



Case Study Series

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Safe School Zones

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Safe School Zones

*Parachute Vision Zero has launched a series called **Word on the Street**; one of the elements of the series is a quarterly Case Study that will feature a variety of issues and examples of Vision Zero from across Canada and around the world. We hope that these practical, evidence based case studies will help educate, inform and inspire those who are interested in getting to zero.*

What's in this issue?

In January 2016, Canada introduced a ten-year [Road Safety Strategy](#) modeled by Vision Zero. The strategy's vision is "Towards Zero: Having the safest roads in the world". The overall focus of the strategy is to eliminate the number of people killed or seriously injured on our roads. This case study will specifically analyze safe school zones and explore some of the safety measures currently being implemented across Canada.

Problem Scope

In Canada, approximately 1,800 people are killed and 162,000 are injured annually.¹ In 2016 alone, motor vehicle traffic collisions took the lives of 197 individuals aged 0-19.² For the same year and age group, the number of serious injuries (1,366) resulting from motor vehicle traffic collisions accounted for 5.9% of the total number of injuries (23,153).² Vulnerable road users, which includes young pedestrians, account for almost a quarter of the traffic fatalities in Canada.³ As a result of these statistics, governments and organizations across the country have placed a stronger emphasis on pedestrian and school zone safety. The definition of a school zone can vary by province or territory. School zones can also differ within a province or territory by municipality. Generally, a school zone is a determined surrounding area, whereby the school acts as the focal point.

Research and Evidence

Utilizing [Vision Zero's 5 E's of traffic safety](#) (engineering, education, enforcement, engagement, and evaluation) can facilitate injury prevention. Preventing injuries can thus encourage active transportation, and its associated benefits. [Active transportation](#)

is defined as any form of transportation powered by humans. Some examples are walking, cycling, snowshoeing, or rollerblading. Two benefits of active transportation include the opportunity for children to engage in physical activity beyond the classroom and being environmentally-friendly.

The Perceptions and Realities of Pedestrian and School Zone Safety

Weather, distance, crime, and school policy are some of the many explanations as to why parents do not allow their children to actively commute to and from school.⁴ Of the reasons, the most reported barriers to active transportation are long distance and safety.⁴ Most parents are not primarily concerned with the area directly in front of the school but rather the area leading up to it.^{4,6} This concern heavily influences a parent's decision to let their children engage in active transportation. Parents are more likely to not have their children walk to and from school when there is a perception of poor traffic safety.⁴⁻⁶

The perception of poor road safety results in a decrease in active transport ironically leading to an increased risk of pedestrian-motor vehicle collisions. Research has explored the effects non-active transportation has on road safety in and around school zones:

- ❖ The area around schools is an increased risk for children due to the high number of vehicles doing school drop-offs.⁷⁻⁸
- ❖ Near misses are not always associated with speed, but rather congestion within the school zones. Some of the associated driving behaviours are: illegal U-turns, parking near stop signs, double parking (see Figure 1), and dropping children off mid-block.⁹

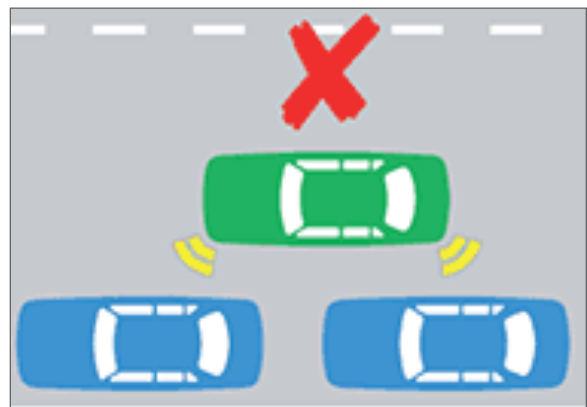


Figure 1: Example of double parking

Source: Government of Australia

Safety is a dominant barrier in active transportation. Additional research indicates that factors such as busy intersections are likely to decrease active transportation,⁶ while maintained accessible sidewalks and safe road crossing are likely to increase it.⁴ As a result, various actions have been taken in order to increase the safety in school zones. Two key determinants include the built environment and school zone safety measures.

