APRIL 2025

OPERATIONAL REPORT

URBANISM NEXT | SEATTLE DEPARTMENT OF TRANSPORTATION

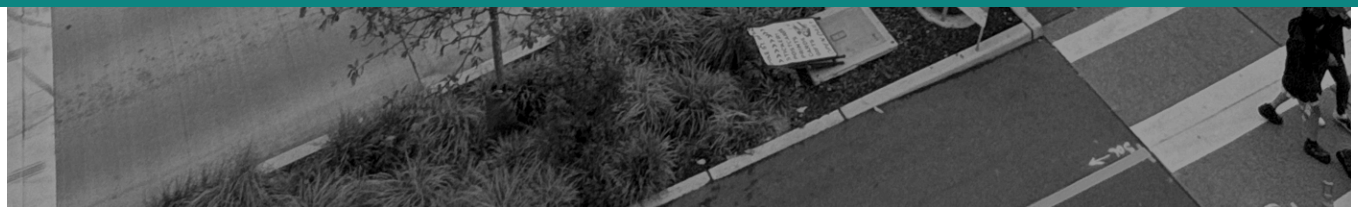

Photo Credit: Zoox

URBANISM NEXT CENTER

The Urbanism Next Center at the University of Oregon conducts research and convenes partners from around the world to understand the impacts of new mobility, e-commerce, urban delivery, and autonomous vehicles on the built environment. Going beyond these emerging technologies, we explore the possible implications on equity, health, safety, the economy, and the environment to inform decision-making that supports community goals. Urbanism Next brings together experts from a wide range of disciplines including planning, design, development, business, and law and works with the public, private, and academic sectors to help create positive outcomes from the impending changes and challenges confronting our cities.

ACKNOWLEDGEMENTS

The Urbanism Next Center would like to thank the members of the Autonomous Vehicle Inclusive Planning Cohort for their engagement and insights over this project.

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Photo Credit: Uncommon Bridges

AVIPC COHORT MEMBERS

We would like to thank and acknowledge the members of our AVIPC cohort with personal and professional expertise and who represent local community-based organizations, coalitions, and networks from or service communities of people of color, people with low-incomes, immigrant and refugee populations, people living with disabilities, people who have experienced homelessness or housing insecurity, LGBTQ+ people, racial justice, environmental justice, and/or transportation justice-based organizations, underrepresented and under-resourced human service providers, and community-based organizations.

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EXECUTIVE SUMMARY

The Seattle Department of Transportation (SDOT) convened the Autonomous Vehicle Inclusive Planning Cohort (AVIPC) to directly engage with the community on the integration of autonomous vehicles (AVs) into Seattle's transportation system. This cohort, representing diverse community voices, aimed to ensure that AV deployment aligns with SDOT's goals of equity, safety, mobility, sustainability, livability, and excellence.

This effort supports various Seattle Transportation Plan Performance Metrics and Transportation Equity Framework Tactics and is inspired by previous work undertaken by SDOT (Ride Now Pilot, 2022) to leverage the Inclusive Planning Toolkit developed by Hopelink (King County, WA) and the King County Mobility Coalition.

Over six months, the cohort engaged in facilitated discussions around seven key priorities agreed upon by the cohort: **Management and Accountability, Workforce Protection and Development, Accessibility and Affordability, Safety, Environmental Impacts, Intersectional Equity, and Education to Community.** The cohort's insights and recommendations will inform Seattle's approach to AV policies and strategies to address the unique needs and priorities of Seattle communities.

This report summarizes the cohort process and key takeaways, and includes perspectives offered by anonymous interviews of policy makers, AV industry representatives, and labor groups. The findings of this report are intended to uphold relevant practices of community co-creation and compensation in local regulatory advising opportunities. Members were compensated for their lived experience and time to support SDOT in bringing in nuanced community voices and experiences across identity groups.

The findings of this report are intended to be informative to other jurisdictions contending with the deployment of AVs. The report focuses on summarizing the cohort's goals, priorities, discussion insights, and additional questions that a jurisdiction or AV operator may consider. Finally, summaries of policymaker, industry, and other stakeholder interviews are included.

SDOT, and other city's, ability to evaluate and address AV deployment's impacts hinges on access to operational and safety data, regulatory authority, and collaboration with AV companies. Transparent data-sharing frameworks are crucial for monitoring compliance and progress. Continuous engagement with historically underserved communities ensures policies reflect their priorities, while adaptability allows SDOT to respond to the rapid evolution of AV technology.

COHORT-IDENTIFIED PRIORITIES

The effectiveness of local and state oversight will vary based on the authority each jurisdiction has.

01 MANAGEMENT & ACCOUNTABILITY

For Cities:

- Advocate for transparent, adaptable regulatory frameworks tailored to local needs.
- Create accountability structures and enforce data-sharing agreements for operational transparency.
- Develop mechanisms for community feedback to guide AV program goals.

For Industry:

- Collaborate on clear operational standards, including safety benchmarks and community engagement processes.
- Ensure transparency in revenues, pricing models, and program outcomes.

02 WORKFORCE PROTECTION & DEVELOPMENT

For Cities:

- Engage local labor representatives to prioritize hiring displaced workers for new roles (e.g., fleet management, vehicle maintenance).
- Address equity in workforce transitions, focusing on underserved communities.

For States:

- Design and fund large-scale retraining programs for displaced workers (e.g., drivers), prioritizing locally based workers.
- Develop certification standards and ensure retraining aligns with emerging industries like cybersecurity.

For Industry:

- Lead job creation efforts, emphasizing emerging roles in maintenance, technology, and safety.
- Partner with local educational institutions to develop workforce pipelines.

03 ACCESSIBILITY & AFFORDABILITY

For Cities:

- Ensure AV services align with local equity goals by prioritizing vulnerable communities and underserved areas.
- Set affordability guidelines, monitor pricing, assess impact to transit, and evaluate subsidies for low-income users if deployment outcomes align with community goals.

04 ACCESSIBILITY & AFFORDABILITY (CON'T)

For Industry:

- Provide ADA-compliant service and integrate accessible features.
- Create multilingual user interfaces and services tailored to community needs.

05 SAFETY

For Cities and States:

- Define safety standards and hold companies accountable for meeting benchmarks.
- Address liability concerns by creating clear legal frameworks for incidents involving AVs.

For Industry:

- Lead innovation in safety technology and incident prevention measures.
- Ensure safety operators are available during testing and deployment phases.
- Share frequent and detailed safety data to improve transparency and public trust.

06 ENVIRONMENTAL IMPACTS

For Cities and States:

- Ensure AV deployment supports climate action strategies such as reducing congestion, emissions, and deadhead miles.
- Regulate land use to prevent AV storage facilities from concentrating in underserved neighborhoods.

For Industry:

- Prioritize electric AV development to accelerate decarbonization.
- Ensure sustainable sourcing of materials for AV production to minimize global environmental impacts.

07 INTERSECTIONAL EQUITY

For Cities:

- Use tools, such as SDOT's AV Racial Equity Toolkit to guide AV policy decisions and mitigate harm to vulnerable communities.
- Facilitate partnerships between industry and underserved communities for inclusive outcomes.

For Industry:

- Directly engage with community to understand unintended impacts of AV deployment and ensure deployment supports community goals.
- Address embedded biases in AV technology and ensure inclusive design and data practices.

08 EDUCATION TO COMMUNITY

For Cities and States:

- Lead outreach and education efforts, ensuring community members understand benefits and challenges with AV integration.
- Use community ambassadors to promote diverse participation in planning and decision-making at the state and local levels.

