1. SOCIAL EQUITY & HEALTH

The City of Toronto will encourage the adoption of driving automation systems in a manner that improves social equity and health.

The City of Toronto will apply a social equity and health lens to the introduction of AVs, to unlock new mobility options in a way that will benefit a broad cross-section of Toronto's population.[1] Populations that are currently unable to drive a vehicle due to accessibility restrictions or age limitations could experience a higher degree of personal freedom to travel on their own. Also, Torontonians underserved by the existing transportation system may have access to new, more affordable and faster ways of getting around, connecting them to opportunities across the City.

However, without an intentional focus on equity, this disruption to the City's transportation system may introduce new forms of discrimination. New mobility business models may not account for everyone's needs, and may subject certain individuals to unfair pricing, reduced choice and poorer service quality.

This Direction for the Tactical Plan was built from City strategies with a focus on accessibility and socioeconomic equity. The Social Equity section aims to ensure barrier-free access for all transportation system users, as well as provide equitable service levels to all neighbourhoods for all trip types.

Guiding Policies and Strategies:

Toronto Official Plan (2015):[2]

> *This Plan will create a better urban environment, a competitive local economy and a more socially cohesive and equitable city through the integration and coordination of transportation planning and land use planning*
>
> *The transportation system will be developed to be inclusive of the needs of people with disabilities and seniors*

TO Prosperity: Toronto Poverty Reduction Strategy (2015-2035):[3]

> *Transit Equity:*
>
> - *6. Make transit more affordable for low-income residents.*
> - *7. Improve transit services in the inner suburbs.*

Toronto Public Health: Strategic Plan (2015-2019):[4]

> *Priority Direction #2: Champion healthy public policy - Collaborate with city divisions and community stakeholders to advance municipal policy for healthy social, built and natural environments*

Toronto Seniors Strategy (2013):[5]

Equity: Older adults should have equitable access to services and programs

Toronto Strong Neighbourhoods Strategy 2020:[6]

Improve transit access in our neighbourhoods:

- *Apply Neighbourhood Equity Scores when planning transit routes and transit services levels.*

SOCIAL EQUITY & HEALTH OVERVIEW

Goals	Tactics	Key performance indicators
1.1 Ensure Barrier-Free Access	1.1.1 Access for Individuals with Disabilities 1.1.2 Access to Transit for Individuals with Disabilities 1.1.3 Access for Unbanked Individuals 1.1.4 Access for Low-Income Individuals 1.1.5 Access for Non-Anglophones	Percentage of AV services that are barrier-free for each group
1.2 Increase Mobility Equity	1.2.1 Equitable Service Coverage 1.2.2 Equitable Performance Standards 1.2.3 Mobility Neutrality	Median wait time for barrier-free AVs versus standard AVs by geographic area (neighbourhood)
1.3 Promote Health	1.3.1 Healthy Mobility	The City of Toronto will be determining the required key performance indicators from 2019-2022

1.1 Ensure Barrier-Free Access

In 2050, the City will have harnessed the widespread adoption of automated vehicles to ensure all users have barrier-free access to personal mobility services.

1.1.1 Access for Individuals with Disabilities

Proposed Tactic: Develop and implement a policy to ensure that shared automated vehicle fleet companies provide an appropriate level of barrier-free access and ensure that unnecessary limitations (e.g. visual, auditory) are avoided. Approaches should consider the safety needs of individuals who require the assistance of an attendant or service animal, and boarding needs of seniors, families with children, and individuals with mobility impairments.

Individuals living with disabilities often experience lesser access to mobility services than non-disabled individuals.[78] While human-driven taxicabs and private transportation company vehicles have human operators available to assist passengers in and out of the vehicle, shared AV fleet vehicles without a human on board may be inaccessible to many individuals who require extra assistance and do not have a dedicated support person. Onboard attendants could provide assistance tailored to the specific needs of customers, including loading and unloading mobility aides and parcels and helping individuals get from door-to-door.

Proposed progress to 2022: Research, learn and identify challenges that individuals with disabilities may face in accessing barrier-free services likely to be provided by shared AV fleet companies.

1.1.2 Access to Transit for Individuals with Disabilities

Proposed Tactic: Develop and implement a mechanism to provide an appropriate level of barrier-free access and ensure that unnecessary limitations (e.g. visual, auditory) are avoided in automated transit vehicles.

TTC's accessible travel network provides customers with disabilities with the freedom and flexibility to travel throughout the City of Toronto. All conventional bus services are low-floor and accessible, all streetcar services will be accessible by 2020, and all subway stations by 2025. Operator assistance with mobility device securement is available on all buses.

