

# Aging and Safe Active Transportation: Issues and Courses of Action for Public Roadway Development

March 2017

Canada's population is aging: a growing portion of the population can be classified as seniors – that is, persons aged 65 and over.<sup>1</sup>

This reality invites reflection and debate about changes that should or could be made in several areas of public policy, including that of safe active transportation. What are the relevant aspects of this phenomenon for public health actors promoting safe active transportation through appropriate design of streets and street networks? What courses of action might they follow in attempting to promote streets and street networks conducive to health and safety within this context? This document explores responses to some aspects of these questions.<sup>2</sup>

## The promotion of safe active transportation for seniors through street and street network design

In Canada, since the 1930s-1940s, public roadway networks and urban spaces have been organized predominantly to accommodate motor vehicle traffic. Two related consequences follow from this. Firstly, active travel modes (walking, cycling, etc.) are less pleasant and safe and, secondly, the use of these modes for utilitarian

trips is marginalized. It is in opposition to this underlying trend that many public health actors have been mobilizing in recent years to promote safe active transportation.

## Aging and active transportation

When age has been included as a mobilizing factor by such actors, it has mainly been a secondary consideration. There is one notable exception, although it is limited to the home-to-school routes of young school children: efforts to promote safe active travel through programs such as "On the Move to School" in Québec or the various "Safe Routes to School" programs elsewhere in Canada.<sup>3</sup> Such detachment regarding the age criterion can be explained by the population health approach guiding public health initiatives in Canada, which leads actors to focus on the population as a whole rather than on individuals or on any particular subgroup. However, because the aging of the population means that the health status of seniors will be a more significant determinant of the health status of the population as a whole, it seems important to address this phenomenon more directly, and examine its ins and outs. Moreover, one can assume that streets and street networks that are safer and more pleasant for seniors would also be so for users of all ages.

## Some contextual aspects

Some of the challenges of promoting safe active transportation for seniors may be grasped by identifying social and demographic trends. On the one hand, sedentariness tends to increase with age among adults in general, and among seniors

<sup>1</sup> Using the age of 65 as a criterion for the definition of a senior citizen is somewhat arbitrary. Nevertheless, many public or private programs or services use this criterion. It is therefore effective and relatively common as an age category and, as such, it is used in this document. Our intention is not to reify this category and we fully recognize that this convention may evolve. We also readily acknowledge that this category comprises many different realities in terms of mobility and the factors associated with it. In this document, for example, we make a separate distinction for persons over 75 years old when discussing certain issues.

<sup>2</sup> This being an exploratory document, the analysis is based on examples that are intended to be illustrative of the issues and the solution pathways explored. The reader should be aware that the issues could be addressed differently and that the solution pathways were not the subject of a systematic review of the literature.

<sup>3</sup> However, these efforts do not always address the issue of street and street network design.



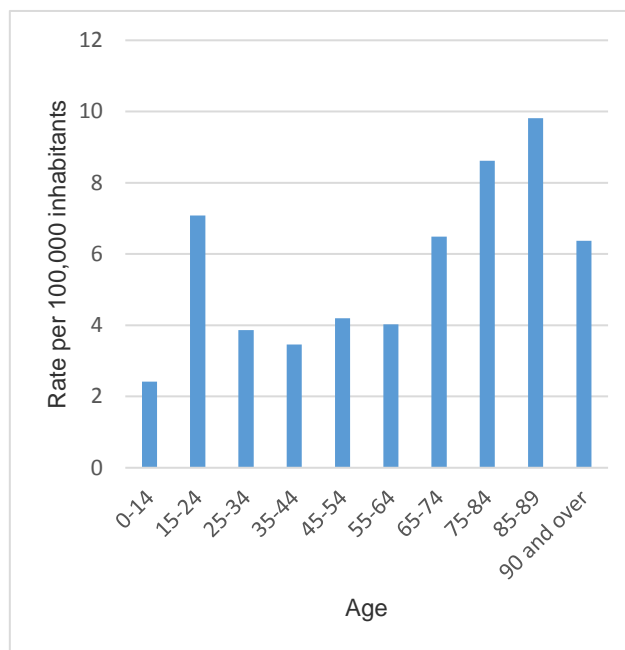
in particular (Ekelund, 2014).<sup>4</sup> In the same vein, the use of active transportation<sup>5</sup> also tends to decrease with advancing age, while the use of cars and public transit increases (except among the most elderly, for whom the use of these modes of transportation also decreases).<sup>6</sup> But these are not immutable phenomena, as seen by the very significant increases in recent years in the amount of walking and cycling done by seniors in some Canadian municipalities. For example, one report shows that between 2001 and 2006 the number of cycling trips carried out by people aged 65 and over increased by 55% in the city of Toronto (Toronto Public Health, 2012).

