

APPENDIX D
LITERATURE REVIEW



SAN JOSÉ EMERGING MOBILITY PLAN

TASK 4.2 LITERATURE REVIEW

June 2021

INTRODUCTION

The evolution of the emerging mobility industry has captured the imagination of transportation officials, the media, technology entrepreneurs, and individual travelers, while raising complicated questions about accessibility and the racial and economic equity implications of these services. This literature review examines the potential impacts of electrification, shared mobility services, and automated passenger and delivery vehicles on job loss and job opportunities, and aims to address the following questions:

- In what ways are current emerging mobility services and practices perpetuating economic and racial inequity?
- In what ways might emerging mobility further economic and racial equity goals?
- Where and how have workforce training programs in the field of emerging mobility been successful?
- Where and how has emerging mobility been used to support the types of goals and metrics identified for this study?

This literature review draws on academic research, city planning documents, and other publicly available sources. Findings are organized by research question and common themes and will be used to inform research of best practices (Task 4.1) as well as preliminary recommendations to the City of San José (Task 4.3 - 4.5).

THE HARM OF EMERGING MOBILITY

Racial and Economic Equity Implications

Despite their potential benefits, a common theme in the literature is that emerging mobility services and businesses practices have the potential to expand existing racial and economic inequities. The operational and business decisions of private emerging mobility providers are often tied to attracting more venture capital funding and asserting investor confidence. As such, emerging mobility providers are more compelled to provide more or better service in areas with higher profit potential than underserved areas. This could ultimately worsen spatial inequities as some communities will ultimately have fewer mobility options available than other communities (Fleming, 2018).

Digital Divide and Restrictive User Requirements

Core features of emerging mobility, including contactless payment systems and the need for internet and cell data for mobile applications, create significant barriers to the equitable adoption of emerging mobility. Limited access to internet service in certain communities can prevent people from reserving rides using a mobile app or website. According to a Portland-based study, survey respondents of color with lower incomes were nearly 10 percentage points more likely than average to have canceled cell service due to costs and limited data plans (Golub et al., 2019). This disparity mirrors national data on inequitable access to transportation technologies. Another study focused on older adults and their perceptions of transportation services in San José found that while older adults see ridesharing services as appealing, there are concerns regarding cost and the need for a smartphone and broadband access to use the service (Bolding, 2019).

Similarly, people who do not have access to a credit card or traditional financial services or are unbanked may be unable to use emerging mobility services that require a credit card. According to the Federal Deposit Insurance Corporation (FDIC), in 2017, unbanked and underbanked rates were higher among

households with the following characteristics: lower-income, less educated, Black and Hispanic-Latino, with disabled working-age household member, and with volatile income (Figliozi and Unnikrishnan, 2020). These trends also reflect how certain groups use transit: people with lower incomes more heavily rely on paying cash on board for transit fares compared to other vulnerable groups (Golub, et al., 2019). According to a study in Portland, survey respondents of color and respondents with lower incomes more heavily rely on paying cash on board for transit fares (Golub et al., 2019).

While more emerging mobility services are offering alternative payment options including cash-based options, PayPal, money orders, and prepaid cards as a result of city permit regulations, processes for using these alternatives are not user-friendly and may differ from provider to provider. Some providers, for instance, may require people who want to pay with cash to visit a local operations office or load funds to their account at a store. To help streamline payment options and to make it as easy as possible for people to get around using one payment option, many cities are exploring ways to connect their public transit passes with emerging mobility services (Shaheen et al., 2017).

Lower access to drivers licenses also creates disparities in accessing emerging mobility services. While licensing may be less relevant as emerging mobility services may reduce the need for individuals to drive themselves, services like carsharing and micromobility still require valid government-issued identification. These requirements are particularly challenging for undocumented individuals, youth, and individuals experiencing housing insecurity (Golub et al., 2019).

