

6 HOPE & HARM OF EMERGING MOBILITY

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 chapter examines the ways in which emerging mobility services and practices perpetuate economic and racial inequities as well as how they might further economic and racial equity goals.

POTENTIAL HARM OF EMERGING MOBILITY

Despite their potential benefits, emerging mobility services and existing business practices have the potential to expand existing racial and economic disparities in the absence of proper planning and policies.

Digital Divide and Restrictive User Requirements

Common features of emerging mobility services, including contactless payment systems and the need for internet and cell data for mobile applications, present significant barriers to the equitable adoption of emerging mobility. Limited access to internet service or wireless data in certain communities may prevent people from reserving rides using a mobile app or website. This disproportionately affects BIPOC and low-income communities. As of 2017, Black, Latinx, and low-income families were more likely to lack internet access compared to other groups.²⁴ Even those with digital access may not feel comfortable interacting with technology for mobility services, due to unfamiliarity, mistrust, or concern over privacy and personally identifiable information. 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, as they usually require a credit card for payment. 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.²⁵ City regulations are requiring more emerging mobility services to offer alternative payment options

²⁴ City of San José (2017). Digital Inclusion Strategy Report.

²⁵ Figliozzi, M., & Unnikrishnan, A. (2021). Home-deliveries before-during COVID-19 lockdown: Accessibility, environmental justice, equity, and policy implications. Elsevier, Transportation Research Part D 93, 15–16.

including cash-based options, PayPal, money orders, and prepaid cards. But processes to use these alternatives are not always user-friendly and differ among providers.

People without driver's licenses or state IDs also face challenges in accessing emerging mobility services such as shared bikes, scooters, and cars that require proof of identification. These requirements are particularly challenging for undocumented individuals, youth, and individuals experiencing housing insecurity.²⁶ In the future, licensing may be less relevant as emerging mobility services may become automated, which would reduce the need for individuals to drive themselves.

Inequitable Vehicle Deployment

Underserved communities, particularly people with low incomes and BIPOC communities, are less likely to be able to afford reliable vehicles or have access to frequent, fast, useful public transit service, bicycle facilities, and other transportation options, which presents major barriers to economic success.²⁷

Geographic inequities are exacerbated when services are not available where they live. Early iterations of carshare and bikeshare programs, for instance, did not emphasize siting in lower-income communities and BIPOC communities.²⁸ 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.²⁹

The City has taken steps to ensure wide distribution of bike share and shared scooters. It requires scooter companies to deploy at least 20% of its vehicles in equity priority areas and has worked with the region's bikeshare provider, Bay Wheels, to ensure that station-based and electric bikes are deployed in low-income areas and BIPOC communities. While some providers have made efforts to site stations in low-income neighborhoods, failing to create connections between the new stations and the broader micromobility system limits their usefulness.³⁰ Simply having a station available will not expand a community's mobility if that station is located too far from the rest of the network or if there is not supportive infrastructure, like bike lanes, to enable connections to other transportation services and destinations they want to travel to.

The City's efforts to deploy shared scooters and bikes more broadly is a good first step. But usage is unlikely to increase without targeted community education designed and executed in partnership with communities.

²⁶ Golub, A., Satterfield, V., Serritella, M., Singh, J., & Philips, S. (2019). Assessing the barriers to equity in smart mobility systems: A case study of Portland, Oregon. *Case Studies on Transport Policy*, 7(4), 689-697. <https://doi.org/10.1016/j.cstp.2019.10.002>.

²⁷ Allen, J. (2019, May). Equitable E-Mobility. 32nd Electric Vehicle Symposium (EVS32), France.

²⁸ Fleming, K. L. (2018). Social Equity Considerations in the New Age of Transportation: Electric, Automated, and Shared Mobility. *Journal of Science Policy & Governance*, 13(1).

²⁹ Schmitt, Angie. (2012). Why Isn't Bike-Share Reaching More Low-Income People? *StreetsBlog USA*. Accessed 2 Feb 2016.