For Industry:

- Partner with local jurisdictions on public engagement, providing funding and resources for educational events and materials.
- Share clear, accessible data on AV operations to build trust and foster collaboration.

APRIL 2025

UNIVERSITY OF OREGON OPERATIONAL REPORT

AUTONOMOUS VEHICLE INCLUSIVE PLANNING COHORT (AVIPC)

INTRODUCTION

In 2024, Seattle's Department of Transportation (SDOT) established an Autonomous Vehicle Planning Cohort (AVIPC, or "the Cohort").The AVIPC is a group dedicated to ensuring that the introduction of AVs in Seattle benefit everyone and aligns with the SDOT's goals of equity, safety, mobility, sustainability, livability, and excellence. The group represented individuals with personal and professional expertise and who represent local community-based organizations, coalitions, and networks from or service the following communities:

- People of color
- People with low-income
- Immigrant and refugee populations
- People living with disabilities
- People who have experienced homelessness or housing insecurity
- People who are LGBTQ+
- Racial justice, environmental justice, and/or transportation justice-based organizations
- Underrepresented and under-resourced human service providers and community-based organizations

Cohort members participated in a six-month facilitated process, from April to August 2024, meeting first in-person and every other following week on Zoom to provide community-guided recommendations. Facilitation was led by Uncommon Bridges and supported by the Urbanism Next Center at the University of Oregon and by Stepherson & Associates. Cohort members, SDOT, and the facilitation team primarily collaborated during these sessions, with the inclusion of presentations on pertinent topics, to develop the key priorities covered throughout the project, including:

This report reflects key takeaways of Cohort discussions and their development of Cohort Goal Statements, developed to help assist SDOT in its role in AV deployment. Cohort Goal Statements were used during cohort meetings to frame the discussion and vetted by the group. Key takeaways form the report will inform the development of local and state AV policy, legislation, and strategies, ensuring that these new technologies are integrated into Seattle's transportation system in a way that is responsive to community needs and priorities.

Cohort discussions were complemented with interviews with workforce leaders, policymakers, and industry members. Interviews were conducted via Zoom by researchers at the Urbanism Next Center at the University of Oregon. Key takeaways from these conversations are included in this report as "Insights from Industry."

The report is organized into sections that cover the seven key priorities to allow direct reference to the reader's areas of interest:

1. **Cohort Goals and Priorities:** This section provides an overview of the seven key priorities agreed upon by the cohort: Management and Accountability, Workforce Protection and Development, Accessibility and Affordability, Safety, Environmental Impacts, Intersectional Equity, and Education to Community. The cohort goal and priorities are provided for each priority.
2. **Cohort Insights:** This section summarizes the insights and key takeaways from the cohort meetings for each of the seven key priorities.
3. **Policymaker and other Stakeholder Interviews:** This section summarizes findings shared by Washington State policymakers and stakeholders, such as labor representatives, during anonymous interviews.
4. **Industry Interviews:** This section summarizes findings shared by AV industry members during anonymous interviews.
5. **Appendix: Community Priority Framework Additional Considerations:** This section lists additional considerations and questions raised by the cohort for further exploration.

COHORT GOALS & PRIORITIES

This section provides an overview of the seven key priorities agreed upon by the cohort: Management and Accountability, Workforce Protection and Development, Accessibility and Affordability, Safety, Environmental Impacts, Intersectional Equity, and Education to Community. The cohort goal and priorities are provided for each.

MANAGEMENT & ACCOUNTABILITY

GOAL:

"SDOT will ensure that community voice will be a part of the city's expectation of AV industry deployment standards and how programs are evaluated and invested in over time."

PRIORITIES:

Cities have a responsibility to educate, support, and empower the communities where AVs are piloted or deployed. Management and accountability ensure that AV deployment supports community needs and that errors can be corrected when necessary. The management of existing transportation systems, alignment with broader urban development goals, and efficacy of these program rollouts are a collaborative effort with the community overseen and facilitated by cities. Additionally, accountability structures should acknowledge the power imbalances that may exist between a community (or community member) and larger AV company, particularly in litigious settings that expose liability. A transparent management and accountability process is necessary to ensure that the expectations of the community can be developed, understood, and met.

Photo Credit: WSJ

WORKFORCE PROTECTION & DEVELOPMENT

GOAL:

"SDOT will ensure that community voices are part of the city's protection of workers in the field and prioritize worker benefits in the implementation of AVs."

PRIORITIES:

With the deployment of AVs, communities are facing both a threat and opportunity to employment within vehicle-based and adjacent industries. Job displacement and its cascading impacts are a prevailing community concern. Proposed solutions include job retraining, employee priority hiring, and local job creation.

Photo Credit: SDOT,
New Mobility Playbook

ACCESSIBILITY & AFFORDABILITY

GOAL:

"SDOT will holistically address accessibility and affordability by minimizing barriers of all entry points, ensuring all communities, particularly the most vulnerable, have equal access to AV services among other transportation options."

Photo Credit: SDOT,
New Mobility Playbook

ACCESSIBILITY & AFFORDABILITY (CON'T)

PRIORITIES:

Implementing accessible and affordable AV services within cities requires a holistic approach. This includes answering questions regarding pricing, accessibility standards, and cascading impacts on neighborhoods, programs, and existing service offerings. Direct work with communities is essential to SDOT's ability to ensure that all communities are considered and integrated into efficient AV services that eases barriers and complements transit services. While all transportation services include operating costs, excluding populations due to income or ability likewise creates individual and societal costs such as limited workforce or activity participation. The Cohort discussed strategies for achieving both accessible and affordable AV program rollouts.

Photo Credit: SDOT

SAFETY

GOAL:

"SDOT will encourage AV operators to surpass safety benchmarks by incorporating community insights, ensuring standards address public safety concerns, and building trust throughout all stages of deployment and operation."

PRIORITIES:

Ensuring AV safety both on and off the road is a critical consideration to their introduction and integration within communities and cities. AV safety aims to minimize harm by setting performance benchmarks (commonly set today by AV operators themselves) that either match or exceed human operations. Safety performance metrics are still in early stages of development. The acknowledged necessity for extensive safety protocols has resulted in a patchwork of regulations and highlighted the need for operational transparency. The Cohort considered many safety elements, exploring both the physical and technological safety factors for SDOT to be aware of as AVs deploy in cities.

Photo Credit: SDOT,
New Mobility Playbook

ENVIRONMENTAL IMPACTS

GOAL:

"SDOT will guide AV operators to prioritize intersectional health and Equity ensuring their practices result in net positive environmental impact and contribute to the overall well-being of Seattle's communities."

PRIORITIES:

Cities seek strategies to both combat climate change and increase resilience with future impacts. The Cohort discussed how SDOT might leverage the integration of AVs into the transportation system to reduce environmental impacts and mitigate impacts on climate change.

Photo Credit: Nicole Stout

INTERSECTIONAL EQUITY

GOAL:

"SDOT will plan for future AV deployment through an intersectional equity lens, holistically considering social identities and impacts in order to correct past discrimination, serve underserved community members, and mitigate future harm to historically vulnerable groups."

PRIORITIES:

The Cohort highlighted intersectional equity as key to AV development and city goal-setting. Cohort discussions tied closely into Seattle's Racial Equity Toolkit (RET), a strategic framework used to promote racial equity in its policies, programs, and initiatives. To avoid uniform legislation and planning approaches, the RET and facilitated discussions around intersectional equity recognize unique community traits and identified potential disparities and systemic inequalities. For example, AV life cycle impacts may fall disproportionately on select communities or data collected and used may affect specific communities. SDOT serves as a coordinator across intersectional equity issues.