Inequitable Business Practices

Service Availability

Underserved communities, particularly low-income communities of color, are less likely to be able to afford reliable vehicles and are less likely to have access to good transit service, bicycle facilities, and other transportation options (Allen, 2019). The lack of access to affordable and reliable transportation options is a major barrier to economic success for people with low-incomes and communities of color.

Spatial inequities bar people from using emerging mobility services for the same reasons it prevents them from using public transit—the service is not available where they live. Early iterations of carshare and bikeshare programs, for instance, did not emphasize siting in lower-income communities and communities of color (Fleming, 2018). Bikeshare stations were implemented in “densely populated, higher income, mixed-use areas with good bicycle infrastructure” to support utilization targets and generate sufficient revenue to cover operating expenses (Schmitt, 2012). Furthermore, bikeshare networks operate most effectively when anchored by clusters of stations. While some providers have made efforts to site stations in low-income neighborhoods, failing to integrate them with other clusters in the system limits their usefulness—low-income users might need to travel further to reach destinations and adjacent stations (Schmitt, 2012). Micromobility providers have also adopted similar deployment practices of concentrating devices in dense, high-utilization areas where higher income residents tend to live while simultaneously removing them from certain neighborhoods due to the perceived threat of theft and vandalism (Wang, 2020).

Marketing & Outreach

In addition to inequitable deployment practices, community-based organizations also cite the lack of culturally inclusive marketing and outreach as a key barrier for emerging mobility use amongst low-income households and minority populations. Although these groups may be able to access and reserve vehicles, there is a perception that services were not designed to meet their needs (Shaheen et al., 2017). For example, non-English speaking users highlight the lack of outreach in languages other than English as a reason they are less likely to use emerging mobility (Snyder, 2014). Electric vehicles and associated

incentives are also not typically marketed to people of color even though they overwhelmingly support climate action policies and are the fastest growing consumer segment in California (Fleming, 2018). Although 42% of California's population is white, nearly 70% of hybrid and alternative fuel vehicle owners are white, which suggests cleaner vehicles and supportive incentives meant to mitigate barriers to access are not targeted to or designed for low-income households and people of color (Fleming, 2018).

Discrimination Within TNC Services

Discrimination within TNC services has been well-documented. This can occur with passengers towards drivers, drivers towards passengers, or between passengers within the same ride. One study found that in Seattle and Boston, "African-American riders were more likely have to have rides canceled than white riders, [and] twice as much in Boston" (Fleming, 2018). The discrimination was based on the passenger's picture and name. Another study noted that African American passengers also experience longer wait times than other groups. (Ge et al., 2018). While this happens less often than traditional taxis, drivers may avoid certain neighborhoods where it's either difficult to find customers or where they perceive safety risks, thereby exacerbating socioeconomic inequities (Wang, 2020).

Based on existing research, it is still unclear whether the use of artificial intelligence in autonomous vehicles would decrease discrimination by eliminating human bias or compound these issues by encoding these biases into vehicle operating systems. Additional research is needed as autonomous vehicles and new service models continue to evolve.

Labor Implications

Expansion of the Gig Economy and Independent Workforce

In the early years of emerging mobility, app-based industries like TNCs recruited part-time drivers who valued flexible work hours and who wanted to take advantage of their mostly idle cars to generate additional income. These drivers held other jobs, were studying and finishing degrees, or were working from home. Since then, the driver profile has considerably changed, and hiring independent contractors is a widespread practice amongst emerging mobility providers. In New York City, 90% of app-based drivers are immigrants, only one of every six has a four-year degree, and forty percent have incomes so low they qualify for Medicaid (Parrott and Reich, 2018). It's now common for TNC drivers to drive full time, work for multiple emerging mobility providers, and make substantial capital investments in their vehicles to perform this work (Parrott and Reich, 2018).