³⁰ Ibid

Need for Inclusive Marketing and Outreach

San José's community-based organizations and community leaders cite the lack of culturally inclusive marketing and outreach as a key barrier for emerging mobility use among low-income households and historically marginalized populations. Although these groups may be able to access and reserve vehicles, there is a perception that services were not designed to meet their needs³¹ and that marketing materials, which historically display users who are young and white, reinforce that perception. Recent research has found that people who are non-English speaking highlight the lack of outreach in languages other than English as a reason they are less likely to use emerging mobility.^{32,33} Although only 42% of California's population is white, nearly 70% of hybrid and alternative fuel vehicle owners are white, which suggests cleaner vehicles, supportive incentives, and outreach campaigns meant to reduce barriers to access have not been designed for low-income households and people of color.

Expansion of the Gig Economy and Independent Workforce

In the early years of emerging mobility, app-based industries like transportation network companies (TNCs), such as Uber and Lyft, recruited part-time drivers who valued flexible work hours and wanted to take advantage of their cars to generate additional income. These drivers typically held other jobs, were in school finishing degrees or were working from home. Since then, the driver profile has diversified; some drivers drive full time, work for multiple emerging mobility providers, and make substantial investments in their vehicle to perform this work.³⁴ Hiring independent contractors for TNCs has also become a widespread practice amongst emerging mobility providers.

Despite rapid industry growth in the past decade, hourly driver pay is still low. Many emerging mobility providers, particularly ride-hailing companies, courier network services,³⁵ and micromobility companies, heavily depend on the availability of large pools of independent contractors to minimize customer wait times for trips, deliveries, and charged scooters. When there are more drivers available than people needing rides in the case of ride hailing, people experience reduced wait times. At the same time, having more drivers than passengers needing rides also means many drivers must compete for rides. This business model, which prioritizes the passenger's convenience and access to the service, reduces driver trips per hour, making it difficult to earn a

³¹ Shaheen, S., Bell, C., Cohen, A., & Yelchuru, B. (2017). Travel Behavior: Shared Mobility and Transportation Equity (pp. 16–20). U.S. Department of Transportation.

³² Ibid

³³ Fleming, K. L. (2018). Social Equity Considerations in the New Age of Transportation: Electric, Automated, and Shared Mobility. *Journal of Science Policy & Governance*, 13(1).

³⁴ Parrott, J., & Reich, M. (2018). An Earnings Standard for New York City's App-based Drivers: Economic Analysis and Policy Assessment. The New School Center for New York City Affairs.

³⁵ Courier network services are on-demand delivery services that use online applications or platforms to facilitate the delivery of goods. This may include heated meals, groceries, and home supplies.

reliable income. Rides (and income) are not guaranteed, and take-home pay can be less than what is advertised or promoted when the company's commission, gas, and vehicle maintenance are accounted for. While studies on driver wages have been mixed, net income is notably less considering independent contractors, not emerging mobility providers, are responsible for registering, insuring, fueling, and maintaining their own vehicles.

Independent contractors are not provided benefits such as employer-provided health insurance, retirement savings plans, unemployment insurance, and paid sick leave that are typically extended to full-time employees. With the passing of California's Proposition 22, app-based transportation and delivery companies (including emerging mobility providers) are required to provide some benefits to independent contractors, such as higher minimum wages, compensation for vehicle maintenance, and a health care stipend. These benefits, however, may not be accessible to all independent contractors on a given platform. For example, drivers are to be reimbursed 30 cents per mile for expenses (notably lower than the state and federal rate of 56 cents per mile), but that benefit does not apply to delivery workers on bike or foot.

As of August 2021, a state Superior Court judge ruled Proposition 22 to be unconstitutional and unenforceable—the proposition was determined to infringe on the state legislature's power to regulate compensation for workers' injuries. In addition, language aimed to prevent drivers from forming a union also violates a provision in the state constitution that requires laws to be limited to a single subject. Ride-hailing company Uber is seeking to appeal against this decision. As of the writing of this document, the decision of the Superior Court stands.