TTC's Wheel-Trans paratransit service currently provides a safe and reliable transit option for persons with disabilities to travel with freedom and dignity. This is an on-demand service where riders can make reservations for vehicles that are wheelchair-accessible, and driven by trained operators who can assist those with any disability to board, find seats, and efficiently reach their destination.[9]

As part of the Wheel-Trans 10-Year Strategy, many Wheel-Trans customers can now take advantage of TTC's Family of Services, where Wheel-Trans can serve as a first-mile, last-mile

feeder to conventional transit for customers with conditions that permit travel on the fixed route system. Automated shuttles and other automated transit services may eventually provide more cost-effective alternatives to the current options for individuals with disabilities.[9] To provide full accessibility in the absence of a driver, the automated vehicles would likely require advanced robotics for ramp deployment, mobility device securement and related tasks, passenger communications and a video link (or similar) to an operations centre for passenger assistance and security.[10]

Proposed progress to 2022: Use lessons learned from automated transit shuttle pilot to inform further research into accessible automated transit vehicles.

1.1.3 Access for Unbanked Individuals

Proposed Tactic: Develop and implement a policy that enables shared automated vehicle fleet companies to accept payment through mechanisms that are available to unbanked populations.

With the rise of ride-hailing, smartphones, and a cashless society – service providers have moved away from accepting cash payments in favour of electronic payment platforms – apps connected directly to users' credit cards and bank accounts. For some users, this provides convenience; for others, it can be a source of exclusion. Unbanked (or financially excluded) individuals – those without access to some or all mainstream banking services – are estimated to comprise between one and five percent of Canada's population (306,000 to 1.53 million people).[11]

As new mobility services – including AVs – begin to roll out, unbanked individuals could find their access to mobility options restricted unless their needs are specifically accounted for in designing these services.[10] By continuing to accept cash as payment as well as offering prepaid debit cards and other options, unbanked individuals will be able to share in the benefits of electronic payment without the need for a bank account or credit card.[12]

Proposed progress to 2022: Engage stakeholders with regard to barriers that unbanked individuals may face in accessing services provided by shared AV fleet companies.

1.1.4 Access for Low-Income Individuals

Proposed Tactic: Develop and implement a mechanism to subsidize or support low-income residents to allow for equitable access to mobility services regardless of trip type, location, time of day, and technical requirements.

According to the 2016 Census, individuals with low-income comprised 20.2% of Toronto's population (using the low-income measure, after tax).[13] Low-income individuals may have few options when it comes to when and how they get to their workplaces, relying on the stable pricing currently provided by public transit and taxicabs or the convenience of a personal vehicle. In addition, low-income individuals are most likely to find themselves on the wrong side

of the 'digital divide' – lacking access to Internet and mobile technology as our lives increasingly moving online.

Most app-enabled shared mobility services require access to a digital device and cellular connectivity. Ride-hailing companies are not subject to a fare structure (apart from a $3.25 minimum fare) leaving them free to use 'dynamic pricing'[14] (also known as 'surge pricing') – increasing their prices during peak hours, special events, or inclement weather to both entice more drivers to pick up fares and manage demand from ride-hailing customers.

By contrast, TTC services and taxicabs have regulated fare structures to make sure they are affordably and consistently priced.[15] The City of Toronto's Fair Pass Discount Program allows individuals receiving Ontario Disability Support Program (ODSP) and Ontario Works (OW) assistance to pay a reduced fare. Both modes require little technology to use – simply wait at a transit stop or hail a taxicab by lifting your arm up and signal the taxi to stop.

If automated mobility services – whether as public transit vehicles or shared fleet vehicles – are offered only at a price premium and require cellular connectivity, it may disproportionately impact low-income individuals who may not have access to a smartphone.

For automated transit and shared AV fleet mobility services to successfully serve everyone, they must ensure that technology is not a barrier to access and that they are affordably and predictably priced to serve Toronto's low-income population.[16]

Proposed progress to 2022: Research and document the potential impacts to low-income residents from the introduction of automated vehicles.

1.1.5 Access for Non-Anglophones

Proposed Tactic: Develop and implement a policy that enables shared automated vehicle fleet companies to provide services to non-Anglophone populations.

Toronto is home to a linguistically diverse population – in fact, one in twenty Torontonians (over 130,000 individuals) do not speak English.[17] These individuals may experience significant barriers to participating in community and civic life, accessing public and community services, finding employment, and achieving a decent standard of living.[17]

It is essential that these populations have the same level of access as English-speaking populations. This could include ensuring that mobile applications used for booking services are multilingual, and onboard announcements are in plain language, with clear enunciation and spoken slowly enough to be easily understood.

