Transportation Networks: Active Transportation

"Transportation Networks: Active Transportation" is part of a series of reports that highlight the Middlesex-London Health Unit's Built, Natural, and Social Environments Framework and the importance of addressing social connection, equity, and sustainability to contribute to inclusive, resilient, and thriving communities.

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TRANSPORTATION NETWORKS: ACTIVE TRANSPORTATION

Mobility is a foundational aspect of human activity, making it possible for social, cultural, political, and economic interactions to take place[1] within the built, natural, and social environments. ***Transportation Networks*** play an important part in how people choose to move from place to place every day.[2] They can include sidewalks, multi-use trails, pathways, bike lanes, transit lanes, and roads.[3]

Active Transportation (AT) is a critical element of equitable, efficient, and diverse transportation networks. It is defined as "the movement of people or goods powered by human activity"[3(p.5)] such as walking, cycling, and the use of "hybrid mobility aids such as wheelchairs, scooters, e-bikes, rollerblades, snowshoes, and cross country skis".[3(p.5)] Riding public transit is also considered a form of AT because transit users must engage in some form of physical activity at the start and/or end of their trip.[4] Creating and maintaining transportation networks that are safe, affordable, and accessible makes it easier for people of all ages and abilities to incorporate AT into daily life.

The impacts of engaging and investing in AT are diverse. By examining its effects on physical, mental, and social health, along with its environmental and economic advantages, there is a greater appreciation for the critical role AT plays in fostering healthier, more sustainable communities.

PHYSICAL HEALTH IMPACTS

Physical Activity

Physical inactivity is one of the four leading risk factors for chronic disease in Ontario, accounting for an economic burden of $2.6 billion annually.[5,6] Statistics Canada reports that more than 50% of Canadians (children and adults) are not reaching the recommended level of daily physical activity.[7] Those reporting the lowest levels of physical activity include women, youth aged 12-17, and older adults (65 and over).[7]

Being active at any age is important. Incorporating AT into daily life contributes to overall improved physical health[3] and can:

- reduce risk of chronic disease and certain cancers; [6,8-10,11-13]
- improve muscle strength and cardiovascular function;[8,10]
- contribute to healthy development in children and healthy aging;[8,10]
- reduce risk for dementia and osteoporosis;[8,10] and
- reduce falls.[9]

Walking or cycling to work can reduce the risk of developing chronic disease by 11%. [3]

Planning and designing safe, compact, connected, and complete neighbourhoods can contribute to the use of AT and increased levels of physical activity. When neighbourhoods include higher residential densities, a diverse mix of land uses near each other, access to public transit, and high-quality pedestrian and cycling infrastructure (e.g., well-maintained sidewalks, well-connected trails, bike lanes, secure bicycle parking),[2, 14-17] it can make it easier to access daily needs within a short walk or ride.

Injury Prevention

Safety is a notable barrier that impedes engagement in AT. While all road users could be involved in a collision, the most vulnerable road users are those not in a motor vehicle such as pedestrians, cyclists, and other mobility device users.[18,19] These vulnerable road users are less protected during a collision, and are more likely to sustain serious injuries or succumb to their injuries.[19] In 2022, vulnerable road users accounted for approximately one third of all serious injuries (33%) and deaths (31%) from motor vehicles collisions (MVCs) in Canada.[20] In Ontario, for both 2022 and 2023, pedestrians had the second highest rate of major injuries and death from MVCs.[21,22] Within the Middlesex-London region, both emergency department visits and hospitalizations due to injuries from MVCs involving pedestrians occurred at a higher rate in 2022 (48/100,000[23] and 10.1/100,000[24], respectively) than in 2020 (37.3/100,000[23] and 7/100,000[24], respectively). For cyclists, emergency department visits due to MVC-related injuries were reported at a rate of 19.7/100,000 in 2022 which was comparable to 2020 (19.8/100,000)[25]. However, the hospitalization rate for cyclists increased by approximately three times, rising from 0.9/100,000 in 2020 to 2.9/100,000 in 2022.[26]

Injuries from MVCs can be prevented for all road users. Transportation policies and adequate infrastructure contribute to the creation of safe, equitable, and supportive environments[27] and can:

- reduce serious injuries and fatalities for vulnerable road users (e.g., pedestrians, cyclists);[9]
- lead to more people engaging in active transportation, with the most promising results for cycling;[10]
- make cyclists feel more comfortable not having to share the road with motorists;[28] and
- remove safety barriers that prevent children from using AT to get to school.[11]