Photo Credit: Uncommon Bridges

EDUCATION TO COMMUNITY

GOAL:

No formal goal statement

PRIORITIES:

With the emergence of new AV technology and a wide testing ground for policy, community education ensures that residents are knowledgeable, able to contribute and navigate community changes, and prepared for the deployment and use of AVs. The City of Seattle and private companies are charged with ensuring community benefits and AV education supports both trust and eventual AV use. The cohort shared their expectations, communication strategies, and identified potential challenges to information sharing.

Public, private, and governing entities should engage communities to inform them about AV program intentions and impacts. The need for community education is particularly acute for vulnerable populations who have historically been underrepresented in public engagement processes and may bear disproportionate shares of transportation system negative externalities. The Cohort discussed public engagement approaches including hosting public events, tabling, procuring promotional materials, sharing information digitally, and providing educational content in schools. Such engagement can build rapport with communities, and activity participation can lay a beneficial foundation for scaling, responsive development, and emergency readiness.

COHORT INSIGHTS

This section summarizes the insights and key takeaways from the cohort meetings for each of the seven key priorities.

MANAGEMENT & ACCOUNTABILITY

Accountability to Community:

An open feedback loop and operational transparency are necessary between cities and communities. The ability and willingness of governing bodies to course correct is critical with the quickly shifting realities and realizations of AV deployment. Cities should work to clear pathways by which local concerns, incidents, needs, and praise could pass from the community to the city and AV operators. An effective and robust community feedback process should be tailored to community technological, language, or scheduling needs, and should offer individuals and communities the ability to develop program goals, communicate expectations and experiences, and hold companies accountable to those goals when necessary. Accountability standards should invite feedback and changes without communities worrying about retribution or imbalanced power dynamics.

" [AV company] Reps should come with their A-game [when engaging with underserved communities]. They are asking questions of people who may never benefit from their services."

— Inclusive Planning Cohort Participant

Intentional Regulatory Control:

The city and AV operators should work together to address how differences in communities will require context-sensitive regulations. Examples include the intentional deployment within select areas as well as adapting services to local conditions. Instead of uniform AV deployment across the city, the cohort suggested that a range of deployment services or strategies should serve different audiences and community needs. Variable deployment strategies or regulations would reflect and respond to local contexts, conditions, and community needs. This variety and patchwork of conditions could create difficulties for AV operators to scale in certain markets.

Operational Cost Transparency:

Operational cost transparency- including both the revenues a city earns from AV operator fees, and the funds the city invests into AV operations- is integral to both the rollout and the ongoing community acceptance of AVs.

Reporting Transparency:

Data generated from AV pilots and deployments should be publicly available to communities to support informed decision-making. Informing communities on when, how, and why data may be collected, what information is necessary, and its intended use is part of ensuring operational transparency. The community should have access to data about deployment, operations, and service issues (including use, access, and safety) so they feel empowered to make decisions about the impacts of AVs on their daily lives.

WORKFORCE PROTECTION & DEVELOPMENT

Job Displacement:

The cohort was concerned about the involuntary loss of employment for drivers and workers in related industries. With the introduction of AVs, cities must remain conscious of the potential cascading impacts within the workforce as jobs are replaced or as valued skills become obsolete. The city must actively engage in worker transitions (such as with re-training and the education of displaced individuals) while maintaining proper safeguards (such as through compensation and incentives) to maintain strong communities.

Drivers:

Drivers are projected to be the primary workforce group impacted by AV deployment. Drivers operating within freight, delivery services, ride-share, or servicing other industries all face potential displacement with the introduction of AVs.

While it is possible that AV deployment will lead to new work positions (fleet maintenance, fleet management, technical services, etc.) that could absorb job losses, not all individuals may be well positioned for retraining or alternative positions. A truck operator may not, for example, be interested in monitoring screens even if retraining were available. In such cases, those employees working in such industries may lose their employment. Potential employment impacts for current drivers must be considered by cities as they structure AV deployment with the private sector.

Related Industries:

The introduction of AVs can benefit or harm related industries. New AV vehicle fleets may result in increased demand for vehicle servicing and maintenance workers. The tech industry (for maintenance, monitoring, or otherwise) may experience a similar increase in demand and job openings, which could create new employment opportunities for individuals that have been displaced and absorb some of the impacts of these workforce shifts.

Job Creation:

AV deployment presents opportunities for new jobs to be created. Infrastructure management, vehicle maintenance, fueling, insurance, manufacturing, tech, and operational management (such as safety operators, first responders, and monitors) are examples of positions that may be created or have increased demand under robust AV services.

"Should the AV companies have a responsibility or hand in retraining or workforce development? Can this be required?"

"Creating job training is fine, but it might not be the same skillset you are interested in doing, or same needs from your body, or same pay... jobs aren't just transferable... they are not all the same..."

"Be conscious of the timelines for communities and opportunities… there is evidence that by the time people have caught up, the job market might be oversaturated, moving on, etc."

— Inclusive Planning Cohort Participants

Industry/Local Retention:

Existing sector employees should be prioritized in a transition to new employment opportunities to mitigate job displacement and offer a ready source of labor needed to support a burgeoning AV service. Their transition to new industries or the creation of positions that are adjacent to existing work is significant and should be considered by cities as new services are offered to bolster local economies.

Retraining/Reskilling Programs:

To realize employment transition opportunities, cities and companies will need to offer retraining and certification opportunities. If cities are too optimistic or have little oversight of these industries and transitions oversaturate these markets, individuals will be unable or challenged in their transition to new positions. Cities should work to ensure that their workforces are adequately prepared and are adapting existing roles as new needs and opportunities arise.

Re-training and re-skilling require new education, instruction, and certifications for adapting existing talent to changing job demands. These programs are necessary to prepare employees for future jobs, presenting an opportunity to promote both career advancement and job security. This advancement may also keep the work sufficiently competitive, encouraging advancements that adapt to an evolving market.

Re-hiring Programs:

Re-hiring programs focus on the reintroduction of former employees to new or evolved roles within companies, assisting with a focus on local talent and community support. This may occur as a set of guidelines, procedures, or policies.

Employers may also view this method as a financial incentive that reduces the costs associated with finding and training new talent. Re-hiring can capitalize on the efficiency of workers being brought up to speed more quickly within familiar settings and contexts, increasing overall productivity.

Technological Challenges:

While a lateral move to AV jobs would be ideal, job creation and re-training may not always be a one-to-one translation, which can be detrimental to the development of a strong workforce. The introduction of AVs increases the need for workers skilled in cybersecurity and data protection, as the vehicles rely heavily on data sharing between vehicles. Ensuring data privacy will be a critical part of workforce responsibilities. Cities will need to promote workforce development in these industries to create a safe and efficient AV ecosystem.

Civic-Community Coalitions/Collaborations:

There is a risk that certain groups, particularly those from historically underserved communities, may be left behind as AV technologies reshape the workforce. Without the input of communities on a local level, there is not an effective feedback model. To create equitable workforce development programs, cities need to collaborate with communities to ensure people from all socioeconomic backgrounds have access to training and employment in the AV sector. Collaborations may include forming coalitions to address specific AV employment and service-related issues.