According to 2015 estimates, "only 0.5% of people in the U.S. were or had been gig-economy workers, a category that includes many workers besides TNC drivers" (Sperling, 2018). Within several major U.S. cities, however, the emerging mobility industry provides more jobs than prominent industries in those cities. In New York, for example, the emerging mobility industry provides more jobs than commercial banking, hotels, and publishing (Parrott and Reich, 2018). TNCs also dwarf the City's 13,587 taxi medallions with its 80,000 registered vehicles (Parrott and Reich, 2018). Despite rapid industry growth in the past decade, hourly driver pay is still low. Many emerging mobility providers, particularly TNC, courier network service (CNS) drivers, and micromobility companies, heavily depend on having large pools of available independent contractors to minimize customer wait times for trips, deliveries, and charged scooters. In the case of TNCs, reducing wait times or ETAs reduce driver trips per hour and therefore driver pay per hour, making it difficult to earn a reliable income. Studies of driver wages has been mixed, with some "finding pre-tax incomes of over \$19/hour or below \$10/hour depending on methodology and the specific markets" (Austin, Brown, and Sperling, 2021). In places like New York, however, most drivers (85%) make less than \$15 per hour (Parrott and Reich, 2018). Net income is notably less considering

independent contractors, not the emerging mobility provider, are responsible for registering, insuring, fueling, and maintaining their own vehicles.

The expansion of the gig economy has also left many people without access to traditional benefits like employer-provided health insurance, retirement savings plans, unemployment insurance, and paid sick leave that are often extended only to full-time employees. With the passing of California's Proposition 22, technology companies (including emerging mobility providers) are required to provide some benefits to independent contractors, which may involve higher minimum wages, compensation for vehicle maintenance, and health care stipends, however, these benefits are not accessible to all independent contractors on a given platform, and stipulations must be met to qualify for them. For example, Uber's benefit program calls for drivers to be paid 30 cents per mile for expenses, but that benefit does not apply to delivery workers on foot or bike.

Automation and Electrification Impacts to Labor Force

While many studies agree that vehicle automation and other new transportation innovations will change the workforce and economy, there is a lack of consensus on when widespread change will occur and at what scale. Many of the benefits from anticipated productivity gains are contending with skepticism on whether the promise of AVs will be shared across diverse socioeconomic groups (Groshen et al., 2018). The outcome ultimately depends on several factors that are yet to be established, such as the pace of automation and adoption of vehicle sharing; the level of impact on personal mobility and freight; and the growth rate of autonomous vehicles (AVs). Some published studies argue "the share of vehicle trips that will be automated by 2030 will range from less than 5% all the way to 95%" (Sperling, 2021).

Though the timing of widespread automation remains uncertain, it is likely that as automation expands and intensifies, a mix of job loss, an expansion for some existing jobs, and the creation of entirely new jobs will occur (Groshen et al., 2018). People who "are employed to design, manufacture, sell, and service vehicles (approximately 3 million jobs) and related infrastructure" represents almost 5% of all GDP (Wang, 2021). These jobs will continue to exist in a future with AVs and may grow, though the nature of the work may change to be more technical. For example, TNCs and CNS companies, which have heavily invested in automation in recent years, may need people to monitor and maintain automated fleets and respond to maintenance or operational issues in the same way that micromobility employers do now (Wang, 2021). Mechanics will need to be retrained to inspect and repair advanced sensors and other components that are absent from conventional vehicles. If AVs are electric, mechanics will also need to learn to install and maintain batteries and charging infrastructure. In the case of electric vehicles, more than half of EVs purchased were manufactured in the US, creating new technology job opportunities and adding to GDP (Department of Energy, 2018). Compared to gasoline-powered cars, EVs have greater potential to boost local and regional economies with the creation of new jobs and spending on local energy sources (Fleming, 2018).

