

Burlington Integrated Mobility Plan

Emerging Transportation Issues for Burlington's Future
Background Paper Series

1 Transportation Planning for an Aging Population



Burlington's Integrated Mobility Plan

The City of Burlington is creating its first Integrated Mobility Plan (IMP) to guide how people and goods move in and through our community up to the year 2051. The IMP will recommend the future networks for each mode of travel, policies, and programs that will help Burlington progress towards our vision for a transportation future. The IMP recommendations will be reviewed and refined every few years as more of the plan is realized.

In previous stages of the project, we've confirmed the IMP vision, values, and goal statements. Those concepts generally define the desired transportation system for Burlington of the future. The next steps of the project include identifying what aspects of our current transportation systems are not aligned with where we want to end up in the future

This paper is part of a series of background papers that explore transportation issues that will affect Burlingtonians in the future as our city grows and develops. Each paper is centred around fictionalized Burlington residents whose transportation needs reflect feedback the City has heard from real Burlington residents over the years.

Each paper covers some key transportation issues affecting Burlington residents with similar lived experiences and identifies the challenges and opportunities of each issue.

Other papers in this series can be found at [CITY WEBSITE].

Meet Frank and Priya



Frank and Priya have been married for 53 years. Lifelong Burlington residents, they've lived most of their lives in Aldershot, where they bought their first home, raised their children, and have now retired.

The couple values their independence and self-reliance. They also have no desire to move from the house they've lived in for several decades, their friends and family in the community, or their favourite spots in their neighbourhood.

But aging has not been without a few challenges. A few years ago, Frank became a full-time wheelchair user. The couple retrofitted their home to accommodate Frank, who enjoys being actively self-sufficient. Priya still drives but the couple's car is not modified to accommodate a wheelchair user. For long-distance trips, Frank uses the Handi-Van service because there is no transit route close to their house. Priya drives if required but is only comfortable doing so in her small car and in fair weather conditions.

With more time and some new limitations, Frank and Priya really value having all of the services, recreational facilities, and vibrant spaces they need within a short distance from their house. They also enjoy opportunities to go on walks and rolls together and enjoy nature year-round.

IMP Alignment

- Goal 2: a transportation system that's *accessible* and *reliable* for all users
- Goal 3: access to *high-quality transportation options*

Today, almost 1 in 5 Burlingtonians (19%) are 65 years of age or older, like Frank and Priya.¹

By 2051, that number is expected to grow to more than 1 in 4 (more than 25%).^{2,3}

As people age, their needs for travel change. People who are retired don't commute; their travel tends to be for recreational purposes (like going for a walk or to visit family and friends) and for running errands (such as visiting retail locations and services).

Many people lose some physical mobility as they get older and require more accessible street infrastructure and transit services. Some older people may also stop driving entirely, either by choice or by necessity, and need other convenient mobility options.

It is important that Burlington's transportation system supports the needs of an older population so that Burlington's residents can age in place with dignity. Read on to find out about five issues that significantly impact our transportation system's ability to support older residents.

The following pages cover five key transportation issues that affect an aging population. The issues cover the challenges to implementing change in Burlington, the opportunities for change through the IMP, and the necessary trade-offs to making change happen.

1. Accessible, Reliable, and Convenient Transit Options

Most Burlington residents have their most common “destinations” scattered across the city. These may include homes of family members and friends, preferred retail locations, cafes and restaurants, community services, healthcare services, and more. Having convenient options to travel to critical services and social networks is a critical part of enabling residents to comfortably age in place. But many of these take longer than what is comfortable for most non-disabled people to walk or cycle and most people lose some physical ability as they age.

Many people stop driving or drive less as they get older - either by choice (like Priya) or by necessity (like Frank). There are also elderly people who have never had a driving license to begin with. Taxis and ride-sharing are available for some long-distance trips but they are not options that are affordable for daily use for most people. Without accessible, reliable, and convenient transit options, older people can become more “stranded” within a certain radius of their house as they age.

The Challenge

Like many other North American transit systems, Burlington Transit’s system is designed to support commuting trips. Burlington Transit’s routes primarily travel along Burlington’s arterials in a grid-like pattern to move people as efficiently as possible to key transit hubs and terminals - the GO Stations and the Downtown Terminal. Downtown is a popular destination for seniors in Burlington but seniors have less need to regularly travel to the GO Stations because they are less likely to be commuting.