Proposed progress to 2022: Research and document the potential impacts to non-Anglophone populations from the introduction of automated vehicles.

1.2 Increase Mobility Equity

In 2050, the City will have harnessed the widespread adoption of automated vehicles to ensure reasonably equitable service levels to all neighbourhoods regardless of trip type, vehicle class or ownership.

1.2.1 Equitable Service Coverage

Proposed Tactic: Develop and implement a mechanism to coordinate mobility services to provide equitable service in terms of frequency, hours of service per day, and proximity across all neighbourhoods for all trip types.

Torontonians live and work differently than they did when much of the transportation system was built. Changes in employment and land use patterns mean that fewer people have 9-to-5 workdays and suburb-to-downtown commutes than in the past.[18] For this reason, the City and TTC have invested millions of dollars in various initiatives such as the All-Day-Every-Day Network, Overnight Network, Express Bus Network, Service Reliability etc.

An affordable, accessible and reliable transportation system connects people to jobs, services and civic life.[3] AVs – whether operated by public transit agencies or ride-hailing companies – will be able to enhance the transportation network.

Proposed progress to 2022: Identify areas in Toronto with lower mobility service coverage and research the potential impacts to frequency, hours of service, and proximity across neighbourhoods from AVs.

1.2.2. Equitable Performance Standards

Proposed Tactic: Develop and implement a mechanism for shared AV fleet companies to report against equitable performance standards, and monitor data (e.g. wait time and declined rides) as a way to identify and respond to potentially discriminatory practices.

Automated decision-making through mobility platforms may introduce alternate forms of discrimination– both intentionally and unintentionally. While this discrimination may not be illegal, unfair outcomes will result if certain groups consistently experience differential pricing, reduced choice and poorer service quality when using mobility services.[19] Therefore, it will be essential to develop and implement a mechanism to identify, track and mitigate against potentially inequitable outcomes as quickly as possible and hold mobility service providers accountable.

Proposed progress to 2022: Research, learn and identify potential equity issues related to services provided by shared AV fleet companies.

1.2.3. Mobility Neutrality

Proposed Tactic: Develop and implement a policy to prevent low-occupancy private passenger vehicles from receiving unregulated priority within the transportation system.

Mobility neutrality is connected to another current issue: net neutrality. Net neutrality is the idea that Internet service providers (ISPs) should treat all data that travels over their networks fairly, without improper discrimination in favor of particular apps, sites or services. Similarly, mobility neutrality is the concept that our transportation network should treat all vehicles equally (transit and emergency response vehicles still receive priority).

AVs will be governed by privately owned algorithms, leaving open the possibility that AV fleet operators could program their vehicles to yield improperly and give certain classes of passengers unregulated priority in traffic – for example, sending a message to surrounding vehicles to make way and let them jump ahead. This could essentially give select users preferential treatment through paid services or loyalty rewards, while others who perhaps cannot afford or access AVs are left stuck in traffic.[20]

Proposed progress to 2022: Produce a white paper exploring the impacts of tiered product or service offerings involving AVs and generate policy options on how to prevent select vehicles from receiving unregulated priority within Toronto's transportation system.

1.3 Promote Health

In 2050, the City will have harnessed the widespread adoption of automated vehicles to promote equitable health outcomes.

1.3.1 Healthy Mobility

Proposed Tactic: Develop and implement a mechanism to integrate health and health equity into automated vehicles policies through use of evidence on population health impacts related to injury prevention, physical activity, network connectivity, greenspace, noise, and air pollution.

Health Equity is the principle that all people should be given the opportunity to reach their full health potential and not be disadvantaged from doing so based on race, ethnicity, religion, gender, age, social class, socioeconomic status or other socially determined circumstances.[21]

In achieving this aim, municipalities should provide equitable distribution of resources needed for health, access to opportunities available, and support offered to people negatively impacted.

The City will promote equitable health outcomes resulting from automated mobility, including encouraging: increased safety and injury prevention, active transportation and physical activity, shared travel modes, network connectivity and greenspace, as well as reduced noise, air pollution, and traffic congestion. This will be achieved through incorporating a health equity lens into all automated vehicles policy in the City.

Proposed progress to 2022: Consult with internal stakeholders to review and summarize available City data that is relevant to applying a health equity lens to the AV Tactical Plan. Identify gaps in available information and determine options to address those gaps. Engage external consultant to recommend healthy mobility key performance indicators, and to begin collecting and analyzing baseline data to apply a health lens to AVs.

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