Double-Displacement & Resident Impacts:

Double displacement refers to the simultaneous displacement of people from their jobs and neighborhoods, often due to gentrification or economic shifts worsened by the introduction of new technologies. This can create significant disruption to cities as the advancement of AVs affects both workers and residents.

ACCESSIBILITY AND AFFORDABILITY

Affordability

Clarity of Service Goals

Service goals are anticipated to be dependent on the context in which AVs are deployed. For example, in urban areas, AV services are likely to be similar to existing ride-hail services. Other use cases for AVs might include: providing first- and last-mile connections to transit serving commuters; reducing impaired driving; or providing access to food, healthcare, or education. Varied goals could result in different models of deployment, price points, and associated costs. Price of service will impact the feasibility and scale of use of these different use cases.

Ensuring Equal and Affordable Access to AVs

Widespread adoption of AV services will depend in large part on pricing and the types of services offered in a given geographic market. How AV travel prices compare to transit, to existing ride-hail services, or to private car ownership will influence who has access to AVs and how often they are used. Prices like today's ride-hail costs, for example, could attract a similar ridership and similarly exclude people who cannot afford the services. Equitable use and deployment will require careful monitoring and understanding of business models and the accompanying price structures. AV operators should consider collaborating with cities and other local jurisdictions to consider and evaluate policies or plans to ensure affordable access across income groups, recognizing that many local jurisdictions may not have regulatory authority, staffing, or other resources to implement these policies or plans. Affordability strategies could include price controls, subsidies, or incentives that can increase access for travelers earning lower incomes.

Competitive or Complementary Transit Pricing

It is important that the introduction of AVs complement, rather than replace, existing transit services, which provide crucial access to low-income and historically marginalized communities. Similar to Seattle's Bike and Scoot to Transit pilot, programs that help leverage AV service to support transit will be critical. Competition from AVs could undermine public transportation ridership, potentially spurring service cuts or reduced investments. Reduced transit availability or frequency may inhibit access to services, jobs, or schools, particularly in communities for whom AV services are too expensive or where companies have no pathway to profitability.

"[Wait times for ADA vehicles] can be an issue if the wait goes from 15 minutes to over an hour or more. [This] is not realistic when you need an on-demand ride."

"Accessibility is such a multi-dimensional topic. I want to be open to experimentation, but as far as subsidizing things that don't live up to ADA, oh heck no!"

— Inclusive Planning Cohort Participant

Incentives & Regulations

The city, private sector, stakeholders, and the community should engage in dialogues to ensure that deployed AVs are affordable. Current pricing models suggest that AVs are positioned to be a 'premium service' rather than a service whose pricing facilitates access by people who have been excluded from other similar modes, such as Transportation Network Companies (TNCs). Cohort members recognized that options such as subsidized transit trips (e.g., reduced fare ORCA (One Regional Card for All) card trips through the Seattle Housing Authority (SHA) and SDOT) substantially affect their mode choices and travel behaviors.[1] Federal or local assistance (both in data and grants) may affect private-sector AV capabilities, but an understanding of future AV pricing remains unclear.

Photo Credit: Steve Morgan, https://commons.wikimedia.org/wiki/User:Steve_Morgan

DEMONSTRATED INCENTIVE MODEL:

SDOT regulates shared scooters and bike operators through a permit program. As a requirement of the permit, operators must offer a discount program for low-income users eligible for assistance programs such as Supplemental Nutrition Assistance Program, ORCA LIFT, and the Regional Reduced Fare Permit – operators are free to structure their discount program so long as rides do not exceed a threshold cost of $1.50 per hour. As a result, there are an estimated 4,788 unique registered reduced fare program users who took 8.6% of the nearly 6.3 million trips delivered in 2024. Permitted operators are also required to deploy a minimum of 15% of their fleet in equity priority areas. These requirements have not impacted business performance, as Seattle remains a top market for shared mobility.

Affordability:

Service Location:

The equitable deployment of AVs will vary by community context and need. Companies must be aware of localized factors that could pose operational risks or affect AV deployment. This might include, for example, collaboration on service areas using data gathered by the City on transit and transportation access, ensuring that areas currently underserved by existing transportation systems are prioritized. Factors such as existing transit service routes will be particularly important to consider as cities work to disrupt and address current inequities. In addition, early deployments and comparisons to existing rideshare services suggest that rural areas are much harder and costlier to serve than urban areas. This could result in far less service in areas outside of urban core or first ring suburbs.

Multilingual Accessibility:

Clear communication is critical for travelers ordering, entering/exiting, and interacting with the vehicle. Offering AV services in multiple languages appropriate to the local context can support more widespread and equitable adoption, particularly for individuals with limited English proficiency. Multilingual access should be considered within apps, marketing and educational materials, signage, and onboard vehicles.

[1] https://www.bloomberg.com/news/newsletters/2024-09-16/waymo-positions-self-driving-cars-as-a-premium-ride-hailing-service

Physical Accessibility:

Community members face a range of mobility needs, including physical or cognitive disabilities and mobility limitations. Many people require mobility devices (e.g., wheelchair, walker, stroller) to move through space. Others, including older adults and children, may face mobility limitations or require additional restraining devices such as a car/booster seat, that affect how they access services or destinations. Ensuring inclusive AV designs is essential to promoting mobility for vulnerable populations and preventing potential isolation or marginalization. To ensure that AVs are a technology that can be accessed by all, organizations that regulate AV design and production (often federal agencies) and companies must consider the particular accessibility accommodations needed within a community. AV companies are currently 'self-certifying' vehicles and offer varying degrees of accessibility features. Additionally, the cohort recommended establishing safety standards and requirements for fleets as a key step for moving towards accessible AVs.

Fleet Requirements:

The composition of the AV fleet will limit or create access to opportunities. Requirements around storage, cleaning, and vehicle maintenance should be considered before services begin.

ADA Vehicles

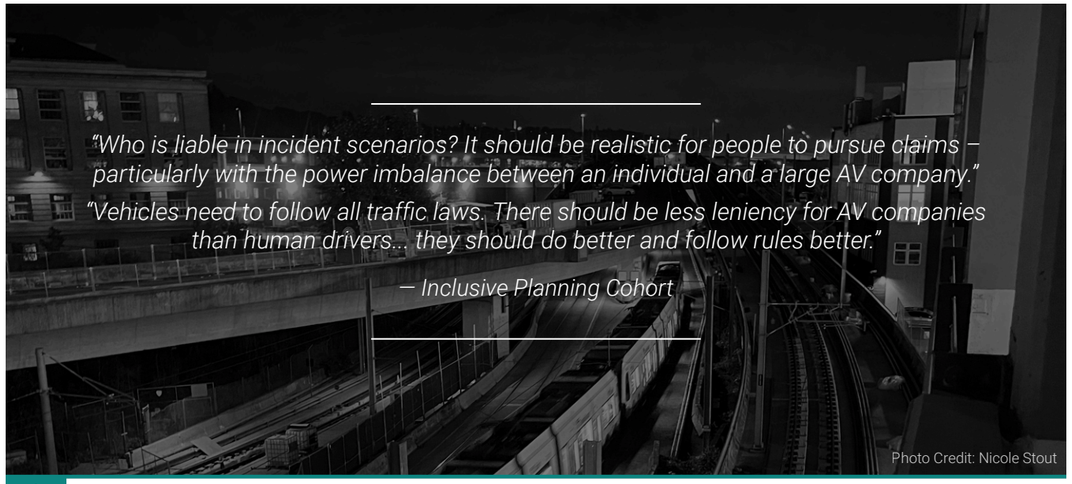
Offering accessible vehicles compliant with Americans with Disabilities Act (ADA) standards is critical to offering an inclusive, accessible vehicle service. No current AV vehicles can accommodate a wheelchair user without the assistance of a safety driver, which has implications for cost and service availability. AV operators and cities will need to understand the demands on these vehicles and how their operations will need to account for and accommodate requests. Additionally, local governments may express a desire to leverage fees on AV trips to help fund additional Regarding ADA services, however, some AV frameworks prohibit local jurisdictions to levy fees on AV services. Given the complexity of this issue, it may take iterative approaches to ensure inclusive vehicle designs and will require feedback from community testing. Iterative approaches highlight the need for open communication and avoiding a generalized approach to program rollouts.