Older adults are more likely to be travelling to destinations within their neighbourhoods that may be too far to walk or roll to. But bus routes that are designed to be efficient for commuters may not be as convenient for trips within the same neighbourhoods or to adjacent neighbourhoods. Riders headed to those locations may be forced to make inconvenient trips to a transit hub “away” from where they ultimately want to go, then transfer, and finally take a different route back in the direction they came from to reach their ultimate destination. Additionally, older adults are more likely to use the bus during the midday but some of the current bus routes can come as rarely as once or twice an hour, especially outside of the peak commuting times (i.e. 6-9am and 3-6pm on weekdays).

The Opportunity

Burlington Transit's fleet of buses is already fully accessible. Burlington Transit also already offers the curb-to-curb Handi-Van service for eligible customers with disabilities like Frank. The next step to making transit service more accessible for seniors would be to improve the fixed route conventional service by increasing frequency of service in the midday and offering more convenient bus connections to destinations within their neighbourhoods or to adjacent neighbourhoods. Adding a form of on-demand transit service to help serve these needs can make transit work better for an older adult population.

These improvements will benefit more than just the senior population, especially since existing conditions in Burlington show that more than half of all daily trips in Burlington are not made for commuting purposes.⁴ A diverse range of Burlington residents who rely on transit because they can't drive or can't afford a vehicle (and who disproportionately experience an inconvenience to their quality of life when transit service is inconvenient) will also benefit from these improvements. Additionally, improved transit service can help attract new riders who currently dismiss transit as an option that cannot work for them. This will help Burlington achieve other transportation system goals, such as eliminating transportation-related carbon emissions.

The Trade-Off

Any service improvements will require additional operating costs on top of what Burlington Transit already uses to provide existing service. The operating costs associated with transit are already expected to go up as the population ages and more people use the Handi-Van service: the Handi-Van service is not as cost efficient as conventional transit but serves a critical role in providing mobility for members in our community. If conventional transit is made more convenient and accessible, some Handi-Van users who are able to may choose to take conventional transit more, reliving some of the anticipated growth in Handi-Van demand.

In prioritizing future investments in transit, the City also has to balance the needs of an aging population with the needs of commuters, who have different needs and generally benefit from efficient grid-like routes that connect to key transit hubs and employment nodes.



2. Walkable and Accessible Neighbourhoods

Older adults like Frank and Priya prefer to age in place because they like where they live. Their home may be in close proximity to important community services, social connections, and recreational opportunities. And as seniors stop driving, start using public transit, and look for opportunities for more recreational opportunities like daily walks, the walkability and accessibility of their community becomes ever more important.

It's unsafe and uncomfortable to walk or roll in a neighbourhood that feels like it was designed specifically to be driven in. These neighbourhoods often have characteristics like narrow sidewalks (or no sidewalks at all), few formalized pedestrian crossings, and a lack of urban design features that make the walk feel pleasant. Without these elements of the "pedestrian realm," people will often choose to drive to destinations that are only a 5-minute walk or roll away.

Connectivity also plays an important role in making a neighbourhood walkable and accessible. Examples of poor connectivity include sidewalks that suddenly end, and absence of frequent and safe opportunities to cross the road, and a lack of safe options for pedestrians trying to cross physical barriers like highways, railways, or geological features. A pedestrian network that doesn't make it easy for people to walk or roll somewhere as directly as possible is not an example of a walkable neighbourhood.

The Challenge

About 26% of local residential roads in Burlington today do not have sidewalks. Most of these are located in the older neighbourhood south of the Queen Elizabeth Way (Q.E.W.).⁴ These are considered to be "gaps" in the pedestrian network and make those areas difficult to navigate as a pedestrian, especially in the winters.

There are also barriers to pedestrian connectivity. The Q.E.W. and the rail lines that pass through Burlington make it impossible for residents of some neighbourhoods to easily walk or roll to some nearby destinations.

Walkability and accessibility also affects transit users. All bus passengers have to walk or use a mobility device for the "first mile/last mile" leg of their trip - to or from the bus stop. A lack of safe and comfortable pedestrian facilities connecting bus stops to other destinations year-round can make a transit trip seem very unappealing or impossible to make, especially for people with mobility impairments.