In addition to manufacturing jobs, automation is also expected to significantly impact the goods movement industry. Automated trucks have been available since the early 2000s and were quickly adopted by third-party logistics companies because they dramatically reduce labor costs that come with hiring driving staff (Austin, Brown, and Sperling, 2021). According to the Bureau of Labor Statistics, approximately 1.9 million people work as heavy and tractor-trailer truck drivers in the U.S.¹ Jobs in this sector are expected to grow in the near-term due to anticipated increases in freight volumes. In the long-term however, driving jobs are expected to decrease (TransForm, 2019). Some studies suggest that all segments of a delivery trip, from jobs at the origin and delivery ends of the supply chain to the long-haul driving portions, will eventually displace human drivers despite near- and mid-term preservation of jobs

¹ Bureau of Labor Statistics Occupational Outlook Handbook: Transportation and Moving Material Moving (2019)

(Wang, 2021; Sperling, 2021). Notably, AVs are also expected to negatively affect the competitiveness of small, independent trucking and distribution companies.

Workers most vulnerable to job displacement as a result of automation, namely those in manufacturing, warehousing, and trucking, may not currently have the skills needed for new jobs or might not live the same areas where new jobs arise (Fleming, 2018). While automation is expected to affect workers at all levels to some degree, low-income workers in particular have the least financial capacity to successfully adjust. Cities, labor representatives, community advocates, and the automotive industry need to identify strategies to achieve a just transition to an automated and electric future.

THE HOPE OF EMERGING MOBILITY

The success of emerging mobility in addressing economic and racial disparities relies on effective policies, partnerships, and community engagement. As stressed by TransForm's *Framework for Equity in New Mobility* (2017), "The new mobility conversation has focused too much on technology and too little on human impact. We must humanize the role of emerging mobility technologies by addressing the current and historically unaddressed needs of those left out of transportation improvements". To do so, policies must be put in place that discourage practices that leave out underserved communities (Fleming 2018), pilot and demonstration projects can be used to identify barriers for underserved communities (Allen 2019), and mutually beneficial partnerships should be established between new mobility companies and City governments, transit agencies, and planning organizations (Fedorowicz 2020).

The literature highlights several opportunities for emerging forms of transportation to further economic and racial equity goals by increasing mobility options for people who have been underserved by transportation in the past. Emerging mobility can reach these groups by supporting first/last-mile connections to public transit, filling gaps where and/or when transit is not offered and providing more affordable options who people who cannot or not wish to drive, such as elderly, people with disabilities, or people without driver's licenses.

Connections to Transit, Jobs, and Public Services

Emerging mobility offers a promising opportunity to expand access to jobs and essential services that promote health and well-being, including education, health services, grocery stores, and discretionary travel for social purposes (Fedorowicz, 2020; National Academies of Sciences, Engineering, and Medicine, 2018; Greene et al., 2019). For example, a study found that residents of East Portland, who are mostly low income and people of color, tend to rely more on modes other than private automobiles; however, transit service is poor in their neighborhood. Consequently, they can reach fewer of the region's opportunities (Golub et al. 2019). The study highlights the opportunity for smart mobility to fill this gap with more affordable and convenient options that would enable residents to more readily find and maintain employment.

Interactions between new mobility and transit are complex. Literature on this topic is mixed in terms of whether or not modes are disrupted by use of new mobility. The literature generally indicates that in urban environments, TNCs probably draw from transit ridership on net. In less urban environments, however, TNCs have been shown to support transit by serving as an effective feeder system. More affordable new mobility options could also potentially compete with personal vehicle ownership and encourage transit trips over other trip types (Rodriguez et al., 2020). For example, in Pinellas County, Florida, the transit authority ran a pilot project that offered tree trips to disadvantaged riders when bus services were not offered (Fedorowicz et al., 2020). Some transit agencies and social service agencies are also partnering with TNCs to provide on-demand paratransit and subsidized non-emergency medical

transportation (Greene et al., 2019). Several transit agencies also have been partnering in programs to connect major job centers such as airports to transit via subsidized TNCs. One example is the Ontario International Airport-Metrolink connection offered through Lyft: passengers can take up to \$35 off their ride between the airport and several Metrolink stations.