Safety Operators & Staffing

A safety operator may be required to assist riders or oversee operations during either AV testing or full deployment. Safety operators may help with loading and unloading assistance, emergency response, or preventative care such as strapping individuals or wheelchairs in before a ride. The costs and time associated with hiring and training safety operators will affect service planning, but may be necessary to further the City's goal of ensuring inclusive service operations available to historically marginalized populations.

Maintenance

Vehicle maintenance and upkeep, including servicing and between-ride cleaning will impact pricing. Companies must uphold hygienic standards and understand the associated cost implications.



SAFETY

Physical Safety:

Loading/Unloading:

Complications can arise as riders enter or exit an AV for a variety of reasons, such as the presence of baggage, or complex pick-up and drop-off zones. Individual disabilities may also be a factor during vehicle loading/unloading. As previously discussed, travelers who are blind or visually impaired, or require other mobility devices or accommodations may require ADA-compliant vehicles or a safety operator to ensure safe boarding or alighting.

Near Miss-Incidents:

Near-miss incidents include events where AVs could have caused harm, but ultimately avoided an incident from occurring. While such circumstances may not require reporting, they could highlight interactions that pose a significant risk. Near-miss incidents might include a pedestrian jumping out of the path of a self-driving vehicle that may have hit them, or other vehicles swerving as an AV changes lanes. Near-misses may be overlooked and under-reported but could represent critical risk or dangers within operations. Reporting on near-misses can help government agencies to better understand and evaluate vehicle safety and how AVs interact with other road users.

Reliability in Inclement Weather or Natural Disasters:

Environmental operating conditions vary widely and can therefore impose unique challenges to safe vehicle operation if untested. Heavy rain and fog, for example, may affect AV systems and driving conditions. Scenarios that are difficult to predict, including natural disasters like earthquakes, also represent scenarios that may compromise predictable and reliable vehicle safety systems.

Unprecedented Events (Edge Cases):

Unprecedented events or edge cases occur when safety-threatening incidents cannot be predicted or have not been accounted for, as there is little to no precedent for its occurrence. This can be as simple as unanticipated objects or blockages within the road, construction, or unpredicted conditions related to natural disasters. Identifying how AVs will respond and what type of protocol is necessary in these scenarios and is essential for operation, especially in emergency response situations.

Emergency Safety:

How AVs respond to emergency scenarios is critical. AVs that block roadways during emergencies, for example, can prove dangerous to emergency responses and must be fully understood prior to AV deployment.

Interactions with EMT

The collaboration between AVs and emergency medical services (EMT) could be critical, particularly in situations requiring immediate intervention such as vehicle crashes. On the one hand, EMT oversight and involvement in AV systems could improve response times and ensure efficient coordination during emergencies. For instance, if an AV is involved in a collision or detects a medical emergency among its passengers, integrated systems could notify EMTs automatically to provide location data and crucial medical information in real-time to deliver care.

On the other hand, in current pilot deployments, AVs have occasionally blocked roads, limited EMT access, and/or have unexpectedly driven into restricted areas where emergency services are operating. These conflicts with emergency services need to be resolved to guarantee the continued and smooth functioning of these essential services

Additionally, the cohort discussed the possibility of collaboration between EMTs and AV operators extending into proactive services such as on-demand transport for medical appointments or facilitating the release of patients after treatment. For instance, AVs could serve as a reliable transportation option for individuals needing regular medical care, especially in underserved areas, and improve access to healthcare for those with mobility issues.

Data/Technology Safety:

Liability Protection and Risks:

Cities and companies are responsible to protect both personal information data and individual physical safety. Regarding incidents, service complications, or near-misses, the Cohort expressed concerns about accountability. It is currently unclear who is responsible or liable under current law or statutes. Additionally, current protocols for safety measurement and assessment are either ambiguous or represent a patchwork of regulations, creating uncertainty about who communities should report to for enforcement or to spur change. The Cohort expressed widespread concern that users or communities may be adversely affected or blamed when bringing these occurrences to the attention of legislators or government, as well as private entities. They also expressed concern that the uneven financial position of impacted individuals and large, well-funded AV operators could be a problem for individuals and litigation outcomes.

Data Exposure:

Overall data transparency is vital for building community trust and establishing industry-wide standards to address safety concerns, particularly as data safety and security become increasingly important issues. The Cohort often expressed concerns with AV's susceptibility to hacking, technology glitches, and malfunctioning – as this is an evolving technology, current AV deployments have seen several recalls for hardware and software issues.

Data Biases:

Underlying bias in software that utilizes machine learning or self-regulated technology that is undetected or untested can both result in catastrophic incidents or perpetuate inequities. Resulting actions can have a collective, adverse, or unintended impact on individuals or communities.

Photo Credit: Nicole Stout

ENVIRONMENTAL IMPACTS

Greenhouse Gas (GHG) Emissions:

Gas-powered AVs contribute to GHG emissions, particularly under specific scenarios.

Deadhead Miles Traveled:

Similar to taxis or ride-hail vehicles, AVs may create deadhead miles, or miles traveled with no riders or deliveries present. Deadheading can occur when an AV drives between destinations, returns to its origin, or due to inefficient routing. Deadhead miles can contribute to added emissions and service inefficiencies.

Idling:

Idling occurs when a vehicle's engine is running, but the car is not moving. This can occur while an AV waits for people or goods to load or unload, when they experience sensor interference, or while waiting between trip requests, such as we are currently seeing in ride-hailing. Idling degrades fuel or energy economy and creates added emissions.

Congestion:

AVs could increase efficient road use, or may exacerbate traffic congestion. In one scenario, AV's ability to navigate roads safely and efficiently (e.g., AVs can safely drive more closely together relative to human drivers) maximizes flow, meaning that more vehicles can use city roadways in a given period of time. Under another scenario, cheap prices, empty vehicles, and/or poor technology communication may increase the number of vehicles on the road and result in greater traffic congestion and emissions.

City Development Patterns:

The widespread adoption of AVs may dramatically affect urban land uses and city form.

Vehicle Storage:

Cohort members raised concerns about vehicle storage and deployment space, specifically that valuable or development-ready land may be used to store AVs rather than be developed for human-centered activities. Additionally, lower land values in historically marginalized or underserved neighborhoods may concentrate AV storage, maintenance, fueling, or deployment facilities in these neighborhoods, contributing to additional traffic or environmental justice concerns in these areas.

Ethical Sourcing & Region Impacts:

AV manufacturing and development may exploit and exhaust resources from developing countries and communities. Cost cutting measures may exacerbate exploitive activities or produce unintended or unforeseen environmental or social consequences.

