Factsheet 1

Improving the safety of intersections and crossing

Included in this factsheet

1. Issues relating to pedestrian safety at crosswalks,
2. Risk factors,
3. Preferred solutions,
4. Examples of best practices.

Intersection of Jean-Talon Street West and Hutchison Street, near the Parc metro station and the Place de la Gare-Jean-Talon public space, where pedestrian crossing is prohibited. Credit: MUEC.

In urban environments, encouraging active mobility is an excellent strategy to promote sustainable development and public health. That said, it is critically important to ensure the full safety of vulnerable road users. The risk of accident to pedestrians and cyclists is highest when they are attempting to cross a road, due to exposure to motor vehicle traffic. The built environment (i.e. the physical lay-out of a given road at an intersection) is a key determining factor in pedestrian and cyclist safety.

Réseau Quartiers verts — Active Neighbourhoods Canada

Montréal Urban Ecology Centre

Sustainable Calgary

tcat toronto centre for active transportation

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VOLUME OF TRAFFIC: A PRIMARY RISK FACTOR

As pedestrians cross a street, their risk of injury increases as the volume of motor vehicle traffic rises. In Montreal, young pedestrians are 39 times more likely to be injured when crossing an intersection with very heavy traffic (5th quintile) than they are at intersections where the volume of traffic is very low (1st quintile).[5]

THREE STRIKES AGAINST: LOW -INCOME NEIGHBOURHOODS

The traffic injury risk to residents of a city's most low-income neighbourhoods is generally higher than that of residents in affluent communities.[6,7,8] Three factors are at play:

1) Fewer residents in low-income neighbourhoods own cars, and therefore more of them are pedestrians;
2) Through-traffic is much heavier in disadvantaged neighbourhoods, which typically contain a higher concentration of streets where traffic flow is heavy;
3) These neighbourhoods may not have been designed with pedestrian safety in mind.

Ease and safety of the crossing: two essential factors in promoting walking

A growing number of Canadian municipalities are implementing measures to encourage citizens to adopt active modes of transportation. While it is clear that active mobility plays a leading role in fostering sustainable development and improving public health, the safety of vulnerable road users (pedestrains and cyclists) must be prioritized. In addition to raising the rates of active transportation, all strategies designed to promote active mobility must also seek to reduce the number and severity of collisions involving these users.

To do so, areas designed for street crossings must be thoroughly secured through the use of appropriate layouts and build-outs. Priority must be given to low-income neighbourhoods within these municipalities, as well as to streets with heavy motor vehicle and pedestrian traffic. These major arteries feature heavy through-traffic as well as locations where active transportation abounds, such as schools, colleges and universities; major employment hubs; hospitals; parks; main bus stops and subway stations; commercial arteries, etc.

The intersection: points of connection... and of potential conflict

Intersections – zones where two streets meet – facilitate the movement of pedestrians and cyclists by increasing the number of directional options available to them. However, they are also zones of potential conflict and collisions between motor vehicle users on the one hand and users of active transportation on the other, as these vulnerable users are exposed to motor vehicle traffic. Most collisions involving pedestrians occur at intersections[1,2] particularly those with at least one major artery.[3,4]

A number of factors influence the safety of vulnerable users as they cross a street. These include the volume and speed of motor vehicle traffic; visibility; the length and number of lanes to be crossed; the existence of a pedestrian refuge halfway across the road; maintenance, etc. In addition to these environmental factors, the vulnerability of specific pedestrian groups is also an issue; the most at-risk user groups include children, the elderly, the blind and visually impaired, and persons with reduced mobility.

Preferred solutions

A number of strategies can contribute to increasing pedestrian safety and comfort when crossing a road.

Reducing pedestrians' exposure to motor vehicle traffic by:

- Shortening the length of the crossing: reducing the overall width of the roadway, reducing the number and width of traffic lanes, shortening the intersection's radius of curvature, building curb extensions, or installing pedestrian refuge halfway across the intersection to enable two-stage crossing;
- Installing stop signs or lights to requiring vehicle traffic to stop;
- Creating a pedestrian-only phase at intersections equipped with traffic lights, and ensuring persons with reduced mobility have enough time to cross safely.

Improving visibility for all road users by:

- Clearly identifying pedestrian crossings: through the use of paint, colour variations, differing paving materials or textures, illuminated signage, etc.;
- Prohibiting parking near intersections and pedestrian crossings (Most provincial standards indicate for a minimum distance of five metres);
- Ensuring all sidewalks surrounding an intersection are free of objects that impair proper visibility, such as large street fittings or fixtures, hedges or other tall vegetation, etc.;
- Building curb extensions;
- Ensuring sufficient lighting at adjacent intersections and crossings.

PROVIDING ADEQUATE INFRASTRUCTURE.... ALL YEAR ROUND!

To maintain the safety and ease of pedestrian movement, existing urban layouts to facilitate street crossing must be appropriate for year-round use. Proper snow removal, de-icing initiatives and drainage along these intersections are critical, as is adequate security along construction sites, particularly those which encroach onto an intersection or pedestrian path.