On the other hand, it appears that the major environmental determinants of the safety of active transportation are generally the same for seniors as for people in all other age categories: the volume and speed of motorized traffic, the width and number of street lanes, infrastructure that protects or separates pedestrians and cyclists from other modes, etc. However, the safety records for seniors seem to indicate that they are particularly vulnerable in higher-risk environments.

For example, for the 2009-2014 period, in Québec, the rate of death and serious injury for seniors resulting from a collision that occurred while they were walking was higher than for all other age groups (see Table 1). In analyzing this record by age sub-category, it can also be seen that for 65- to 74-year olds the rate is somewhat lower than for 15- to 24-year olds, but the rate for these seniors is still about 50% higher than for 25- to 64-year olds. As regards 75- to 84-year olds and 85- to 89-year olds, the rates

for these groups are approximately 100% and 150% higher respectively, as compared to the population aged between 25 and 64 years. For its part, the group comprising those aged 90 and over presents a similar rate to that of 65- to 74-year olds.

**Table 1** Death and serious injury of pedestrians from collisions on public roadways in Québec 2009-2014



Data source: Société de l'assurance automobile du Québec (2015).

Even though the data are generally less detailed, the trends appear similar in other jurisdictions, such as Manitoba, for example (Manitoba Public Insurance, 2012). Various explanations for this state of affairs have been advanced in studies. In summary, they point to **individual** (age, walking speed and reduced cognitive abilities), **situational** (use of walking aids) and **environmental factors** (street design practices and standards, such as the width of streets or the time allotted by signalling for crossing) (Lachapelle & Cloutier, 2017).

Thus, the aging of the population calls for greater efforts to be devoted to promoting safe active transportation, so as to improve the health of Canadians. Moreover, this should lead to stepped-up action at the level of streets and street networks, both to increase the modal share of active transportation and to ensure the safety of travel for seniors. In addition to the major determinants of the

<sup>4</sup> There are two approaches to promoting physical activity in public health. The first is to focus on moderate to intense physical activity, and propose time targets to be reached. The second, which is better aligned with the movement for the promotion of safe active transportation, is to posit that physical activity, even of a low intensity, is beneficial for countering its opposite: sedentariness.

<sup>5</sup> Active transportation should not be confused with recreational walking. Also, it is important to remember that the use of public transit very often involves some amount of walking, except in the case of paratransit or shuttles designed expressly to serve seniors' residences.

<sup>6</sup> Statistics Canada has produced a portrait of the use of cars by seniors in Canada. Retrieved on January 24, 2017 from: <http://www.statcan.gc.ca/pub/11-008-x/2012001/article/11619-eng.pdf>

modal share and safety of travel which are linked to the urban setting (density, land use mix, connectivity, design of public spaces and buildings), several other phenomena appear to be entwined as factors, including the following two.

