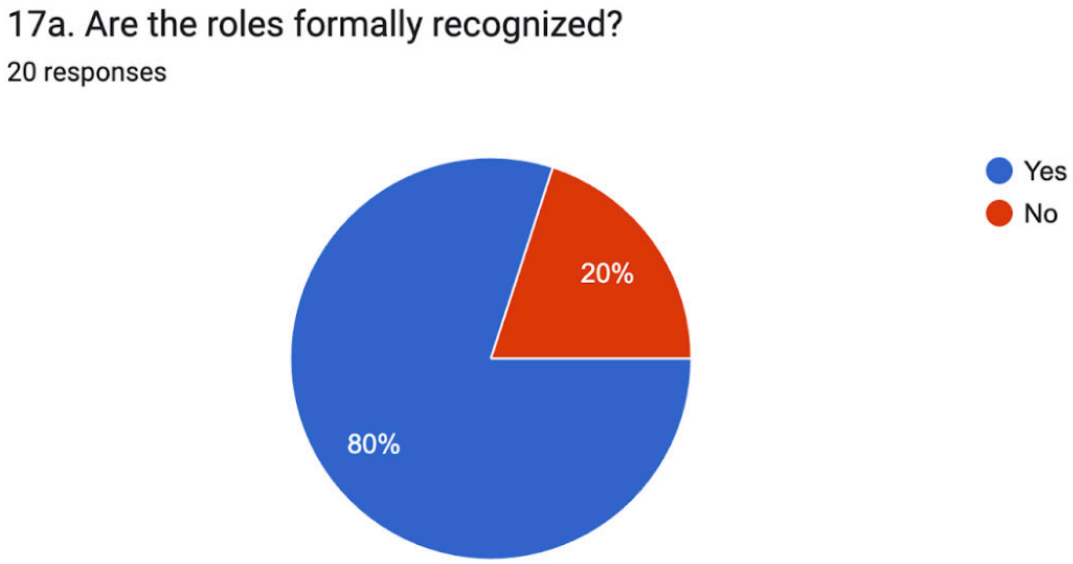


Figure B5. Presence of Formalized Roles for Emerging Transportation Technology

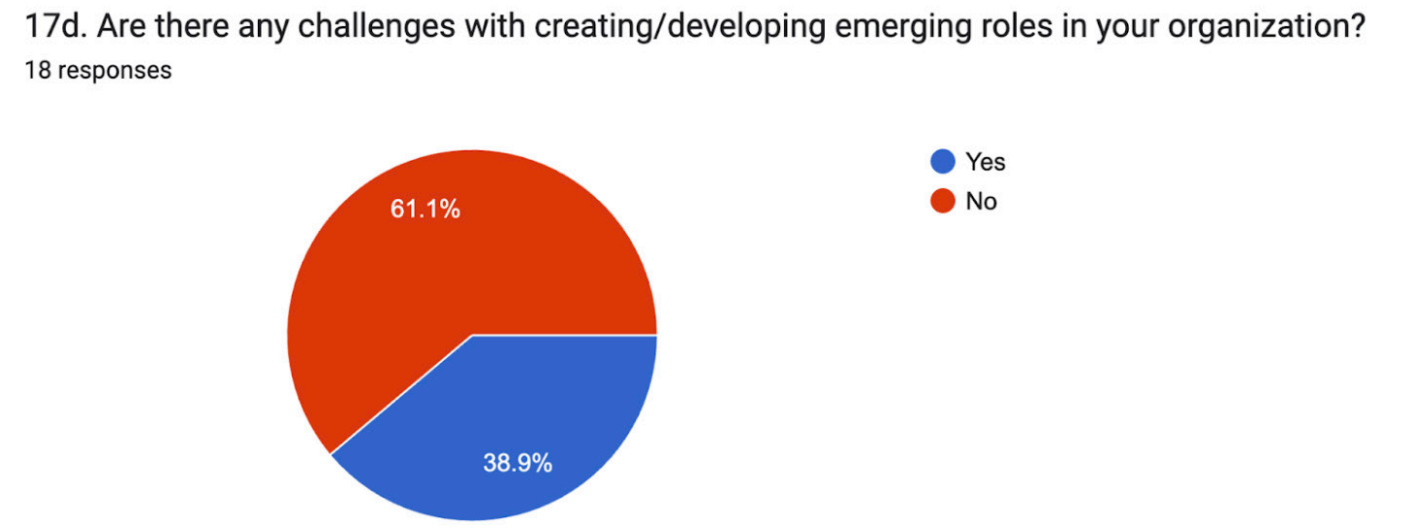


Figure B6. New Role Creation Challenges (or lack thereof)