Intersection of Villeneuve and Esplanade Avenue, Montreal.
Crédit : MUEC

Decreasing motor vehicle speed by:

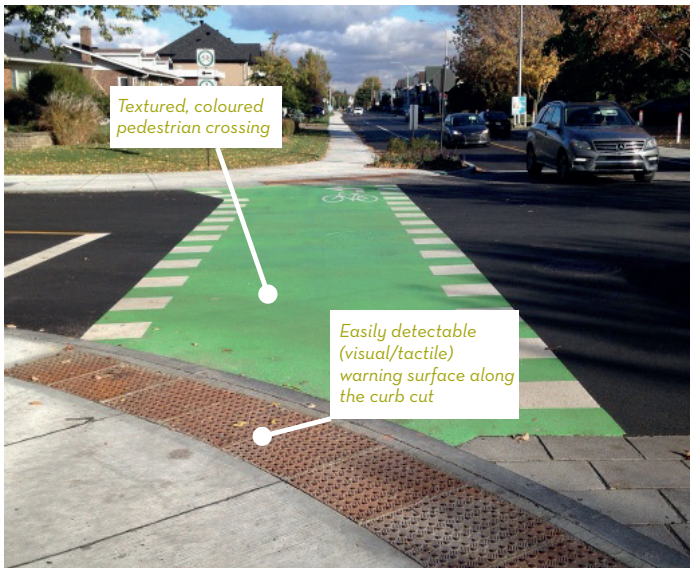
- Calming traffic at approaches to intersections (and mid-block crossings): by installing speed bumps or other traffic calming measures, building curb extensions, using visual (lines) or physical (addition of a centre island or bicycle path, etc.) means to narrow the roadway, building chicanes, etc.;
- Lowering the speed limit (must be accompanied by physical measures to be truly effective);
- Installing illuminated panels displaying actual traffic speed;
- Increasing police surveillance.

Reducing the volume of motor vehicule traffic by:

- Investing in public transit;
- Providing adequate development for active transportation modes;
- Developing car-sharing initiatives;
- Offering carpooling incentives.

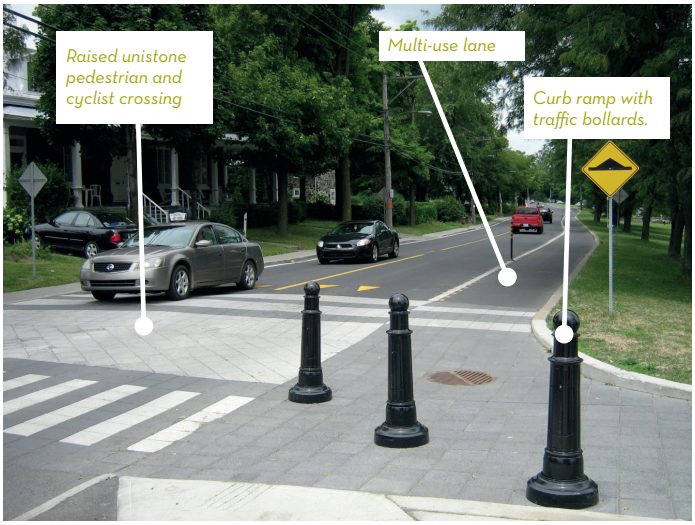
Success stories / inspiring examples

1. Redesigning chemin des Prairies, Brossard



Chemin des Prairies, between Taschereau Boulevard and Orient Avenue in Brossard. Credit: City of Brossard

2. Curb extension with traffic bollards



Chemin du Richelieu in Beloeil. Credit: Montérégie Public Health Agency.

LINK TO TOOLKIT

http://www.ecologieurbaine.net/fr/transformer-sa-ville

LINK TO UP GUIDE

http://www.ecologieurbaine.net/en/documentation-en/technical-guides/79-urbanplanningguide

SOURCES

1 Morency, Patrick and Marie-Soleil Cloutier (2005). *Distribution géographique des blessés de la route sur l'île de Montréal (1999-2003). Cartographie pour les 27 arrondissements.* Health and Social Services Network of Montreal.

2 Toronto Public Health (2015). *Pedestrian and Cyclist Safety in Toronto.*

3 Morency, Patrick, Judith Archambault, Marie-Soleil Cloutier, Mathieu Tremblay, Céline Plante and Anne Sophie Dubé (2013). *Sécurité des piétons en milieu urbain : enquête sur les aménagements routiers aux intersections.* Report.

4 Toronto Public Health (2015). *Op. cit.*

5 Morency, Patrick, François Tessier, François Thérien and Judith Archambault (2013). *La sécurité des piétons à Montréal : améliorer les aménagements routiers.* Brief prepared by the Health and Social Services Network of Montreal and presented to the City of Montreal's Standing Committee on Transportation and Public Works.

6 *Idem.*

7 Oliver Lisa N. and Dafna D. Kohen (2009). "Neighbourhood income gradients in hospitalizations due to motor vehicle traffic incidents among Canadian children." *Injury Prevention.* Vol. 15, no. 3, p. 163-169.

8 Yiannakoulias, Niko and Darren M. Scott (2013). "The effects of local and non-local traffic on child pedestrian safety: a spatial displacement of risk." *Social Science & Medicine.* Vol. 80, p. 96-104.