Traffic Calming Policies in Canada: A Description of Strategies In Two Major Cities

Liraz Fridman, PhD (Postdoctoral Research Fellow)
Tona Pitt, MSc Student
Alberta Children's Hospital Research Institute (ACHRI)
O'Brien School of Public Health
Department of Community Health Sciences / Cumming School of Medicine
University of Calgary

Canadian Association of Road Safety Professionals (CARSP) – Victoria BC
June 2018

Background

- Policies to reduce injuries among Canadians can be controversial and there is variability in the enactment of injury prevention laws across the country (Macpherson et al., 2015)
- Previous studies have outlined barriers and enablers to enacting child and youth related injury prevention legislation in Canada (Rothman et al., 2016)
- Traffic calming strategies aim to make roads safer for vulnerable road users by minimizing speed and volume on local and collector roads
- Little is known about what types of traffic calming interventions are outlined across municipalities

Objective

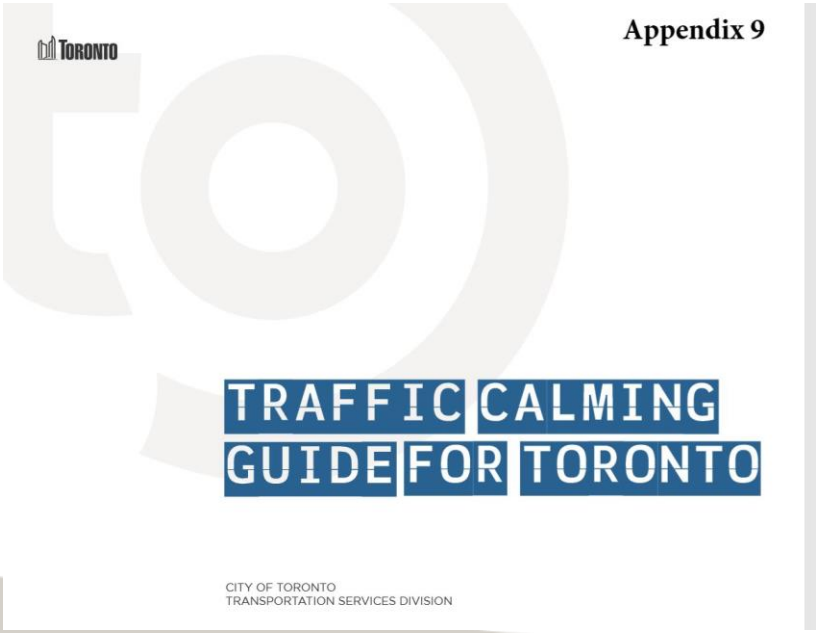
- To describe policy documents related to traffic calming physical design strategies in two locations as part of a larger nation-wide project: Toronto, Ontario & Calgary, Alberta to determine:
  - 1. Differences in the traffic calming strategies proposed in cities
  - 2. The degree to which specific strategies have been implemented
  - 3. Whether proposed strategies are evidence-based

Methods

- Grey literature search on direct road traffic safety documents in Ontario and Alberta (2000 – 2017)
- Reviewed most up-to-date traffic calming policy documents in both cities
- Where data was available, we quantified the proportion of specific strategies (e.g. speed humps) compared to all types of traffic calming measures
- Identified which strategies were evidence based

Results - Toronto

- 15 traffic calming measures identified:
  - One and two way chicanes, directional and full closures, curb extensions and reductions, diverters, median islands, on street parking, raised intersection, speed humps, and traffic circles



Speed Bumps: raised sections of the roadway, shorter than speed humps

Traffic Islands: narrow the road and reduce the speed of passing traffic

Results - Toronto

- Speed humps (70.4%)
- Intersection Narrowing (14.4%)

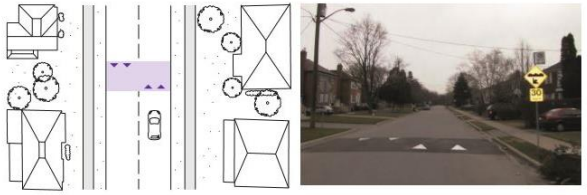
SPEED HUMPS

MEASURE
Vertical Measure

PRIMARY PURPOSE
Speed Reduction

TRAFFIC CALMING SIGNS

12 | 2016 TRAFFIC CALMING GUIDE FOR TORONTO



SPEED HUMPS
Speed humps are raised sections of the roadway designed to discourage motor vehicle drivers from travelling at excessive speeds.