Sprawl:

Personal vehicles combined with land use regulations contributed to widespread urban and regional sprawl over the past several decades. AVs may exacerbate this problem as the friction of traveling wanes; in other words, people may be more willing to travel farther if they can now take a nap or watch a movie in an AV rather than having to drive their personal car.

Vehicle Charging Stations

If electric, AVs will require ample charging infrastructure, which creates both land demands and challenges existing power grids.

City Development Patterns:

Charging electric AV fleets will concentrate demand for electricity over longer periods; issues may be particularly acute if charging is uncoordinated or concentrated during times of day when energy demand is higher in general (e.g., middle of the day).

"I feel the AV movement will accelerate the electrification of cars in this country, since electric cars are better to be used as AV. This has a big environment impact."

"[It is important to] address the oppression from gathering the materials needed for these technologies."

— Inclusive Planning Cohort Participants

Photo Credit: Nicole Stout

INTERSECTIONAL EQUITY

Establishing & Developing Equity Tools:

Developing, updating, and referencing equity toolkits ensures that selected policies and programs weigh community contexts and needs and consider both unintended outcomes and cascading community impacts. Equity tools can offer useful guidelines for ensuring that communities are engaged and heard in order to foster open dialogues and empower inclusive community support.

The Role of SDOT's RET:

SDOT has developed a Racial Equity Toolkit (RET), an inclusive framework that ensures conversations and policies promote racial equity while addressing systemic inequalities, around the topic of AV deployment. The City of Seattle uses the RET to lay out a process and a set of questions to guide the development, implementation, and evaluation of policies, initiatives, and programs to address the impacts on racial equity. The cohort is familiar with the use of the RET for transportation programming, acknowledging that their input is integral to the development of SDOT's latest framework and the advancement of Seattle's race and social justice goals. They also expressed some concerns about how the RET is implemented and if it is leading to the desired outcomes.

Cities as an Intersectional Coordinator:

Cities have a responsibility to guide, share, and actively adapt to constructive feedback from impacted communities. SDOT has a unique understanding of the past harms done to communities while maintaining an active role in future planning. This creates an opportunity for policy and program improvement, ensuring that these past harms do not recur.

Recognizing Community Needs & Maintaining Development Goals:

SDOT should foster active feedback opportunities between the City, the community and the private sector to build trust and clear communication while forming an acute understanding of community needs. These needs can vary greatly by locality, and therefore require an ongoing dialogue. The goals of a community, particularly as it pertains to AVs, should be maintained and upheld by the city. The Cohort expressed a keen interest in how current goals, such as promoting walkable neighborhoods, were related to the impacts of AV services. Community feedback should guide policy and future planning and should rely on ambassadors and open communications strategies.

Addressing Disability & Race:

The Cohort argued that cities should discuss disability in addition to and alongside racial dynamics. Black, Indigenous, and other People of Color have disproportionately high rates of disabilities due to environmental and systemic factors. As a result, SDOT must acknowledge and balance racial equity alongside intersectional equity issues and ensure discussions are focused on program iteration and accountability.

Data Protection in Communities:

Substantial efforts have been dedicated to collect comprehensive and relevant data while remaining sensitive to data privacy. Still, additional data and analysis are needed to understand potential impacts on access and equity.

Disaggregation of Data and Metrics:

The Cohort voiced concerns about data privacy and metrics that could be harmful for communities. For example, collecting detailed economic profiles to strategically tailor services could inadvertently exclude certain communities, particularly those underrepresented or marginalized. Moreover, existing biases embedded in machine learning algorithms, which may allow for the identification of individuals, pose significant risks to privacy. These biases could disproportionately affect certain groups based on race, disability, or socio-economic status.

In contrast to this, the use of datasets for understanding AV use and development- especially while addressing current data gaps, such as with race and disability- could lead to more equitable service outcomes. The disaggregation or anonymizing data could help identify the effectiveness of programs without compromising individual privacy.

"The City needs to motivate or require AV vendors to answer key inclusivity and racial equity questions. This would help communities feel good about the future and opportunities of AVs."

— Inclusive Planning Cohort Participant

Asking for Community Contributions:

A line that may be explored carefully is through the active participation and engagement of community members. This may include the voluntary disclosure of personal AV use data, for example. The cohort was often curious how and what information was collected, who stored and sorted it, and how it might be used. Engaging communities with their consent and voluntary inclusion is important.

Denial of Services and Data Use:

Awareness of data use and its accessibility to the community was a repeated request by the cohort. Historically, data has been used to deny services or keep spaces exclusive alongside technological and program improvements.

Photo Credit: Creative Commons

EDUCATION TO COMMUNITY

Government & Legislative Communication:

Cities should aim to share data, current events, and future planning openly across a range of media. Email lists, calendar items for public meetings, updates, and events, marketing, tabling, and online event hosting are all options for cities and communities to communicate and respond in real-time to concerns or ideas.

Operational Transparency:

A key factor to AV program support within communities lies in the city's (and company's) ability to share plans, data, and actions openly. Communicating the role of the government in the deployment of AVs to impacted communities can encourage active participation in rollouts and evolving programs. Clear communication is also a vital component to accountability. Including the ability for the city to obtain data from AV companies necessary to provide operational transparency to the public.

Building Community Resilience:

For SDOT, investing in communities means dedicating time and support. This also means encouraging communities to facilitate their own conversations, and supporting future education through compensation (monetary is the most common) and by supplying up-to-date information. Information and advocacy can empower resilient and adaptable communities with established trust within their own systems and local governments

Promoting Diverse Engagement Through Community Ambassadors:

Community ambassadors, often working for non-profit organizations, public service offices, or universities, play a critical role in program development, community engagement, and feedback. Ambassadors can be integral to spreading information and engaging their communities. As members of the community themselves, they have a more in-depth understanding of needs and opportunities locally and can often reach broader, more diverse groups of people than city outreach alone. This is an important consideration as cities engage community ambassadors, ensuring that feedback shaping goals and policies is representative of communities as a whole.

Education to Community

Education is necessary to engage diverse populations and connect government efforts to community members and organizations. Ensuring that information and programs are available in a diverse number of settings and formats is important for reaching as many community members as possible. Groups that are often underrepresented in this process, such as refugees, immigrants, workers, those experiencing poverty and homelessness, and students can benefit from additional forms of outreach by the city.

Within Scool Settings

Offering educational programs centered on AV readiness, albeit a more traditional approach, ensures that populations (primarily students and emerging professionals, though local members are likely to benefit as well from attendance or word-of-mouth) are prepared as a future workforce and knowledgeable of the technology. By integrating workshops, training, and courses into educational settings, such as community colleges or technical schools, students can gain hands-on experience and technical proficiency within their curriculum.

Workforce

Workforce development requires education and training opportunities within the job setting, which requires companies and cities to offer incentives and support the implementation of these programs. Offering opportunities for individuals to advance ensures that the market is prepared and encourages technological development, driving a competitive edge in the workforce.

"Data should be published online for everyone to see, so the community can make informed choices — like food safety ratings for restaurants."

"Seattle residents make decisions off of affordability, access, and company ethic… they care about environmental impacts, vehicle life cycle, and company values."

— Inclusive Planning Cohort Participant

POLICYMAKER & OTHER STAKEHOLDER INTERVIEWS:

This section summarizes findings shared by Washington State policymakers and stakeholders, such as labor representatives, during anonymous interviews.

