Factsheet 4

Traffic calming measures to decrease speed

Included in this factsheet:

1. Safety issues related to motor vehicle traffic speed in urban settings,
2. An efficient strategy to reduce traffic speed,
3. Preferred solutions,
4. Some inspirational examples.

Curb extensions with plant wells near Saint-Pierre-Claver Elementary School, Montréal, June 2012. Credit: MUEC

In an urban environment, motor vehicle traffic speed may generate safety and comfort problems for pedestrians and cyclists, in addition to disturbing the peace of nearby residents and users of public spaces. Of the many strategies designed to manage speed, traffic calming measures which modify the physical layout of the roadway to force drivers to slow down are considered the most effective. In addition to reducing traffic speed, traffic calming measures implemented along neighbourhood streets can also discourage through traffic and entice motorists to use more suitable alternate roads. In this way, these measures contribute to creating safer, more pleasant living environments for all users.

Réseau Quartiers verts — Active Neighbourhoods Canada

Montréal Urban Ecology Centre

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The achievement of this project was made possible by a financial contribution from the Public Health Agency of Canada.

The views expressed here do not necessarily reflect the official position of the Public Health Agency of Canada

Ensuring safety and peace in our living spaces

Over the past few decades, urban sprawl and its corresponding reliance on automobiles have resulted in a relentless increase in the number of motor vehicles moving throughout North American cities.

Motor vehicule traffic speed represents a major risk to the security and comfort of pedestrians and cyclists, particularly in urban settings. Governments and civic authorities alike have instituted a wide range of operations to reduce traffic speed, including public education campaigns, speed limit reductions in certain areas, heightened police surveillance, and more.

As part of an overall strategy, these operations rely primarily on the goodwill and constant vigilance of drivers or the omnipresence of police officers, a situation which cannot be sustained indefinitely. Using traffic-calming measures that modify the physical layout of roads is widely considered to be the most efficient strategy to slow motor vehicle traffic.

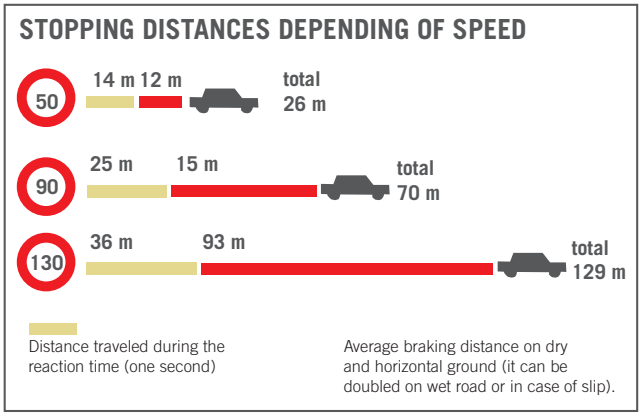
Traffic calming measures are considered "passive" and "self-enforcing," [1,2]; in other words, their very presence forces drivers to reduce their speed. Respecting these measures does not require police intervention. Consequently, they protect everyone, at all times.

SPEED AND PERCEIVED SAFETY

In addition to significantly increasing collision risk, speed can also foster a sense of danger and discourage certain people from active travel[3]. When traffic speed is high, children, the elderly, and individuals with reduced mobility are more likely to feel threatened and unsafe. This environment may also dissuade parents from allowing their children to walk or cycle to school.

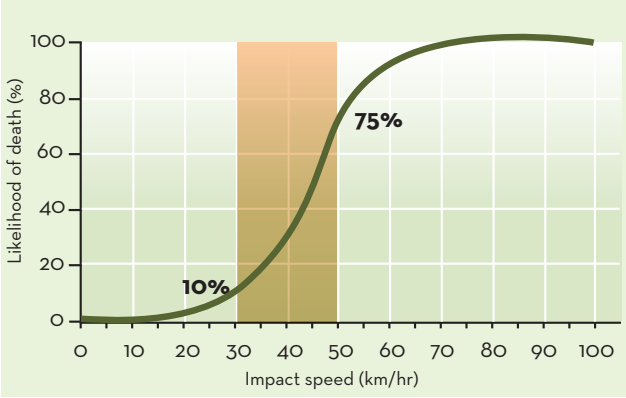
Speed: a major factor affecting road safety

Driving speed is a leading factor affecting the safety of pedestrians and cyclists. It raises the collision risk by restricting the driver's peripheral field of vision and increasing the motor vehicle's stopping distance (the distance travelled between reaction time and braking time). Speed is also a determining factor in collision severity, as impact force increases rapidly as motor vehicle speed rises.[4]



Source: http://assureurs-prevention.fr

A pedestrian is 7.5 times more likely to die after colliding with a car travelling at 50 km/h than if was moving at 30 km/h.