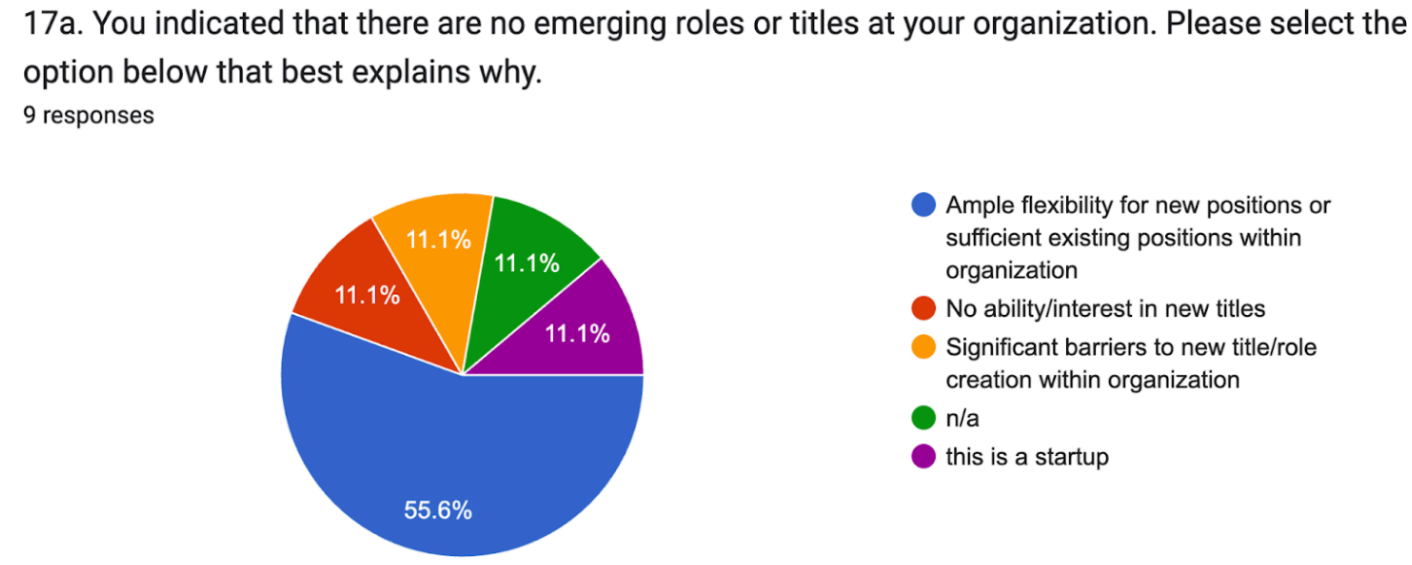


Figure B7. Reasoning for Entities that did not create new roles at their organization

25a. Are there emerging education programs or training for mobility technology that are not yet formally recognized?

10 responses

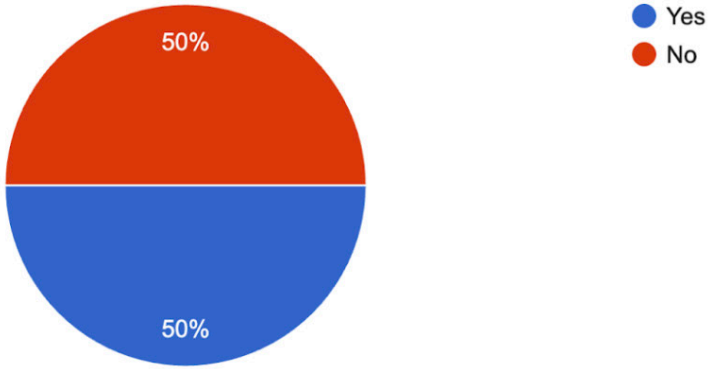


Figure B8. Perception of Education or Training for New Roles

27a. On a scale of 1-10, how would you rate current training/education/certification programs to meet industry needs?