The Built Environment

The built environment is defined as anything, such as buildings, spaces and products, that are created and modified by people.¹⁰ The built environment can impact the decision to engage in active transportation:

- ❖ Built environment factors related to physical activity and injury prevention include: quality sidewalks, number of streets and intersections, land use (green space), crosswalk markings (see Figure 2), and programmed timer signals.¹⁰
- ❖ Variables, such as density of traffic lights, traffic calming measures and sidewalks, were found to be positively associated with collisions and walking exposure.¹¹
- ❖ A systematic review found that design (roundabouts and speed humps) and diversity features (playgrounds/parks) correlates with increased walking and decreased injury.¹²
- ❖ A built environment scan of injury locations within Vancouver, British Columbia determined that risk factors were present, and/or a lack of pedestrian safety countermeasures existed at each location. Just one of the 11 midblock locations had a marked pedestrian crosswalk.¹³

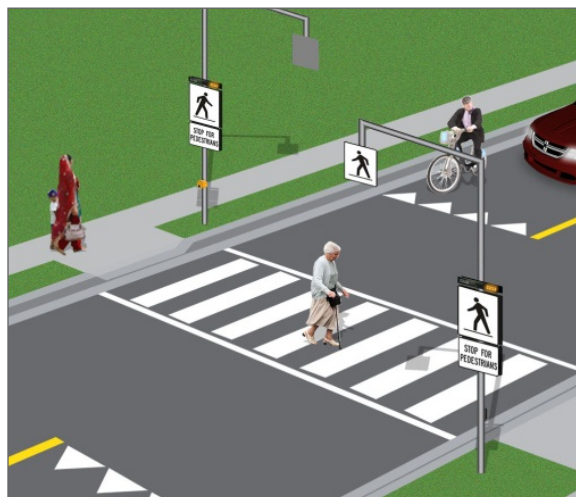


Figure 2: Example of crosswalk marking

Source: Ontario Ministry of Transportation

School Zone Safety Measures

The presence, or lack of, safety measures can influence whether or not children engage in active transportation. Some safety measures and their associated impacts are indicated below:

- ❖ A study of 21 London, Ontario elementary schools found that 62% of students living within 1.6 km of the school walked to school. Distance was determined to be the most important factor.¹⁴

- ❖ A study in Toronto, Ontario found that the presence of new crossing guards did not result in a significant change in collision rates. The paper highlighted the need for other interventions since 39% of pedestrian motor vehicle collisions occurred within school time.¹⁵
- ❖ The United Kingdom Department for Transport compared the 2010 annual report to the averages of the 1994-98 reports. Legislation changes to the tasks and hours of school crossing guards, education material, child pedestrian training, lower speed zones and enforcement collectively resulted in a 64% reduction in kills and serious injuries (KSI) for children.¹⁶
- ❖ A systematic review found that community-based programs aimed at preventing injuries through a multi-faceted approach, using educational, social and environmental strategies were more likely to be successful. Effective programs resulted in a 12-54% reduction in childhood pedestrian injuries.¹⁷
- ❖ Crosswalk design can be modified and built in a way that increases pedestrian safety. The [How to Develop a Pedestrian Safety Action Plan](#) offers evidence-based safety measures.
- ❖ In a pooled study of 18 US States, post Safe Routes to School (SRTS) resulted in a 23% decline in all-hour injury and a 20% decline in all-hour fatalities for children when compared to adults.¹⁸
- ❖ A survey of 651 Oregon, USA drivers found that drivers felt a higher level of risk when the speeding fines were double.¹⁹
- ❖ The introduction of speed warning signs (see Figure 3) and photo radar was found to be effective in the reduction of speed by 7-8 km/h. Introducing periodic enforcement added to the effectiveness. However, once the signs were removed, the speed increased.²⁰
- ❖ The effectiveness of dynamic speed signs was evaluated by measuring the speed pre- and post-implementation in seven sites. Speeds were measured at



Figure 3: Example of a speed warning sign

Source: The City of Hamilton

one week prior to signage, and at one week and four months after signage. On average, the school speed zone saw a reduction of 9 mph.²¹

- ❖ A study evaluating the effectiveness of speed monitoring displays in four school zones was conducted in Utah, USA. Overall, the displays reduced the average travel speeds, as well as the percentage of vehicles driving above the 20 mph speed limit.²²
- ❖ A before and after study in Saskatoon, Saskatchewan was conducted following the implementation of 30 km/h school zones (previously 50 km/h). The results indicated an average 10 km/h reduction in the 85th percentile speed. The 85th percentile speed is the 70% of drivers who maintain speed within range of the average and the 15% of slow drivers. A 13% reduction of average weekday traffic was also reported.²³
- ❖ A cost-utility analysis was conducted for the SRTS program in New York City. Over 50 consecutive cohorts, the overall net benefit was \$230 million and 2055 quality adjusted life years gained.²⁴

Relevant Law and Regulation

Since the 2016 Parachute [Vision Zero Summit](#), many stakeholders, governments, and organizations have incorporated the Vision Zero framework through strategy, policy and law. Vision Zero recognizes that humans make mistakes. It is the responsibility of road system and safety designers to minimize the effects of those mistakes by incorporating Vision Zero's 5 E's. Measures such as speeding laws, school walking policies, and engineered adjustments to the built environment can positively impact school zone safety.