Source : MTQ (2011)

Preferred solutions

A variety of approaches based on underlying objectives

The preferred approach depends largely on the primary objective. To correct an isolated safety issue related to traffic speed within a well-defined zone (e.g. a problematic intersection or part of a road bordering a school), a single design feature may be sufficient. The number of collisions, injuries and fatalities, or the number of speed-related complaints made by residents regarding a specific location will help identify areas where decisive action should be prioritized. This is known as the "blackspots approach.[5]"

However, a broader "area-wide" approach should be adopted by municipalities with a more global scope, perhaps those seeking to improve liveability in a particular neighbourhood, promote active modes of transportation, heighten the appeal of a tourist area, or support revitalization efforts across part of their jurisdisction. This approach, which covers all roadways in the targeted zone, is especially suitable for urban neighbourhoods located in and around city centres which experience a high volume of through traffic[6].

Multiple design possibilities

Traffic-calming measures are extremely diverse. They are generally divided into three design categories:

- Vertical deflections (e.g. speed humps, speed cushions, raised crosswalks);
- Horizontal deflections (e.g. chicanes, on-street parking, or mini roundabouts);
- Obstructions (e.g. diagonal diverters, dead-end).

These measures are normally complemented with appropriate signage.

Plessis Street, Montréal, 2015. Credit: MUEC

On-street parking, parallel to the curb but curving slightly into the centre of the roadway, decreases the space available for through traffic. The net effect is a reduction in motor vehicle speed.

Vertical deflection measures reduce traffic speed by forcing drivers to slow down in an attempt to minimize the unpleasantness of crossing these features. For their part, **horizontal deflections** discourage cut-through traffic and some may also reduce speed and conflicts. Finally, **obstructions** are used at and between intersections to discourage cut-through traffic while enhancing the neighbourhood's liveability and appeal.

Initially, the selection of an appropriate measure is founded on the purpose and context of its implementation. For example, studies have shown that vertical deflections are particularly effective in significantly reducing speed. Therefore, these measures are often used in situations where particularly vulnerable pedestrians or cyclists (children, for example) are at greatest risk.[7] Other practical issues must also be considered, such as the impact on neighbouring streets, the effect these measures may have on buses and emergency vehicles, maintenance costs and complications, and available funding.

Calming traffic and removing snow, at the same time? It's possible!

When considering traffic calming measures, Canadian municipalities must remain mindful of winter conditions. On one hand, they worry that snow-clearing operations may be complicated by the presence of certain road design features; on the other, city equipment may damage these features as they move through the community. However, an inquiry among local municipalities led by the *ministère des Transports du Québec* revealed that snow-clearing operations posed no threat to traffic calming features if the features are properly designed, the clearing operations are appropriately adapted, and equipment operators undergo training.[8] Municipal authorities may also opt to install temporary design features, which can be removed before winter.

Inspirational examples

Redevelopment of Riverside Street in Saint-Lambert

Before:

After: redesigned layout

Intersection of Riverside and Pine Streets, Saint-Lambert
Source: Google Street View, 2012 and 2015

A corridor along Riverside Street and its nearby intersection with Pine Street were redeveloped and made more attractive and safe through various traffic calming measures. This project was part of the vision and prime directive of the Saint-Lambert Traffic Master Plan (2013).[9] The City took advantage of reconstruction work on underground infrastructures to complete the Riverside Street redesign. Riverside Street is a main collector with several bus routes.

The work included narrowing Riverside's roadway to discourage through traffic originating from Route 132. In addition, a raised intersection equipped with a four-way stop sign and textured pedestrian crosswalks were installed to reduce traffic speed, force motorists to come to a full stop, and better define the crosswalk.

The raised intersection, including the crosswalk, was built higher than the adjacent roadbeds. The purpose of this layout is to reduce traffic speed, better define pedestrian crossing zones, and decrease conflicts between motor vehicles and pedestrians.[10]

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 Drouin, Louis (2010). *Sécurité routière : il faut agir d'abord sur les causes principales.* Open letter to Le Devoir, February 16.

2 City of Greater Sudbury (2008). *Traffic calming policy.* Technical information sheet No 4.

3 Bellefleur, Olivier (2012). *Urban Traffic Calming and Active Transportation: Effects and Implications for Practice.* National Collaborating Centre for Healthy Public Policy.

4 Ministère des Transports du Québec (2015). *Gestion de la vitesse sur le réseau routier municipal en milieu urbain.* Guide intended for municipalities.

5 Gagnon, François and Olivier Bellefleur (2011). *Traffic Calming: Political Dimensions.* National Collaborating Centre for Healthy Public Policy. Online: http://www.ncchpp.ca/docs/PolDimensions_TrafficCalming_En.pdf

6 Gagnon, François and Olivier Bellefleur (2011). *Op. cit.*

7 Bellefleur, Olivier and François Gagnon (2011). *Urban Traffic Calming: Summary Tables of Evaluative Studies.* National Collaborating Centre for Healthy Public Policy.

8 Ministère des Transports du Québec (2011). *Op. cit.*

9 City of Saint-Lambert (2013). *Traffic Master Plan.* Online: http://www.saint-lambert.ca/en/services-residents/transportation-and-road-maintenance/traffic-master-plan.

10 Transportation Association of Canada (1998). *Op. cit.*