EFFECTIVENESS

Speed Reduction	●
Road Volume Reduction	●
Safety	●

ADVANTAGES
- Speed reduction
- Minimal impact on cyclists
- Minimal impact on snow clearing
- Self enforcing

COST PER MEASURE
$1,000—$5,000
(Physical speed hump, signage, pavement markings, polling)

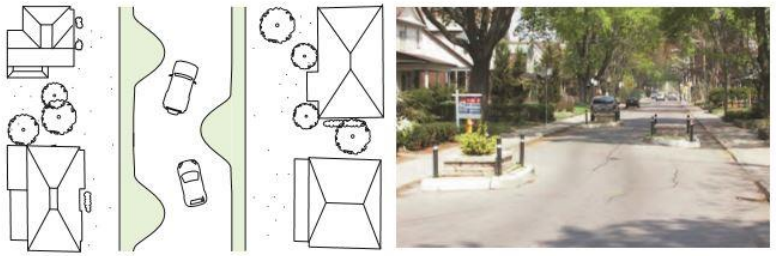
DISADVANTAGES
- Negative impact on Emergency Services (i.e., Ambulance, Fire, and Police), by slowing down response time and impacting the comfort of patients being transported

CHICANES

MEASURE
Horizontal Measure

PRIMARY PURPOSE
Speed Reduction

TRAFFIC CALMING SIGNS



CHICANES
A chicane is a series of curb extensions on alternate sides of a roadway which narrow the roadway and requires drivers to steer from one side to the other to travel through the chicane.

EFFECTIVENESS

	One-lane	Two-lane
Speed Reduction	●	◐
Road Volume Reduction	●	○
Safety	●	◐

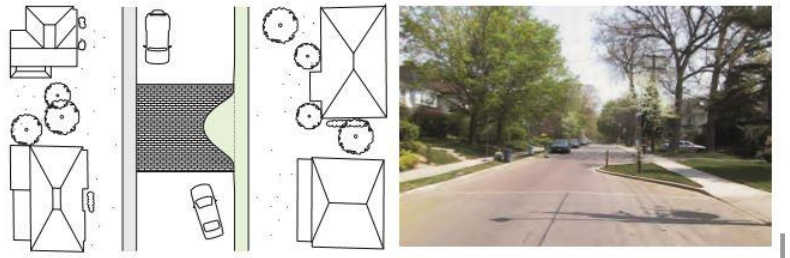
ADVANTAGES
- Speed reduction
- Discourage shortcutting and through traffic
- Opportunity for landscaping

CURB EXTENSIONS

MEASURE
Horizontal Measure

PRIMARY PURPOSE
Speed Reduction

TRAFFIC CALMING SIGNS



CURB EXTENSIONS - MID-BLOCK PINCH POINT
A curb extension is a horizontal intrusion of the curb into the roadway, resulting in a narrower section. Curb extensions installed mid-block must follow the traffic calming process.

EFFECTIVENESS

Speed Reduction	◐
Road Volume Reduction	○
Safety	◐

ADVANTAGES
- Speed reduction
- Increase pedestrian visibility
- Opportunity for landscaping

Results - Toronto

A Matched Case–Control Study Evaluating the Effectiveness of Speed Humps in Reducing Child Pedestrian Injuries

June M. Tester, MD, MPH, George W. Rutherford, MD, Zachary Wald, McP, and Mary W. Rutherford, MD

Installation of speed humps and pedestrian-motor vehicle collisions in Toronto, Canada: a quasi-experimental study

Linda Rothman, Alison Macpherson, Ron Buliung, Colin Macarthur, Teresa To, Kristian Larsen and Andrew Howard

Results - Toronto

Healthy Streets: Evidence Review

Table 1. Complete Street health related element associations with safety, physical and social activity

Category	Design element	Safety	Physical activity	Social Activity
Street & network	Street connectivity	+	+	NK
Pedestrian category	Sidewalk presence & width	+	+	+
	Buffer zone	+	+	NK
	Lighting	+	+	NK
	Furnishings	NK	+	+
	Trees & vegetation	+	+	NK
	Public transit facilities	NK	+	NK
	On-street parking	+/-[1]	+	NK
Cycling category	Bike lanes	+	+	NK
	Cycle tracks	+	+	NK
	Off-street bike paths/trails	-	+	NK
	Bike boulevards	NK	+	NK
	Bicycle parking	NK	+	NK
	On-street parking	-	-	NK
Roadway	Minimize street width / # lanes	+	+	+
	Narrow lane width	+	+	NK
	Median inclusion	+	+	NK
	Traffic calming features	+	+	NK
Intersections & crossings	Intersection control	+	+	NK
	Midblock control	+/-[2]	+	NK
	Small corner radius & other curb treatments	+	+	NK
Adjacent buildings and land uses	Retail uses	+	+	+
	Open space uses	NK	+	NK
	Building enclosure & façade	+	+	NK
	Café/vending space	+	+	+

* NK = not known
* +/- = both positive and negative impacts were found, conflicting evidence

[1] +/-: On-street parking seems to provide safety benefits for adult pedestrians, but can have negative impact on children, bicyclists, and motor vehicles.