Comprehensive road safety strategies are needed to protect road users of all ages and abilities. Implementing policies and investing in transportation infrastructure protects vulnerable road users while influencing the adoption of AT and achieving better physical activity outcomes. This investment is further enhanced by considering safety and accessibility, as well as the unique needs of a community (e.g., socio-economic status, gender, geography, culture) to provide more inclusive and equitable AT opportunities.[12,13]

MENTAL AND SOCIAL HEALTH IMPACTS

Concerns related to mental health and social well-being continue to grow.[29] Nationally, it is estimated that one in five people will experience a mental health problem in an average year.[30] In Ontario, from April to September 2023, approximately 20% of individuals reported their mental health was fair or poor.[31]

In 2024, on average, approximately 50% of Ontarians reported feeling lonely, while 14% reported always or often feeling lonely, and 36% reported sometimes feeling lonely.[32]

Physical activity is generally recognized for its widespread benefits to not only physical, but also mental, and social health and well-being. [2,12,13,17,33] Engaging in regular physical activity through active transportation can: [14,33]

- lower the risk of anxiety, depression, and dementia;[8]
- slow cognitive decline in older adults;[34]
- lower stress levels;[9,17]
- reduce depressive symptoms and prevent future depression;[34]
- provide opportunities for social interaction;[17] and
- contribute to a sense of community belonging.[17]

Walking 20-30 minutes / day can increase physical and mental well-being.[3]

Investing in accessible, safe, and convenient transportation networks that promote physical activity and provide connections to people and the places where they live, play, work, and learn, enhances mental well-being and reduces the risk of people feeling socially isolated. It allows people of all ages and abilities to access amenities and supports to meet their daily needs, thereby improving their well-being and quality of life.[35]

ENVIRONMENTAL IMPACTS

Outdoor air pollution is a hazard to health.[36-38] Even at low levels of exposure, health can be negatively impacted.[37] Traffic is a major cause of air pollution, with the health impacts of exposure to traffic-related air pollution accounting for an estimated economic burden of 9.5 billion per year in Canada (based on 2015 Canadian dollars).[39]

Motor vehicles are also a major contributor of greenhouse gas (GHG) emissions. Slightly less than 25% of Canada's GHG emissions come from transportation[3,12] with 53% of emissions coming from cars and light trucks.[12]

Shifting to more sustainable modes of transportation leads to positive environmental impacts and can:

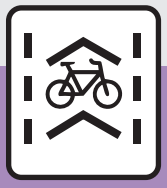
- reduce noise pollution from traffic;[12]
- decrease air pollution from traffic;[12] which can:
  - reduce premature death from "diseases and conditions, such as heart disease, stroke, respiratory disease, lung cancer, diabetes, and respiratory infections in children;"[17(p.19)] and
  - decrease risk of cancer from fine particulate matter, found in outdoor air pollution;[40]
- reduce GHG emissions which can help mitigate climate change and diminish negative health effects from a changing climate, including potential injuries and fatalities that can occur from large-scale weather events;[12] and
- reduce road congestion when motorists switch to alternate modes of travel.[3] Cycling, walking, or riding public transit increases capacity to move more people to and from destinations.

Continued investment in transportation policies and programs (e.g., reducing single-occupancy vehicle use, investing in public transit) to promote a reduction in transport emissions is essential to improve air quality.[40]

ECONOMIC IMPACTS

Active transportation can lead to economic savings. Owning and operating a motor vehicle can be expensive. The financial gains of using AT as an alternative can be derived from the:

- elimination of vehicle finance or lease payments;[3]
- removal of insurance fees;[3]
- elimination of parking expenses;[3]
- removal of vehicular fuel costs;[3] and
- elimination of vehicular maintenance costs.[3]



Adding bike lanes can increase store visits and potential spending.[3]

There are also financial benefits to the local economy. Efficient and accessible transportation options that are integrated with affordable, mixed housing developments can reduce the need to own a car and improve access to employment opportunities and social activities. As a result, inequalities are reduced and there are improvements in household budgets and the local economy.[41]

Positive economic impacts can also be realized for business owners and the tourism industry. People who shop using active modes of transportation (e.g., walking, cycling) tend to spend more money per trip and visit shops more frequently.[3] For shops located in pedestrianized areas, there have been reports of higher sales per square foot, demonstrating that walkable environments can contribute to more economically fruitful and robust communities.[41,42] Improvements to active transportation infrastructure can also create more jobs within communities [3,43] and support related industries (e.g., bike shops, bike repairs, retail centres, bike tourism).[41,44] Investing in AT contributes to economically healthy and sustainable communities.