1. The decline in active transportation among seniors seems to be related to their feelings of insecurity when circulating in the streets. (Cunningham, Michael, Farquhar, & Lapidus, 2005) This insecurity appears to be associated with various phenomena, such as fear of crime, of falling, or of the volume and speed of motorized traffic.
2. The increase in sedentariness and the decline in active transportation among seniors are probably related to various changes in their physical and cognitive abilities. For example, a portion of the senior population has greater difficulty maintaining balance and negotiating curb ascents and descents. These changes can also slow down movement and lead to difficulty in crossing long continuous distances.

Finally, geographic variations tied to aging should not be overlooked. In fact, the populations of all regions are not aging to the same extent, or at the same pace. Local and regional public health actors are not all experiencing the same reality and need to carefully analyze their socio-demographic contexts to see whether and how aging is affecting a given area.

In the next section of the document, we focus on the following question: How can public health actors promote safe active transportation given the context of an aging population?

In brief, the aging of the Canadian population in general and the increase in the proportion of seniors in particular seem to indicate that, all things being equal (financial and energy resources, available public transit and active transportation options, etc.):

- active transportation will be used less and less;
- more and more people will belong to a very advanced age category in which active transportation is much riskier.

All this seems to indicate that the promotion of safe active transportation will become increasingly important and will require more action to be taken on the level of streets and street networks.

## Courses of action for promoting safe active transportation for seniors

As mentioned above, the major determinants of safe active transportation for seniors seem overall to be the same as for the rest of the population. Indeed, density, land use mix, the connectivity of active travel networks, and the volume and speed of motorized traffic are the main determinants of whether or not active modes of travel are adopted and the degree to which they are safe. Within the context of the NCCHPP's work, to date we have chosen to focus mainly on policies and practices related to the design of streets and street networks.

In recent years in North America, particularly outside of Québec, a new movement in street design has been emerging that is characterized by the expression "complete streets" (this is sometimes translated into French as "rues complètes").<sup>7</sup> Firstly, we will position the complete streets movement within the current field of transportation. Next, we will examine the various courses of action introduced by the movement to increase the ease and safety of active transportation for seniors.

### THE COMPLETE STREETS MOVEMENT WITHIN THE FIELD OF TRANSPORTATION

The various actors who adhere to the complete streets movement share certain ideological and normative bases. Indeed, these actors all demonstrate a willingness to view street design in relation to a variety of travel modes (and not only in terms of individual motor vehicles) and in relation to persons of varying ages and levels of ability (instead of taking adults with average abilities as the standard reference). Thus, this approach is at odds with the predominant approach to transportation that has prevailed since the post-war period, which clearly revolves around individual motorized transportation, namely in trucks and cars, and adult users with a relatively high level of agility.

<sup>7</sup> To date, there does not seem to be a similar movement in Québec or in other Francophone settings in Canada. Of course, this is not necessarily evidence of a total absence of safe active transportation design practices or policies. However, at this stage, the actors promoting such practices and policies do not seem to have developed a sufficiently formal network for the development and exchange of knowledge to be identified by such a label.

However, an important dividing line separates actors within the movement. In fact, a large majority of actors calls exclusively for the installation of facilities designed for different ages and levels of ability. In this respect, the policies and practices promoted by these proponents of complete streets seem to fit quite easily within the tradition of so-called universal design. This tradition, which extends far beyond questions of street and street network design, gradually became institutionalized in North America beginning in the 1970s (Story, Mueller, & Mace, 1998).

For certain other actors, however, the aim is to promote a design that benefits many other subgroups or segments of the population besides those defined by age or ability level. For example, for the National Complete Streets Coalition of the United States: "Streets are a vital part of livable, attractive communities. Everyone, regardless of age, ability, income, race, or ethnicity, ought to have safe, comfortable, and convenient access to community destinations and public places—whether walking, driving, bicycling, or using public transit. But too many of our streets are designed only for speeding cars or, worse, creeping traffic jams."<sup>8</sup> These broader concerns about equity can also be found in a publication put out by the umbrella organization for the National Complete Streets Coalition, which suggests evaluation criteria for complete streets policies, and they are also integral to the complete streets guidelines of the City of Toronto<sup>9</sup> (AARP, 2015).