The Opportunity

Filling in pedestrian network gaps in residential areas and enhancing the pedestrian realm in locations of high pedestrian activity (like main streets, shopping complexes, around community services, etc.), will help improve the walkability and accessibility of Burlington's neighbourhoods. Improved walkability and accessibility benefit older adults who prefer to age in place as these qualities offers them convenient access to destinations in their neighbourhood and opportunities for recreational walks and rolls.

Improved walkability and accessibility also makes walking more appealing to other Burlington residents, which is a desirable outcome. More walking in the community helps shift the community mode share away from cars, improve public health, reduce air pollution, and minimize carbon emissions associated with transportation.

The Trade-Off

Filling in pedestrian network gaps requires additional capital investment and all new pedestrian infrastructure would need to be maintained by the City after it is installed. In particular, significant investments would be required to create more safe crossings of major physical barriers to pedestrian connectivity.

Unlike new streets, existing streets usually have more limited width – within a given right-of-way (R.O.W.), adding new street elements is only possible if space is taken away from something else. Adding new sidewalks to streets that do not currently have any or widening sidewalks would likely require taking away space from driving or parking lanes. Adding more crossing opportunities could also add some seconds of car delay.

However, not prioritizing walkability and accessibility today will lead to neighborhoods where older adult residents have limited opportunities for walking at a time when walking may become a primary way to exercise and travel to important destinations.

3. Accessible Street Design

Pedestrian facilities come in all shapes and sizes. Simply having them doesn't mean that they are convenient for people of all ages and abilities. For instance, narrow sidewalks make it difficult for people using mobility devices (like Frank) or pushing strollers to pass each other on the street. A lack of curb cuts may be a tripping hazard for people with mobility or vision impairments and may make it impossible for someone using a mobility device to get into the sidewalk. Long distances between safe pedestrian crossings may be an annoyance to a non-disabled pedestrian but can be a major inconvenience to someone with mobility impairments who is not able to stand or walk for long periods of time or at all.

An aging population needs a network of streets that prioritize accessibility through their design. Having these streets helps make a community more walkable.

The Challenge

Burlington's existing standards for street design are from 2005. Best practices for accessible streets that serve the needs of people of all ages and abilities have evolved since that time. For example, Burlington's current standards permit 1.5m-sidewalks on streets with a R.O.W. narrower than 35m. Today's best practices suggest that 1.5m should be the minimum width for a sidewalk in residential areas but sidewalks in locations with high pedestrian activity (like main streets) should be wider.⁵ This is because different pedestrians have different "width envelopes" – a single non-disabled person walking needs about 0.7m of width but a person using a mobility device needs about 0.9m.⁶ Therefore, a 1.5m sidewalk does not allow two people using wheelchairs to pass each other under summer conditions and usable sidewalk space often narrows in the winter due to snow pileups.

Access to the curb is another challenge. The rise of delivery services means the more vehicles are stopping and loading by the sides of all street. New street designs (like physically separated bike lanes) push the pedestrian realm further from the roadway. And new modes – like e-scooters – are often parkers beside the curb. These practices can conflict with seniors like Frank, who need to board wheelchair accessible vehicles.

The Opportunity

Accessibility elements of driveways and walkways on private property are already covered until Burlington's 2016 Accessibility Design Standards for all facilities in the city. It's now time to modernize the standards for street design to ensure that best practices for accessibility are embedded in Burlington's street network. It's the also the time to think about how all the new modes and ways of travelling in the future are going to coexist within a street R.O.W. for all people - those with disabilities as well as those who are not disabled.

The Trade-Off

The infrastructure that can be included on any street is limited by the street R.O.W. This means that improving conditions for some users – like widening sidewalks for pedestrians – can only occur if space is taken away from something else. These trade-off decisions can be difficult to make but should be aligned with values and goals of the community.

Burlington needs to make sure that adding new forms of mobility and improving mobility for modes that have not been prioritized in the past (like cycling) does not make transportation infrastructure inaccessible for some residents.