Alternatives for At-Risk Populations

During the COVID-19 pandemic, many cities have successfully demonstrated how emerging mobility services can solve transportation challenges by offering free and/or reduced pricing and partnerships with essential services (Fedorowicz 2020). Going forward, policymakers and emerging mobility providers should continue to think creatively about how to provide accessible transportation options, especially for people who have been left out in the past.

By providing increased access to medical appointments, emerging mobility can help to reduce stress on emergency transportation demands and save healthcare costs for persons with disabilities. A study found that ridesharing for non-emergency medical transportation helped to reduce wait times for ambulances for emergencies (Moskatel and Slusky 2017). In addition, another study found that if emerging mobility were to help people with disabilities miss fewer medical appointments, \$19 billion annually in healthcare expenditures would be saved (Claypool et al., 2017).

WORKFORCE DEVELOPMENT INITIATIVES

Emerging mobility is evolving so quickly that current educational and training providers are struggling to keep pace. The composition of our workforce is also changing with the influx of younger workers, women, and people of diverse backgrounds and cultures. These market-driven changes and shifts in the demographics of the existing workforce presents challenges for workforce development and planning.

Several studies provide recommendations for preparing the workforce to ensure a just transition to a more technology-driven economy. These recommendations and general best practices for workforce development are summarized below (Mudge, 2018; Groshen et al., 2018; Reeb, 2019):

- Engaging with the next generation of workers. Build knowledge and awareness of available transportation careers and guide students as they enter post-secondary education.
- Continuously plan for future transportation workforce. Understand the talent supply and demand to inform planning efforts. Invest in economic development with the local community by developing partnerships with schools, local labor groups, and non-profits.
- Find areas of overlap between the skills that people in potentially disrupted jobs already have and new jobs created by emerging industries. Displaced workers find new jobs faster when those jobs overlap in skillset and are geographically close.
- Conduct industry level-research to identify jobs that may be affected by automation, electrification, and new transportation technologies.
- Identify specific skillsets needed by automotive and technology industries to facilitate the creation, transition to, and adoption of AVs and other emerging mobility options.
- Promote on-the-job training, mentorship, and opportunities that will be desirable—younger workers in particular are seeking work that is meaningful and can make a difference in the world.
- Study where unemployed truck drivers or manufacturing workers find new jobs by industry and occupation, the duration of employment, and changes in ages. Understanding the career trajectories of workers in industries anticipated to be impacted by automation can help to inform retraining program design.

The following section reviews several examples of workforce development programs related to emerging mobility.

Preparing for the Digital Economy

Leila Janah Foundation

Leila Janah Foundation, previously Samaschool, is a Bay Area-based non-profit focused on reskilling for the new, technology-driven economy. Their goal is to bridge the digital divide and to equip people in underserved communities to earn a living wage through independent work.² Working primarily with low-income job seekers who engage in independent work, the organization provides skills-based, sector-focused training to support freelancers, temporary help agency workers, and gig economy workers who use online, on-demand work platforms. As of 2018, the Leila Janah Foundation has partnered with 15 workforce development organizations, 24 community colleges, and two city government agencies to create multidisciplinary programs and to create legislation that aims to protect independent workers.³ Programs provide an overview of the risks and benefits of independent work, guide trainees on managing personal finances, and teach independent work skills like branding, business management, navigate gig economy platforms, and leveraging independent work to meet professional and personal goals. US-based trainees who engaged in independent work reported “earning an average of \$21 per hour and \$9,000 over the course of 5 months”.⁴

DriveOhio

DriveOhio is the state of Ohio’s new center for smart mobility. Supported by the Ohio Department of Transportation, DriveOhio brings policymakers and industry leaders together to handle all matters related to autonomous and connected vehicles in Ohio. DriveOhio adopts a multi-pronged approach to workforce development to support new smart mobility projects, which include preparing workers for emerging mobility jobs; provide training and support the transition of disrupted workers into new jobs; attract companies in the smart mobility industry to Ohio; and ensure equitable access to educational and economic opportunities through mobility.