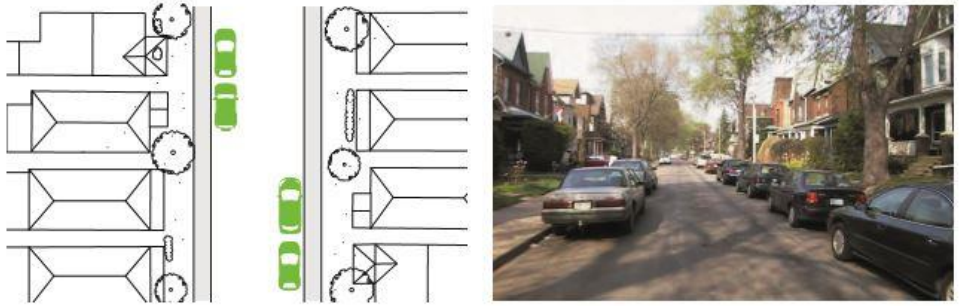
ON-STREET PARKING

MEASURE

Horizontal Measure

PRIMARY PURPOSE

Speed Reduction



ON-STREET PARKING (ALTERNATING SIDES/CHICANE EFFECT)

On-street parking is the reduction of the roadway width available for vehicle movement by allowing motor vehicles to park adjacent and parallel to the curb.

EFFECTIVENESS

Speed Reduction	◐
Road Volume Reduction	◐
Safety	○

ADVANTAGES

- Speed reduction
- Possible reduction in short-cutting traffic or through traffic

COST PER MEASURE

$1,000—$5,000

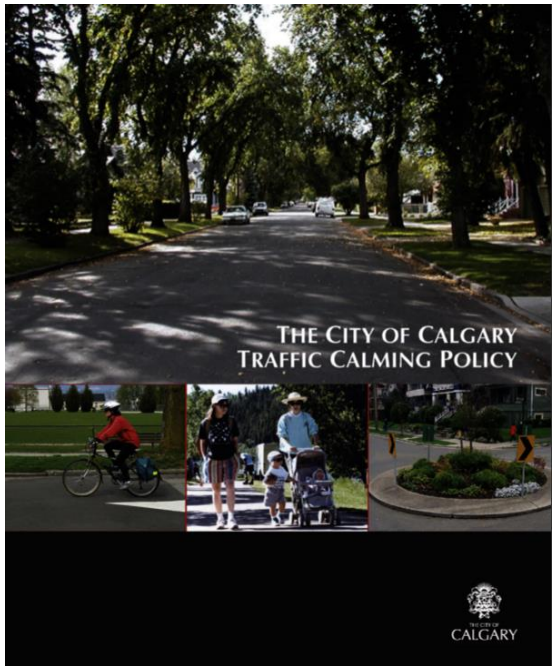
(Pavement line markings and signage)

DISADVANTAGES

- Potential impact on cyclists

2016 TRAFFIC CALMING GUIDE FOR TORONTO | 29

Results – Calgary



- Document created in 2003 and is heavily based on the *Canadian Guide to Neighbourhood Traffic Calming*.
- 22 potential traffic calming measures identified in the policy.
- Separated into Vertical Deflection, Horizontal Deflection, Obstruction and Signage

Calgary- Different Measures

- 9 measures not identified in TO
  - Speed Cushions/Speed Tables,
  - Raised Crosswalks
  - Sidewalk Extensions
  - Rumble Strips & Textured Crosswalks
  - Signage (Yield, Stop and Maximum Speed)
  - Turn Prohibitions/Channelization

Conclusions

- Policy documents from both Toronto and Calgary outline strategies that have not been proven to be effective in reducing motor vehicle conflicts with pedestrians and cyclists
- Along with other factors, scientific studies that examine intervention effectiveness need to be considered
- Although there are a number of unique traffic calming measures outline within policy documents, there is little variety in the interventions that are actually being implemented