4. Winter Maintenance of Active Transportation Facilities

Having a connected pedestrian network and accessible and comfortable facilities for walking do not cover all the parts of the walkability puzzle. Without proper maintenance, a community with the best possible pedestrian infrastructure will only be walkable for half of the year. Historical data shows that Burlington experiences an average of 100cm of snowfall each year.⁷ This number is expected to change due to effects of climate change, which will result in more days of heavy precipitation (20mm or more in 24 hours), more freezing rain and ice in the winter, and more higher intensity storms.⁸

Winter conditions can already be dangerous for people walking without climate change in the mix. A study in Umeå in Sweden found that 79% of pedestrian injuries occurred in the winter months and two-thirds of injured pedestrians has slipped and fallen due to slippery conditions.⁹ Other data from Sweden shows that pedestrians are three times more likely to get injured due to slippery winter conditions in the winter than motorists.¹⁰

Seniors, who are more likely to experience loss of physical mobility with age, are more susceptible to falls and injuries when proper winter maintenance of pedestrian facilities isn't carried out. This is particularly important because falling is the cause of 85% of hospital injury admissions for people aged 65 or over in Halton Region.¹¹

The Challenge

Snow clearance has historically prioritized cars over active transportation modes – walking and cycling. Today in Burlington, sidewalks, multiuse pathways (MUPs), and transit stops are plowed by the City if there is accumulation of more than 5cm of snow. These pedestrian facilities are plowed only after all the roads are cleared, which can take up to 72 hours after a snowfall (though the city aims to clear sidewalks sooner than that, especially after a significant snowfall).

Existing on-street cycling facilities (none of which are physically separated from the roadway) are cleared in accordance with the road schedule. However, with the approval of the Burlington Cycling Plan by Council in March 2021, new physically separated facilities will be implemented along some streets. These will require new winter maintenance policies and equipment.



The Opportunity

All active transportation users at risk of serious injury due to slippery winter conditions and this risk becomes even greater among an aging population. Older adults who are worried about the risk of injury can become housebound and socially isolated during the winters. Prioritizing the winter maintenance of pedestrian facilities and bus stops enables older adults and other pedestrians stay safe, self-sufficient, and socially connected.

The addition of new protected cycling facilities is also an opportunity to set new winter maintenance policies that prioritize cycling infrastructure from the start.

The Trade-Off

Winter maintenance for any mode is costly. These costs include the actual effort by staff and the purchase and maintenance of equipment, which can be unique specialized for different modes (e.g. standard road snow plows are not suited for clearing sidewalks or physically separated bike lanes). And with more intense and unpredictable weather events due to climate change, more winter maintenance of all infrastructure may be required in the future compared to today.

With finite resources, prioritizing active transportation maintenance could mean completing it before some lower priority roadways are cleared or requiring more resources than available today.

However, not investing into better and more efficient winter maintenance of active transportation facilities can lead to more people getting hurt, especially among older adults. And the medical care and productivity losses for these injuries can cost society up to four times as much as the cost of keeping roads clear of ice and snow.⁹

5. Minimizing Conflicts on Pedestrian Facilities

Access to nature is valued by all Burlington residents, regardless of age. Many older adults who are retired like Frank and Priya have more opportunities for recreational walks and tend to frequent the city's trails and MUPs. Trails and MUPs are typically shared by cyclists and pedestrians, which creates potential for collisions between users of these two modes travelling at different speeds. And as mentioned earlier, seniors are more susceptible to serious injuries due to collisions and falls.



Emerging technologies are also adding new slow-moving methods of travel that generally fall under the “cycling” umbrella. In recent years, micromobility devices like e-bikes and e-scooters have popped up in cities around the world. Often, these are shared devices that can be rented by users for short trips. Since they operate at similar speeds to conventional bicycles, municipalities around the world typically permit micromobility modes on the same facilities as bicycles, which often include trails and MUPs.¹²

The Challenge

Burlington does not currently have a by-law prohibiting bikes from using sidewalks. And serious injuries – and sometimes even deaths – can and do occur as a result of collisions between bicycles or scooters and pedestrians.

Limited R.O.W on streets can make it difficult to create accommodate separate dedicated spaces for people walking and people using modes that “roll.” from people walking. It can be acceptable to put bicycles and scooters on the road with vehicles on streets that have small traffic volumes and low speeds. But bicycle and e-scooter riders are physically vulnerable and cannot travel at the same speeds as cars. This makes it unsafe to ride bikes or scooters in mixed traffic with high vehicle volumes and speeds. The goal is to keep pedestrians, cyclists, and scooter users safe from vehicle collisions while also minimizing the risk of collisions with each other.

The Opportunity

The recently approved Burlington Cycling Plan will help separate cyclists from pedestrians on the City's streets. Implementing the recommendations of the Cycling Plan will create a network of on-street cycling facilities that are comfortable for cyclists of all experience levels. This will help shift cyclists from sidewalks into cycling facilities.