Automation and Electrification Impacts on Labor Force

While many studies agree vehicle automation will substantially change employment options and the economy, there is a lack of consensus on when that change will occur and at what scale. The outcome depends on a variety of factors, such as the pace of technical development and adoption, adoption of vehicle sharing, and its impact on personal mobility and freight.

Though the timing remains uncertain, it is likely that automation will cause some job loss, expand some existing jobs, and create new jobs.³⁶ People who “are employed to design, manufacture, sell, and service vehicles (approximately 3 million jobs) and related infrastructure” represents almost 5% of all GDP.³⁷ These jobs will continue to exist in the future with automation and may grow, though the nature of the work may change. For example, ride hailing and courier network service companies, which have heavily invested in automation in recent years, may need people to monitor and maintain

³⁶ Groshen, E., Helper, S., MacDuffie, J. P., & Carson, C. (2018). Preparing U.S. Workers and Employers for an Autonomous Vehicle Future. *Securing America's Future Energy (SAFE)*.

³⁷ Wang, X. (2019). Preparing the public transportation workforce for the new mobility world. In *Empowering the New Mobility Workforce* (pp. 221–243). Elsevier Inc.
<https://www.sciencedirect.com/science/article/pii/B9780128160886000109?via%3Dihub>

automated fleets and respond to maintenance or operational issues in the same way that micromobility service providers do now.³⁸ 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 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 associated with hiring driving staff.³⁹ According to the Bureau of Labor Statistics, approximately 1.9 million people work as heavy and tractor-trailer truck drivers in the U.S. 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. 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, automation will eventually displace human drivers.⁴⁰ 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 in the areas where new jobs arise.⁴¹ 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.

HOPE OF EMERGING MOBILITY

Emerging mobility's success in addressing economic and racial disparities will rely on effective policies, partnerships, and community engagement. As noted 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, pilot and demonstration projects can be implemented that test concepts and encourage practices that strive to meet the needs of underserved communities. Pilot and demonstration projects can help to identify and address barriers for underserved communities and establish mutually beneficial partnerships between emerging mobility companies and public agencies.

³⁸ Ibid

³⁹ Brown, A., Safford, H., & Sperling, D. (2019). Historical perspectives on managing automation and other disruptions in transportation. In *Empowering the New Mobility Workforce*. Elsevier Inc.

⁴⁰ Ibid

⁴¹ Fleming, K. L. (2018). Social Equity Considerations in the New Age of Transportation: Electric, Automated, and Shared Mobility. *Journal of Science Policy & Governance*, 13(1).

Connections to Transit, Jobs, and Public Services

The broad range of emerging or new mobility services and technologies offers promising opportunities to increase transportation options and, by extension, access to jobs and essential services, including education, health services, grocery stores, and discretionary travel for social purposes.^{42 43 44} Interactions between new mobility and public transit are complex. Literature on this topic is mixed in terms of whether the share of trips taken on transit or by bicycling and walking are disrupted by the introduction of new mobility. The literature generally indicates that in urban environments, ride hailing probably reduces transit ridership overall. In more suburban environments such as San José, ride-hailing has been shown to support public transit by serving as an effective feeder system.⁴⁵ More affordable options could also potentially compete with personal vehicle ownership and encourage public transit trips over other trip types.⁴⁶ Some transit agencies and social service agencies are partnering with ride-hail companies to provide on-demand paratransit and subsidized non-emergency medical transportation, in an effort to improve service for users and decrease costs for agencies.⁴⁷ Others have partnered with ride-hailing companies in pilot programs that connect major job centers such as airports to transit services.

Fills Gaps in the Transportation Network

During the COVID-19 pandemic, service providers helped address transportation challenges by offering free and/or reduced pricing and partnerships with essential services to support critical workers, seniors, and people with disabilities. 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.

Emerging mobility has also been used to fill gaps by supplementing existing, or in some cases, wholly replacing, non-emergency medical transportation trips in both rural and urban areas. By providing increased access to medical appointments, emerging mobility can help to reduce stress on emergency response services and reduce healthcare costs

⁴² Fedorowicz, M., Bramhall, E., Treskon, M., & Ezike, R. (2020). *New Mobility and Equity* (pp. 10–27). Urban Institute.