One example of this applied approach is from the Connected Marysville project. As part of this project, video cameras and short-distance communication devices are installed to help relay traffic conditions and intersection information between traffic signals and 1,500 public and private vehicles (DriveOhio, 2020). DriveOhio is working with students and educators at high school career centers, community colleges, and universities to learn about the technology and to train students on installing on-board units. Students not only gain knowledge around new transportation technology, but also gain hands-on experience.

In addition to engaging K-12 students with STEM outreach programs, DriveOhio has implemented work-based learning programs that are linked to DriveOhio statewide projects to prepare career technical and higher education students for careers in emerging mobility. The organization is also upskilling the state’s existing workforce for emerging mobility-related and transportation-focused jobs ranging from designing, building, operating, or maintaining vehicles or infrastructure. For example, DriveOhio has partnered with AAA on a pilot program to upskill Ohio Department of Transportation auto technicians on Advanced Driver Assistance Systems (DriveOhio, 2021). Courses, available through AAA and Ohio TechCred, will be

² <https://www.leilajanahfoundation.org/samaschool>

³ The Annie E. Casey Foundation, *The Future of Workforce Development? Samaschool is Thinking Gig*. 2019. Accessed via: <https://www.aecf.org/blog/the-future-of-workforce-development-samaschool-is-thinking-gig/>

⁴ Ibid.

instructed by automotive tech educators and experts at career technical schools across the state. Future courses will cover topics such as EVs and higher levels of automation.

Greater Sacramento Digital Upskill Program

The Greater Sacramento Urban League (GSUL) and Greater Sacramento Economic Council (GSEC) partnered to digitally upskill disadvantaged and displaced workers in Sacramento's most impacted communities during the COVID-19 pandemic. GSUL partnered with General Assembly, who provides training for advanced data analytics, and Merit America, who provides training for IT support. Merit America has a long track record in upskilling adults without bachelor's degrees and those from disadvantaged backgrounds. Launched in Fall of 2020, over 5,000 residents applied for the pilot program's 40 available spots. In addition to training, the program provides several incentives to participants, including laptops, stipends to access internet, \$400 per week over nine weeks, a completion stipend of \$1,800, and a certificate in either IT support or advanced data analytics. Of the 40 people who started the program, 37 have graduated. Six have been placed in jobs while the remaining graduates will continue to receive placement assistance until they are placed.

LA Metro

Transportation agencies are also taking steps to prepare the existing and future workforce for the changing economy and to adapt to evolving transportation technologies. While many of these initiatives are geared towards public-sector roles, they serve as hallmark examples that can be adapted for the development of emerging mobility-centered workforce development programs.

Transportation School

LA Metro created a transportation school aimed at exposing, educating, and employing youth in the transportation industry. Their goal is to build career awareness earlier in the education cycle by collaborating with teachers, students, and workforce development organizations. With support from city councilmembers and Los Angeles County Board of Supervisors, LA Metro acquired a boarding school to create a mixed-use development with the transportation school as its centerpiece. LA Metro is also working with the LA County Department of Children and Family Services to recruit at risk youth from underserved communities to attend school and to generate funding to ensure students can attend free of charge, gain exposure to a STEM-focused curriculum, and receive additional services to support other life needs. The program includes direct exposure to LA Metro operations and real-world experiences through tours, field trips, educational sessions, mentorships, and apprenticeships.

Veteran-Focused Recruitment and Hiring

Approximately 7% of LA Metro's workforce is made up of veterans. LA Metro has built partnerships with veteran service organizations, active military basis, and community-based service providers to recruit and hire veterans. The agency also has dedicated staff assigned to support veterans through the hiring process by helping to interpret their military experience to the transportation industry. In addition, LA Metro supports employees in contacting veteran candidates through job fairs and outreach activities.