Creating better policies, additional education and awareness, and improving enforcement of appropriate transportation etiquette can help cyclists and pedestrians co-exist more safely on the City off-street active transportation network. This will also create opportunities to introduce new transportation technologies like micromobility, which aren't going to go away because people like using them. A review of 84 million micromobility trips in the U.S. in 2018 found that people used micromobility modes to commute, as a first mile/last mile connection to transit, and for recreation.¹³ Rather than rejecting micromobility outright, offering modern transportation options can help attract people to Burlington and make the city more vibrant. In fact, the electric motors in e-scooters and e-bikes can help people with limited mobility enjoy these modes for recreation – including seniors!

The Trade-Off

Burlington will need more people to walk, bike, and take other non-car modes (including micromobility) to achieve the community's sustainability and city-building goals. To encourage this, Burlington will be challenged with finding a "sweet spot" of enforcement (to prevent speeding on shared facilities), education (to inform all active transportation users on safe behaviour on shared facilities), and physical separation of active transportation users where required.

It's important to note that although tragic, serious collisions between cyclists or scooter riders with pedestrians are not very common. In the U.K., 162 people are involved in bicycle-pedestrian collisions for every billion miles (or 1,609,344,000 km) walked¹⁴ and 99% of pedestrians deaths in the U.K. are due to collisions with vehicles.¹⁵ In fact, a study in Finland showed that near-misses are 50 times more likely than actual collisions between cyclists and pedestrians and that collisions typically occur on shared facilities where cyclists are speeding and pedestrians are completing unexpected manoeuvres.¹⁶ Alberta Health Services Data also shows that after two years of e-scooter pilots in Calgary and Edmonton in 2019 and 2020, serious e-scooter injuries almost always affect riders, not pedestrians.¹⁷

What Do You Think?

In this paper, we've discussed how Burlington's transportation system can be improved to support people like Frank and Priya, who are projected to make up over 25% of Burlington's population by 2051. We've suggested:

1. Adding more accessible, reliable, and convenient transit options;
2. Improving neighbourhood walkability and accessibility;
3. Making street design more accessible;
4. Improving winter maintenance of active transportation facilities; and
5. Developing a strategy to encourage active transportation use while minimizing conflicts on pedestrian facilities.



Now it's your turn:

- What transportation issues will most affect you or your loved ones in Burlington over the next few decades?
- Did we capture all of the factors that will help Burlington's transportation system of the future support an older population of residents who want to age in place?
- Did we miss any transportation issues or solutions that will affect Burlington residents like Frank and Priya?

Let us know by **[DOING TASK – SURVEY?]** at **[CITY WEBSITE]!**

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[OTHER STAFF WHO CONTRIBUTE]

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Dennis Kar

[OTHER STAFF WHO CONTRIBUTE]

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Glossary

active transportation – modes of travel that use human activity to propel people forward, such as walking and cycling

all ages and abilities infrastructure – infrastructure that is designed to appeal to users of all ages, abilities, and comfort levels; often used to describe cycling infrastructure but can be used to describe other infrastructure or facilities

cycling facilities – infrastructure made specifically for people who are cycling, such as painted or separated bike lanes, cycle tracks, multiuse pathways, etc.

curb cuts – a slope in the curb that is typically seen at intersections

first mile/last mile – the beginning or end leg of a transit user's journey, from door to bus stop or bus stop to door; this leg of the trip is commonly completed by walking, cycling, or using a mobility device

fixed route – a traditional transit service model where buses follow the same route at pre-determined scheduled times

micromobility – a mode of travel that uses human-powered or electric light vehicles that can carry one or two passengers at a time, such as bicycles, scooters, and small vehicles

mode – a way of transportation people of goods, such as driving, taking public transit, cycling, walking, using heavy trucks, and more

mode share – the proportion of trips by residents of a community that are made by different modes

multiuse pathway (MUP) – a paved trail on on-street facility that is shared by all active transportation users

on-demand transit – a flexible transit service model where riders can request specific pick-up and drop-off times and/or locations, similar to ride-hailing but within a set of fixed parameters like service area, general stop locations, etc.

pedestrian facilities – infrastructure made specifically for people walking, such as sidewalks, multiuse pathways, etc.

right-of-way (R.O.W.) – width of a street between property lanes that accommodates the vehicular roadway, pedestrian facilities, cycling facilities, etc.