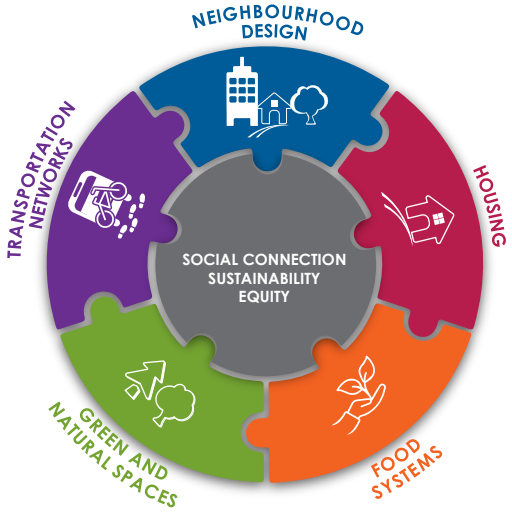
CONCLUSION

Transportation networks that prioritize safe, affordable, accessible, and sustainable mobility options (e.g., walking, cycling, public transit) for people of all ages and abilities can have a significant impact on physical, mental, and social health; the environment; and the economy.

These networks can be developed through ongoing implementation of policies, programs, and initiatives that foster and sustain the use of active modes of transportation.

POLICY POSITION AND RECOMMENDATIONS

The Middlesex-London Health Unit's (MLHU) policy position and corresponding recommendations aim to increase active transportation while reducing health inequities, fostering social connection, and contributing to sustainability in alignment with the MLHU's Built, Natural, and Social Environments Framework.



POLICY POSITION ON ACTIVE TRANSPORTATION

To protect and promote the health of Middlesex-London residents, municipalities should prioritize active transportation in the development and implementation of transportation networks.

POLICY RECOMMENDATIONS

The following recommendations highlight policies and actions that can be taken by municipalities and community partners to ensure transportation networks in Middlesex-London are:

- Active,
- Safe,
- Affordable,
- Sustainable, and
- Accessible for individuals of all ages and abilities.

1. Walking, cycling, and public transit should be prioritized in the design of communities and transportation networks over single-occupancy vehicles.

Provide a complete and well-maintained cycling network to encourage active daily travel.

Provide well-maintained sidewalks on both sides of the street to promote accessibility and safety.

Provide adequate, convenient, and secure bike parking and shelters to encourage and support cycling as a viable transportation option.

Encourage convenient and reliable access to affordable public transit, through implementation of dedicated transit lanes, and accessible, proximal transit stops.

Enhance public transit use through the integration of intercommunity transit options.

Support multimodal travel by providing infrastructure (e.g., bike storage at transit stations, bike racks at the front of transit buses, park-and-ride lots) at transfer points to encourage the integration of travel modes and facilitate getting to a destination that is further away without the use of a personal vehicle.

Provide easy and safe connections to accessible trails and pathways within existing and new residential areas.

Maintain, strengthen, and promote existing trail networks to facilitate the use of active travel for both recreational and everyday needs.

Encourage easy and safe connections between new green space and the active transportation network.

2. Prioritize accessibility and safety in the design and implementation of transportation networks.

Promote accessibility through ongoing maintenance of AT infrastructure (e.g., sidewalks, bike lanes, and multi-use pathways).

Implement transportation policies that protect vulnerable road users from speed such as automated speed enforcement, red light cameras, traffic calming measures, and lower neighbourhood speeds.

Adopt and implement strategies to improve safety for all road users (e.g., Complete Streets, Vision Zero).

Provide infrastructure that protects vulnerable road users through separation from motor vehicle traffic (e.g., protected bike lanes, safety islands, longer leading pedestrian intervals).

Ensure that pedestrian crossings are designed, maintained, and operated in a manner that promotes safety, equity, and efficiency for all road users.

Incorporate design elements that provide safety and comfort while using AT such as benches, trees, pleasant streetscapes, and adequate lighting.

Develop, maintain, and improve navigation tools such as wayfinding systems and travel route mapping (e.g., bike and walking maps, trail guides).

Promote and support safe routes to school through school-based approaches such as Active and Safe Routes to School and neighbourhood school travel plans to encourage safe and active school commutes.

Encourage and promote workplace policies, programs, and incentives that facilitate active modes of commuting.

3. Design neighbourhoods that are complete, compact, and connected to facilitate easy and equitable access to daily needs within a short walk or ride.

- Encourage transit-oriented development to facilitate connections to a variety of places.
- Design compact neighbourhoods with higher residential densities to support the use of active modes of transportation.
- Provide a mix of land uses and diverse housing options to shorten the distance between destinations while ensuring equitable access to school, recreation, faith-based institutions, services, and employment opportunities.
- Ensure active transportation connections are integrated into new developments early in the planning stages.

4. Prioritize ongoing, meaningful, and inclusive community engagement in the development and implementation of active transportation infrastructure, policies, and programs.

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