⁴³ Ricci, A. (2019). Socioeconomic Impacts of Automated and Connected Vehicles. *The National Academies of Sciences, Engineering, and Medicine*, 78–90. <https://doi.org/10.17226/25359>

⁴⁴ Greene, Solomon, Graham MacDonald, Olivia Arena, Tanaya Srin, Ruth Gourevitch, Richard Ezike, and Alena Stern. 2019. *Technology and Equity in Cities*. Washington, DC: Urban Institute.

⁴⁵ Stiglic, Mitja and Agatz, Niels A.H. and Savelsbergh, Martin and Gradišar, Miro, *Enhancing Urban Mobility: Integrating Ride-Sharing and Public Transit* (July 5, 2016).

⁴⁶ Rodriguez, G., Bailey-Campbell, P., Bittner, J., Shriber, J., Constantine, S., & Coyner, K. (2020). *Prioritizing Equity, Accessibility and Inclusion Around the Deployment of Automated Vehicles* (NCHRP Project 20-113F; Preparing for Automated Vehicles and Shared Mobility: State-of-the-Research Topical Paper #5, pp. 6–20). Transportation Research Board.

⁴⁷ Greene, Solomon, Graham MacDonald, Olivia Arena, Tanaya Srin, Ruth Gourevitch, Richard Ezike, and Alena Stern.

for persons with disabilities. A study found that ridesharing for non-emergency medical transportation helped to reduce wait times for ambulances for emergencies.⁴⁸ 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.⁴⁹

Expanding Sustainable Mobility Options

Emerging mobility modes are often more sustainable options than personally owned combustion engine vehicles because they often are shared and/or electric. The shared model allows people to travel without having to own a personal vehicle, bike, or scooter, which, with increased adoption, can help to reduce the amount of land dedicated to parked vehicles. Also, electrification of all forms of transportation substantially reduces transportation related GHG emissions. As electric mobility options and their supporting infrastructure become more accessible and affordable, sustainable travel options may become more commonplace and can be a critical tool in advancing local and state climate initiatives.

Powering Data-Informed Decision-making

Mobility data is essential for planning, regulating, and actively managing complex, interconnected transportation networks. Collecting mobility data, while a significant upfront investment, enables increased, long-term efficiencies. With the ability to actively monitor existing conditions and trends, cities can identify problems and adopt policy changes more quickly. Cities and mobility providers can also establish public-facing portals with aggregated data to share information about what is happening on the cities' streets with its communities. This helps increase transparency, build understanding within communities, and promote accountability for ongoing projects.

Workforce Development Initiatives

In recent years, several cities, such as San Francisco, New York, and Sacramento, have created workforce development programs geared toward upskilling workers, particularly within vulnerable communities, to mitigate the impacts of anticipated job loss and job displacement that are driven by an increasingly technology-driven economy. While some examples of such programs exist in San José, more is needed. In Santa Clara County, work2future, which operates as a workforce development board, provides residents with coaching and professional skill building training. SJ Works, a strategic initiative of the San José Mayor's Office, creates employment opportunities for at-risk and underserved

⁴⁸ Moskatel, L., & Slusky, D. (2017). Did UberX Reduce Ambulance Volume? Department of Medicine, Scripps Mercy Hospital.

⁴⁹ Claypool, H., Bin-Nun, A., & Gerlach, J., (2017). Self-Driving Cars: The Impact on People with Disabilities. The Ruderman Family Foundation. Accessed https://rudermanfoundation.org/wp-content/uploads/2017/08/Self-Driving-Cars-The-Impact-on-People-with-Disabilities_FINAL.pdf.

youth. In 2020, work2future and SJ Works also offered a paid internship program that focused increasingly on private-sector placements with employers in high-growth sectors such as manufacturing, financial services, and information technology. In general, workforce development programs and focus areas vary depending on local needs. Technology-focused workforce development programs generally fall into three categories:

- **Independent contractor support** where organizations provide targeted training and guidance to independent contractors who engage in online, on-demand work;
- **Work-based learning programs** where workforce development organizations partner with private mobility companies and public agencies to prepare K-12, career technical, and higher education students for transportation technology-focused jobs;
- And **digital upskill programs** where public agencies partner with third-party education companies to subsidize and develop training courses focused on advanced data analytics, coding, or IT support.