MANAGEMENT & ACCOUNTABILITY

Elected officials at times echoed industry's interest to work together across cities to avoid patchwork regulations such as those implemented with ride-hail services. They proposed solutions such as frameworks that applied across multiple jurisdictions when asked how AV deployment should be approached. While some policymakers saw local contexts as critical for testing and argued local control was paramount at the current phase of AV operations, some believed that local regulations could eventually transition to the state or federal levels; this included safety regulations related to camera or insurance requirements. Others discussed federal agencies (e.g., National Highway Traffic Safety Administration) serving in their traditional oversight roles and investigating broad trends or problems.

Policymakers also argued that states and local levels should retain some control to adapt services to local conditions, such as for specific populations (e.g., disabled populations), unique terrains or topographies, designating where AVs can operate, and price regulations or subsidies to ensure competitive compensation or affordable fares. They also said the state role would depend on AV deployment, and that states could regulate fleets, but that it may be harder to regulate individually-owned vehicles with autonomous capabilities.

Policymakers raised additional concerns around liability and argued that the state must play a role in establishing liability, who is at fault, and safety expectations around AVs. One policymaker suggested using human driving as a benchmark for determining blame; in other words, whether the AV reacted the way a human driver would.

State-level policymakers expressed a hope to collaborate in the near-term with cities on several related topics including:

- **Testing** that produces real-life data to see how people use AVs, what the impacts are, and what the benefits are.
- **Articulating** to the state what is needed at the local level.
- **Identifying tools and resources** needed to gather and analyze appropriate data.
- **Understanding existing state laws** that are important to consider to avoid preemption.

WORKFORCE PROTECTION & DEVELOPMENT

Interviews with labor representatives highlighted a range of both opportunities and challenges for labor and employment with the widespread arrival of AVs. Interviewees estimated that about 400,000 jobs are related to commercial or passenger transportation and/or delivery across the State of Washington, and that more than 80 percent of drivers within the Seattle area work full-time. Within this context, they emphasized that changing technology is a familiar and repeating history within the transportation industry, and that far from being averse to technology, people are willing to adapt, want to engage, and are willing to bargain about these issues. Labor representatives acknowledged that the City of Seattle has done a good job of outreach, participating in the statewide autonomous vehicle task force, and working with the tools and issues they have regulatory control over. They expressed general optimism about working with the city on this issue as it evolves. Labor representatives advocated for the city to ensure that labor is engaged and that the city is building coalitions with people that have like-minded priorities. While they cautioned that there will undoubtedly be areas of conflict between labor and the city, this should be mitigated so that they could present a unified front.

While expressing optimism about promising futures and collaborations with the city, labor representatives cautioned a need for a thoughtful workforce transition. A proactive and considered approach is needed to ensure both sufficient support for AV deployment and operations, and to ensure that worker transition is addressed.

Interviewees highlighted the wide range of employment opportunities that may emerge under AV scenarios including:

- **Safety operator** to aid vehicle operations or to serve as ambassadors in passenger service contexts, including answering questions or assisting passengers boarding or alighting vehicles.
- **Maintenance roles** may include people needed to fuel, maintain or repair, refuel, conduct safety checks and clean vehicles.
- **Technology-based positions** including engineers, software technicians, maintaining hardware or other required updates.
- **Electrification** may create a host of additional jobs from installation and maintenance of charging infrastructure, to manufacturing related to electrification.

Photo Credit: Zoox

Realizing new employment and workforce opportunities will require proactive investment in training programs to build skills and capacity within the workforce in advance of AV deployment. Currently, community and technical colleges have not identified the best workforce clusters that need to take place to prepare the new workforce to engage in an AV future. Interviewees recommended that the City should collaborate with state workforce staff to identify opportunities in the schools, connect with high schools and higher ed and community and technical colleges.

Interviewees flagged that drivers currently working within the Puget Sound region, which includes Snohomish, Pierce, and King Counties, speak more than 50 languages, highlighting the important role the industry plays for immigrants, refugees, and other new arrivals to the area, and the need for inclusive education and programming to meet workers' communication and learning needs. Interviewees cautioned that Worker Assistance Retraining Notices (WARN), while offering important retraining options for employees, do not apply to independent contractors who comprise a large share of the current driving workforce.

Labor representatives also cautioned against assuming a 1:1 replacement of existing jobs with new ones, or smooth pathways between roles. They noted, for example, that retraining drivers may represent a fundamental mismatch in interests. They also acknowledged that pay gaps may exist between current versus re-trained jobs. Higher paying jobs within transportation workforces are often held by drivers; jobs that replace these existing positions may not be unionized or could pay far less, creating financial challenges for existing workers.

Elected officials echoed labor concerns about potential employment transition scenarios, noting that labor was among the prominent questions currently being considered within AV conversations. Policymakers emphasized that while the current focus is on incumbent workers, additional employment opportunities will exist in the future. Still, they emphasized the need to have worker voices in how cities and states scale an AV transition and considerations around pathways to other jobs within the transportation field, or transitions to other fields entirely.

ACCESSIBILITY & AFFORDABILITY

Elected officials argue that AVs may represent a dramatic improvement of mobility options, particularly in suburban and rural areas where drivers may not be available. As noted previously, these may, unfortunately, be exactly the areas that have the toughest business case and may require subsidies to operate. The elected officials also said that about one-third of Washingtonians do not drive themselves, whether due to age (children or older adults), disability, or other factors. AVs may also help to improve paratransit service reliability to increase access to wheelchair accessible transportation, although service costs will play an important role in availability. Policymakers suggested that regulators could dictate the share of AV fleets that should be wheelchair accessible and emphasized that AV apps or customer interfaces must be accessible to people with disabilities.

Policymakers expressed hope that AVs could address existing racial bias within transportation services, including discrimination in taxi and ride-hail industries; research shows, however, that biases (including racial biases) typically persist within machine learning and that technology does not necessarily offer a blank slate free of bias.[2]

Costs represent a crucial variable according to elected officials, and reducing costs are critical to the long-term viability and offers of AV services. Elected officials state that while cost does not yet represent a substantial benefit over other modes, further technological advancements may affect this calculus. They highlight labor as a large component of ride-hail costs as an example of future cost savings under AV deployment. They note that including a safety operator in AV vehicles— as labor strongly argued for— costs were less likely to decline. Policymakers were adamant, however, that service prices needed to be carefully monitored. A list of steps to monitor services were not provided at the time of interview. They cautioned that prices should not exclude people based on income or vary based on peoples' disabilities or adaptive or accessible vehicle needs. Some policymakers observed little or no interest among regulators in subsidizing private companies.

[2] https://diversityatlas.io/wp-content/uploads/2023/08/2018-Detecting-racial-bias-in-algorithms-and-machine-learning.pdf


Photo Credit: SDOT

SAFETY

Labor representatives strongly advocated for a safety operator to aid vehicles operating in unpredictable and quickly changing weather, road, or vehicle conditions (e.g. cobblestones, obstacles in the road, storms, changing conditions in mountain passes). Safety operators could likewise help to navigate emergency situations. Labor representatives emphasized that other modes including trains and airplanes continued to have engineers and pilots, respectively, even though these modes could likewise operate at high levels of automation.