22 responses

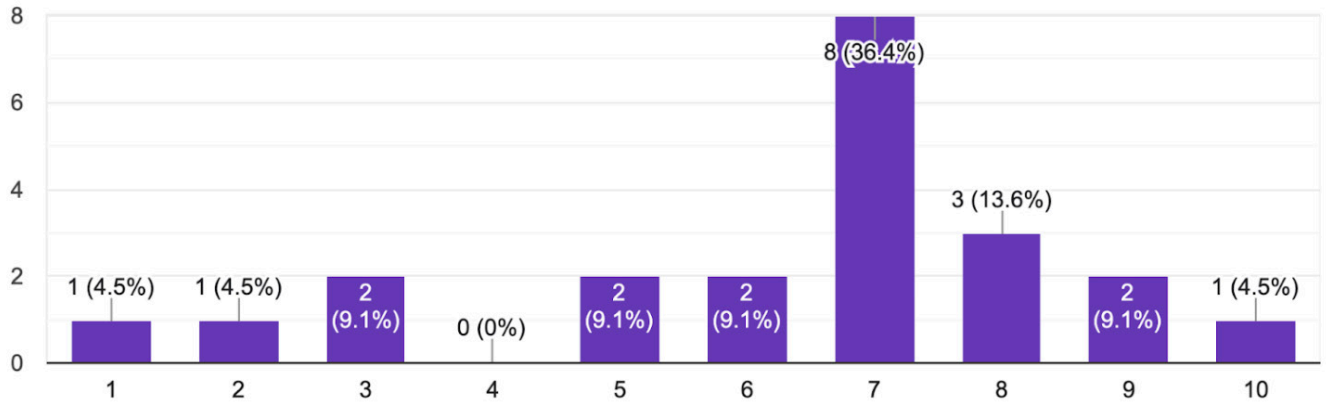


Figure B9. Rating for Current Workforce Development Efforts

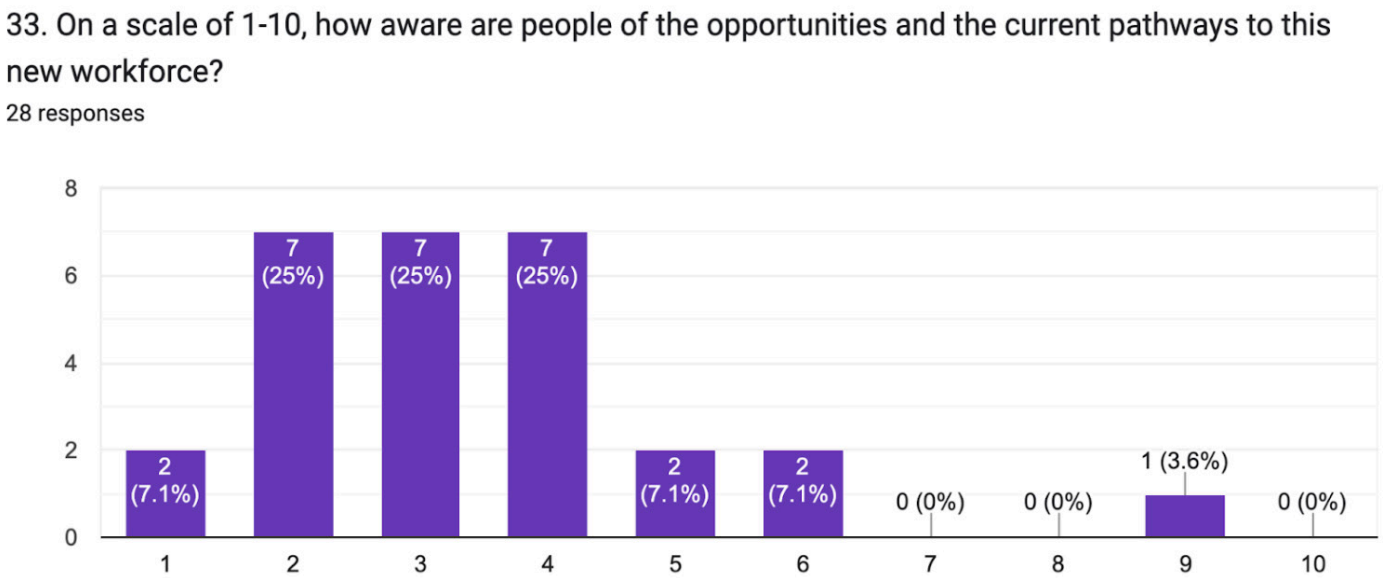


Figure B10. Rating Public Awareness of New Job and Career Opportunities in Emerging Transportation Technology

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