Additional information and specific examples of workforce development initiatives, including lessons learned and outcomes, can be found in the Appendix.

MOBILITY WITHOUT DISPLACEMENT

Mobility Investments for Whom?

New mobility services create options that can help people complete the trips they need. However, there is a perception and real fear of emerging mobility being a catalyst for displacement. While a connection between emerging mobility and displacement has not been confirmed through research, throughout this process community members have expressed mistrust toward private mobility companies because their services, which are seen as being tailored to white, affluent users, are placed in their neighborhoods without their consultation. This mistrust stems from longstanding cycles of disinvestment and sudden investment in neighborhoods experiencing change.

Disinvestment over long periods of time can lead to disconnected and segregated communities that have less access to critical resources in their neighborhoods. But sudden investments can also have harmful, lasting impacts. These investments, sometimes seen as “helping” or “revitalizing” communities by planners, policymakers, and elected officials, often do not involve or consider people already living in the community. Studies have shown that in dense coastal cities, a sudden injection of public dollars in historically disinvested communities can result in notable shifts in cost of living, increased density, and, depending on the type of investment, displacement of current residents.⁵⁰ In the case of investment-driven residential displacement, studies have consistently demonstrated patterns of wealthier, more educated, and whiter

⁵⁰ National Community Reinvestment Coalition, Shifting neighborhoods: Gentrification and cultural displacement in American cities, March 2019.

residents moving into previously disinvested neighborhoods, while people who move out are often renters, poorer, and/or people of color.⁵¹

Investment Without Displacement

To reduce the risk of displacement, policymakers, planners, and private mobility providers must consider who is burdened and who benefits from future investments in transit, highways, street repaving programs, bike lanes, and the expansion of emerging transportation options. Fear of displacement may prevent investment in BIPOC communities entirely, resulting in a continued cycle of funding infrastructure and programs in predominantly white communities. To stop this negative cycle, government agencies can adopt the following strategies to counteract displacement^{52 53 54 55}:

- Engage other agencies and intergovernmental collaboration. For example, consider how emerging mobility can support greater access to “high quality transportation options,” to meet Affirmatively Furthering Fair Housing (AFFH) requirements and allow the development of affordable housing in wealthier, more resourced neighborhoods.
- Institutionalize meaningful, sustained community engagement to co-create solutions and commit to funding services that meet community needs.
- Understand the difference between investment and displacement.
- Understand what systems and policies need to be in place to allow investment in existing communities to occur safely.⁵⁶
- Support policies that allow people to stay in their current neighborhoods.
- Acknowledge, own, and leverage power to enact desired outcomes.
- Build wealth in the community through every decision.

Similarly, private mobility partners can adopt the following strategies to better align service offerings with community goals and help reduce the risk of displacement:

- Hire local residents—at all levels, not just in street team positions.
- Market towards BIPOC and immigrant communities.
- Enact internal equity policies and accountability measures.
- Partner with community members and community-based organizations.
- Include payment options to tackle gaps in access among unbanked or lower-income community members.

⁵¹ Derek Hyra, The Back-To-The-City Movement: Neighborhood Redevelopment and Processes of Political and Cultural Displacement, June 2014.

⁵² Greater Communities. Prevent Displacement Policy Fact Sheet. 2007.

⁵³ PolicyLink. Equitable Development Toolkit. 2018.

⁵⁴ Mission Anti-Displacement Coalition (MAC). <http://medasf.org>

⁵⁵ The Chicago Rehab network. The Nathalie P. Voorhees Center for Neighborhood and Community Improvement.

⁵⁶ Zuk, M., Bierbaum, A., Chapple, K., Gorska, K., Loukaitou-Sideris, A., Gentrification, Displacement, and the Role of Public Investment. 2018.

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- Understand demographics of users.
- Be transparent with data when working with government.

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