By adopting a broader view of the inequalities that need to be addressed, these actors seem to be aligned instead with the environmental justice movement as it first took shape in the major highway programs of the 1960s-1970s in the United States. They seem to be at odds with the tradition of universal design, which apparently did not focus much attention on the economic or ethnic inequalities embedded in public roadway development policies and practices and in those of transportation more generally. Public health actors concerned about health inequalities may be faced here with a decision about what position to adopt with respect to equity issues. Reflecting on this

<sup>8</sup> Retrieved on March 29, 2016 from: <http://www.smartgrowthamerica.org/complete-streets>

<sup>9</sup> Retrieved on May 19, 2016 from: <http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=bdb604f82477d410VgnVCM10000071d60f89RCRD>

positioning is all the more important given that street design policies and practices intended to enhance usability for cyclists or pedestrians are often identified as one of the factors fuelling the dynamics of gentrification responsible for displacing the most disadvantaged segments of the population (Flanagan, Lachapelle, & El-Geneidy, 2016).

### SOME COURSES OF ACTION FOR PUBLIC HEALTH ACTORS

In any case, aging and its associated issues probably serve to strengthen the justification for and the importance of a number of interventions, standards or principles already promoted by many public health actors. Indeed, densification, increased mixity of land use and the connectivity of public roadway networks, as well as designs that encourage active modes of transportation and enhance their safety (protected bike paths, raised intersections and other protective devices separating active modes of travel from the flow of motorized traffic or slowing down motor vehicles) support the adoption of active modes of travel and improve transportation safety. Such devices are particularly relevant for seniors, as for other categories of persons with reduced agility and ability levels or high levels of insecurity.



Figure 1 A sidewalk crossing in Stockholm (Sweden)

Since the walking surface is continuous, pedestrians do not have to descend to or ascend from the street. This is particularly user-friendly for people with motor disabilities, which affects more very elderly people. Crosswalks and raised intersections are related options serving a similar purpose, although in both of these cases the street area is preserved, whereas it is interrupted in the case of continuous sidewalks.

Photo credit: Lior Steinberg

Source: <http://www.lvbcity.com/blog/2014/9/sidewalks-instead-of-crosswalks>.

The aging of the population may prompt political actors to assign more importance to design features which are not currently promoted widely, but which seem particularly useful for the most elderly seniors, such as: continuous sidewalks, raised pedestrian crossings or pedestrian priority streets<sup>10</sup> (see Figure 1). Like other interventions, these force drivers to adopt slower speeds, thus improving the overall safety and usability of streets. Moreover, a shared feature is continuity of the walking surface - although this is not always the case for pedestrian priority streets. Such continuity of the walking surface can be particularly helpful to individuals who have difficulty negotiating changes in surface level. This could also lead to the promotion of other types of adapted infrastructure, such as the installation of benches on the routes most frequently used by seniors in their daily activities – as this would make it easier for them to rest periodically.

In some parts of the country, seniors' associations are already fairly involved in the development of policies related to mobility in general, and also to the design of streets and street networks in particular. One example would be the Table de concertation des aînés de l'île de Montréal [the Island of Montréal seniors' roundtable], which gave rise to several projects and activities intended to influence street design.<sup>11</sup> Such associations are important potential allies for public health actors.

Various sites and networks that enable exchange and collaboration among "age-friendly" cities and communities can also prove useful resources for public health actors seeking to influence the design of streets and street networks. For example, the Public Health Agency of Canada has developed a section of its website devoted to age-friendly communities.<sup>12</sup> As a final example, the World Health

Organization has established the WHO Global Network for Age-friendly Cities and Communities.<sup>13</sup>

The design or redesign of streets and street networks is just one dimension of the built environment likely to be modified within the context of an aging population. We can also assume that it will probably be necessary to modify the design and organization of residential and commercial buildings, public transit stations, parks and public squares, etc. However, streets constitute an important element – the most significant in many cities – of contemporary public spaces, and since their current design results in a high-risk and rather unfriendly environment for seniors, it seems quite important that they continue to be a focus of attention.