Workforce Initiative Now-Los Angeles (WIN-LA)

Workforce Initiative Now-Los Angeles (WIN-LA) is LA Metro's workforce development program established to create career pathways in the transportation industry. The program is primarily focused on construction, operations and maintenance, administration, and professional services. In partnership with the Regional Workforce Development Board Consortium, including the LA Regional Community College Consortium, Transportation Workforce Institute, and other organizations, it aims to increase

opportunities for historically underrepresented communities that have experienced challenges such as emancipated foster youth, homelessness, involvement with the criminal justice system, those lacking a GED, and veterans.

ALIGNMENT WITH CITYWIDE GOALS

A critical component of this work is to create goals that are in alignment with community needs. To achieve this desired outcome, the City of San José will need to reorient internal and external processes in service of communitywide goals. There is no standard approach for how to do this. Many cities across the country are working on how to best incorporate and reflect community needs and priorities in their processes, plans, and projects. A common approach is to convene multiple stakeholder groups involved in emerging mobility to understand their priorities and from there co-create a set of goals that speak to where and how stakeholder priorities overlap. Two relevant examples for the City of San José to learn from include the stakeholder engagement processes behind the SFMTA *Guiding Principles for Emerging Mobility* and the *Austin Strategic Mobility Plan*. For additional examples, reference the Task 4.1 Best Practices report.

SFMTA Guiding Principles for Emerging Mobility

The SFMTA *Guiding Principles for Emerging Mobility* provide a Board-approved, policy framework for the City to follow when engagement with new transportation service providers. The development and implementation of the principles has relied on both external and internal collaboration.

To ensure that the principles reflect communitywide input, SFMTA conducted stakeholder engagement with other City agencies and departments, private sector stakeholders, and advocacy groups. The engagement process sought to both inform and consult with stakeholders to incorporate their concerns and goals into the final product. Outreach to these groups included informational presentations, focus groups, Board briefings, stakeholder interviews, email correspondence, and other stand-alone meetings.

SFMTA also collaborated and continues to collaborate closely with its partner agency, SFCTA. SFMTA and SFCTA established the Emerging Mobility Services and Technologies Streeting Committee. This committee serves to discuss and coordinate around anything related to new transportation providers.

Austin Strategic Mobility Plan

The *Austin Strategic Mobility Plan* lays out a multimodal plan for the future of Austin. The City sought to build on and learn from past planning processes by first identifying recurring themes from past public engagement efforts. These recurring themes laid the groundwork for the community engagement process, which was conducted over four phases. During this process, the community prioritized the plan goals, provided input on future transportation scenarios and community-defined strategies, shared feedback on draft policies, and reviewed the final plan.

CONCLUSION

If planned thoughtfully, emerging mobility offers an opportunity to address current and historical inequities for people left out of the transportation decision-making process, provide affordable mobility options for people who cannot or do not wish to drive a car and people in areas poorly served by transit, and increase access to jobs, education, services, and other mobility options. Success relies on community-

driven policies that help shape emerging mobility services for the local context as well as close collaboration with community-based organization. As the industry continues to evolve and new business models are piloted, close attention is needed to understand the scale of impact on the existing workforce.

The following is a list of key takeaways from the literature review, which will help to inform both best practices and preliminary recommendations:

Key Takeaways

- Barriers to emerging mobility (e.g., access to credit card, smartphone, internet) perpetuate racial and economic inequities as well as a lack of culturally inclusive marketing and outreach.
- Siting of services are more likely to occur in higher income, higher density areas.
- Safety concerns or discrimination may discourage use of emerging mobility services.
- The gig-economy has left many people without access to benefits and employing drivers on a supply/demand-driven basis makes it difficult to earn a reliable income.
- Automation and other transportation innovations will change the workforce and economy, and are anticipated to result in job loss, the creation of new types of jobs, and jobs displacement, particularly within the manufacturing, warehousing, and trucking industries.
- Cities and transit agencies are collaborating with non-profits, workforce development orgs, labor groups, and educational institutions to develop training programs to prepare workers for the digital economy. Several models are being piloted, including the creation of 'transportation schools' to prepare K-12 and college students and online training courses in data analytics.

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