Like cohort members, interviewees advocated for the city to help increase transparency by requiring companies to provide data needed to evaluate broad city goals related to safety. They voiced concerns about a lack of transparent data availability creating biased narratives and recommended that the city insist on access to data for purposes of planning and efficacy to be able to provide an accurate picture of what's happening. While this point was mentioned by cohort members and elected officials, the City of Seattle does not currently have the authority to require this level of data sharing. Industry raised challenges related to data availability in an unpredictable world; for example, cities such as San Francisco publish construction zone databases, but do not post traffic control plans

An often-cited primary motivation behind AV development and a key claim made by AV operators is that they will improve safety. Elected officials viewed safety as the potentially greatest benefit of AV deployment. Some policymakers articulated a need for flexibility and that we should not expect AVs to be perfect at deployment, just that they should be 'better than humans' in the environment they are allowed to operate within. While seemingly a simple metric, this is fairly difficult to measure and compare AV driving safety to human driving safety as AVs currently operate in limited domains, and data about human drivers is often inclusive of all domains. This said, all elected officials interviewed agreed that safety is not currently receiving the level of attention it deserves. While several bills are currently circulating around AVs and AV safety, policymakers see little uptake. Policymakers interviewed also highlight a tension between private operators who state that they will not provide services under strongly regulated environments, and a need to ensure safety and achieve state and city goals. The policymakers acknowledge that testing in uncertain environments–including places like Washington–will be necessary, but argue that testing programs must be strengthened; they report that very limited information is currently provided around testing programs, nor do clear criteria exist for if a test driver must accompany a vehicle. Policymakers argued that safety standards are needed and that many governmental departments and agencies must collaborate to create a well-rounded approach.

ENVIRONMENTAL IMPACTS

Policymakers emphasized how a fleet-based AV service could help reduce vehicle miles traveled, but personally-owned AVs may have the opposite effect. Electric vehicle mandates, they worried, posed challenges to implement either at a personal or company-level. Additional use cases, such as using AVs to connect to transit, could spur additional emissions savings and environmental benefits. Policymakers also raised the issue of the costs–both environmental and financial–associated with changing roadways and the built environment to accommodate AVs.

Policymaker and other stakeholder interviews did not yield specific insights on the topics of **Intersectional Equity** and **Education to Community.**

INDUSTRY INTERVIEWS:

This section summarizes findings shared by AV industry members during anonymous interviews.

MANAGEMENT & ACCOUNTABILITY

Conversations with private industry representatives revealed a strong preference for eventual state-level rather than city regulations. This stands in tension to Cohort expressions for community influence and adaptability to local contexts. Companies highlighted challenges to patchwork regulations including permit requirements varying by states, or even within neighboring jurisdictions such as City of Seattle versus the surrounding communities. Private industry seeks several management inputs from cities including:

- **Clarity on requirements and regulatory timelines,** including what documentation and data will be wanted or needed. Additionally, a clearer sense of how long the public review process will take (e.g., 5 versus 15 months) would help companies plan accordingly.
- **Digitized data** related to city operations - such as speed limits, curb uses, work zones, new traffic laws, turn restrictions, construction zone databases, etc - should be easy to access by AV operators. This should be information provided in computer readable formats such as the Open Mobility Foundation's Mobility Data Specification and Curb Data Specification.
- **Positive partnerships with city staff** including a dedicated staff person from the city who can connect industry with other city entities. City representatives can articulate city priorities and assist with necessary coordination across departments.
- **Proactive engagement with law enforcement and emergency response** including training and simulated interactions to work with AVs. California, for example, requires that a law enforcement interaction plan is provided to jurisdictions before operations and ensures uniform requirements between companies.[3] Private industry representatives noted that trainings can require substantial time investments.

[3] https://www.dmv.ca.gov/portal/vehicle-industry-services/autonomous-vehicles/testing-autonomous-vehicles-without-a-driver/

ACCESSIBILITY & AFFORDABILITY

Conversations with private industry emphasized the remaining uncertainty around service pricing. Industry representatives emphasized that prices must be competitive with alternative modes of vehicle travel such as with a personal car, ride-hail services such as Uber and Lyft, or transit. They also argued that subsidies may be required to serve less profitable use cases or areas, but that their goal was not to out-compete transit, which represents the most efficient way to move large numbers of people across cities. Pricing options may also vary as the industry matures; for example, services may begin as free and on a small scale and then introduce pricing as they scale to maturity.

Industry representatives argue that AVs can advance a range of city goals including cleaner transportation by using electric vehicles, connecting people to transit, and serving transportation deserts. Industry representatives report conducting substantial user testing across a diverse range of potential users including people who are deaf or hard of hearing, blind or low-vision, or have other physical or mental disabilities. Considerations for each user group vary; for people who are blind, for example, companies must consider visual impact on accessibility in wayfinding, app use, and vehicle interaction, considering the potential of voice-activated services rather than screen reliance. Companies have also considered wheelchair accessible vehicles and tested options that are accompanied by a human operator, and estimate that pricing and wait times would be similar for wheelchair accessible vehicles as non-accessible vehicles. Companies stated their aim is to provide the most access to the most people.

EDUCATION TO COMMUNITY

Industry representatives articulated value in community engagement as important to earning peoples' trust. To date, industry representatives report engaging in a range of city and community outreach activities including:

- Sponsoring and education events
- Tabling at festivals
- Outreach sessions at coffee shops
- First responder trainings
- Community advisory boards

Policymaker and other stakeholder interviews did not yield specific insights on the topics of **Workforce Protection & Development, Safety, Environmental Impacts, Intersectional Equity** and **Education to Community.**

APPENDIX

COMMUNITY PRIORITY FRAMEWORK ADDITIONAL CONSIDERATIONS:

This section lists additional considerations and questions raised by the cohort for further exploration.

MANAGEMENT & ACCOUNTABILITY

- What steps are being taken to ensure that the deployment of AVs is beneficial for all parties, particularly residents?
- Who should be held accountable for operational standards, such as with pricing?
- What role should the city play in ensuring community benefits?
- How can communities ensure that companies and cities are held accountable to community standards and outcome goals?
- How can claims be pursued by individuals or communities when there are issues?
- How do we distinguish which policies are the responsibility of cities, states, or federal actors?

WORKFORCE PROTECTION & DEVELOPMENT

- How can community involvement be prioritized?
- Will cities maintain pay grade standards and scales if the skills and jobs are not lateral within the AV workforce?

ACCESSIBILITY & AFFORDABILITY

- How will the introduction of AVs influence other transportation choices?
- How will AVs affect existing transportation services, including access for transit-dependent riders?
- How does SDOT ensure equal access to AV services?
- How can SDOT ensure that the necessary accessibility standards are consistently met?
- Are AVs intended to be affordable to all or different income groups?
- Will AVs adapt to the needs of diverse communities?

SAFETY

- How are cities and companies using, protecting, or sharing the data collected by AV services?
- What metrics are governments, cities, and companies using to manage and regulate user safety?
- How does SDOT ensure that safety standards are upheld at the city level?
- Who is accountable for AV actions or incidents?
- What do these safety considerations look like within a legal context?

ENVIRONMENTAL IMPACTS

- How can we encourage shared AV trips?
- What legislation is necessary at the local and regional levels to encourage alignment between AV deployment and ‘green’ policy goals?
- How are we accounting for known inequities and impacts on historically disadvantaged communities?

INTERSECTIONAL EQUITY

- Are AVs increasing access within communities?
- What metrics are cities using to measure changes in access?
- Do we have enough ‘lifecycle’ data on AVs to determine how AVs should impact legislation and decision making?
- What data is collected? How is data used in deployment or policy decision-making?

EDUCATION TO COMMUNITY

- How are cities reaching out to communities, and how are communities able to engage with cities? What is the most effective?
- How can education programs be tailored to reach underrepresented and vulnerable populations?
- How will cities ensure that community education translates into meaningful participation in AV policy decisions?