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<sup>10</sup> For more information on pedestrian priority streets, the following information brief may be consulted: [http://www.ncchpp.ca/docs/2016\\_BuiltEnvBati\\_PedestrianPriorityStreets\\_En.pdf](http://www.ncchpp.ca/docs/2016_BuiltEnvBati_PedestrianPriorityStreets_En.pdf). Several other publications about interventions or standards that may be suitable for seniors, among other users, are available on our website: traffic-calming interventions; municipal standards for reduced lane widths and a 30-km/h speed limit on local streets, etc. See: <http://www.ncchpp.ca/175/publications.ccnpps>

<sup>11</sup> Retrieved on May 17, 2016 from: <http://tcaim.org/dossiers/transport-et-mobilite-des-aines/transport-et-mobilite-des-aines/>

<sup>12</sup> Retrieved on May 19, 2016 from: <http://www.phac-aspc.gc.ca/seniors-aines/afc-cao-eng.php>

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<sup>13</sup> Retrieved on May 17, 2016 from: [http://www.who.int/ageing/projects/age\\_friendly\\_cities\\_network/en/](http://www.who.int/ageing/projects/age_friendly_cities_network/en/)

## References

- AARP. (2015). *Evaluating complete streets projects: A guide for practitioners*. Washington, D.C.: AARP Government Affairs, State Advocacy & Strategy Integration. Retrieved from: <http://www.smartgrowthamerica.org/documents/evaluating-complete-streets-projects.pdf>
- Cunningham, G. O., Michael, Y. L., Farquhar, S. A., & Lapidus, J.. (2005). Developing a reliable senior walking environmental assessment tool. *American Journal of Preventive Medicine*, 29(3), 215-217.
- Ekelund, U. (2014). Lifetime lifestyles II: Physical activity, the life course, and ageing. In D. Kuh, R. Cooper, R. Hardy, M. Richards & Y. Ben-Shlomo (Eds.), *A Life Course Approach to Healthy Ageing*, (pp. 229 – 245). New York: Oxford University Press.
- Flanagan, E., Lachapelle, U. et El-Geneidy, A. (2016). Riding tandem: Does cycling infrastructure investment mirror gentrification and privilege in Portland, OR and Chicago, IL? *Research in Transportation Economics*, September. Consulté en ligne à: <http://www.sciencedirect.com/science/article/pii/S0739885915300287>
- Lachapelle, U. & Cloutier, M.-S. (2017). On the complexity of finishing a crossing on time: Elderly pedestrians, timing and cycling infrastructure. *Transportation Research Part A*, 96, 54–63. doi: <http://dx.doi.org/10.1016/j.tra.2016.12.005>
- Manitoba Public Insurance. (2012). *Traffic collision statistics report 2012*. Winnipeg, Manitoba. Retrieved from: <https://www.mpi.mb.ca/en/PDFs/TCSR2012.pdf>
- Société de l'assurance automobile du Québec. (2015). *Bilan 2014 : accidents, parc automobile et permis de conduire*. Direction de la recherche et du développement en sécurité routière. Québec, Québec: Gouvernement du Québec.
- Story, M. F., Mueller, J. L., & Mace, R. L. (1998). *The universal design file. Designing for people of all ages and abilities*. Revised edition. Raleigh, North Carolina: Center for Universal Design, NC State University.
- Toronto Public Health. (2012). *Road to health. A Healthy Toronto by Design report*. Toronto, Canada: City of Toronto. Retrieved from: <http://www.toronto.ca/legdocs/mmis/2012/hl/bgrd/backgroundfile-46520.pdf>

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