[Transport Canada](#) is a federal branch of government responsible for national transportation policies and programs. Although they are not directly responsible for everything regarding transportation, Transport Canada plays a leadership role for all the provinces and territories.²⁵

Currently, Canada's move towards a Vision Zero framework varies for each province and territory. Provincial laws and regulations regarding school zones are further explored for the following provinces: Ontario, Alberta, Manitoba, and British Columbia. Table 1 provides a summary chart comparing four aspects of the laws and regulations

currently in place for each of the 13 provinces and territories. It is important to note that a 'highway' generally refers to public roads and ways.

Table 1

School Zone Law/Regulation Summary

	Ontario	Alberta	Manitoba	British Columbia	Quebec	Saskatchewan	New Brunswick
School Zone Definition	✓	✓	✓	✓	..**	✓	✓
Maximum School Zone Speed indicated by Provincial or Territorial Act*	50 km/h	30 km/h	30 km/h (roads <80 km/h) 50 km/h (roads ≥80 km/h)	30 km/h	50 km/h	..***	30 km/h 50 km/h (where speed limit is not posted)
Specific School Zone Times indicated by Provincial or Territorial Act*	Mentioned, but time not specified	8 - 9:30am 11:30am - 1:30pm 3 - 4:30pm	Mentioned, but time not specified	8am - 5pm at minimum	7am - 5pm	Mentioned, but time not specified	7:30am - 4pm
Municipal or Local Authority to Change School Zone Regulations	✓	✓	✓	✓	✓	✓	✓

	Newfoundland & Labrador	Prince Edward Island	Nova Scotia	Northwest Territories	Nunavut	Yukon
School Zone Definition	✓	-**	✓	✓	-***	✓
Maximum School Zone Speed indicated by Provincial or Territorial Act*	50 km/h	60 km/h	30 km/h (roads <50 km/h) 50 km/h (roads ≥50 km/h)	50 km/h (within municipality or community) 90 km/h (outside municipality or community)	-****	30 km/h (within municipality) 40 km/h (outside municipality)
Specific School Zone Times indicated by Provincial or Territorial Act*	7am - 5pm	8am - 4pm	Mentioned, but time not specified	Mentioned, but time not specified	-	8am - 4:30pm
Municipal or Local Authority to Change School Zone Regulations	✓	✓	✓	✓	✓	✓

* Provinces/territories have the authority to create bylaws and regulations regarding school zones

** not specified/defined

*** school zone not specified, speed limit is 80km/h in the absence of signs

**** school zone not specified, within municipality speed limit is 50km/h in the absence of signs; outside municipality speed limit is 90 km/h in absence of signs

ONTARIO

The Highway Traffic Act

- ❖ The maximum speed within a municipality or built-up area is 50 km/h
- ❖ A municipality may by by-law:
 - Designate a portion that adjoins the entrance or exit of a school; and
 - Designate a lower rate of speed within it, on days when school is regularly held (see Figure 4).



Figure 4: Example of lower speed limit on school days

Source: News 1130

Bill 90 - School Safety Zones (2016)

- ❖ A “safety school zone” is defined as:
 - Portions of highways that adjoin land use for the purpose of a school, including the entrance to or exit from
 - Portions along the highway beyond the land use of the school for 150 m in either direction

Bill 65 - Safer School Zone Act (2017)

Amendments made to the *Highway Traffic Act*

- ❖ Allows municipalities by by-law to designate areas with speed limits lower than 50 km/h
- ❖ Authorizes the use of automated speed enforcement in school zones (red-light camera)

ALBERTA

The Traffic Safety Act

- ❖ “School zone” defined as:
 - Portion of a highway identified by a traffic control device as outlined by regulation
- ❖ Maximum speed within a school zone:
 - 30 km/h during the days and times specified on a traffic control device
 - 30 km/h when a traffic control device shows rapid flashes of yellow light
- ❖ A municipality may by by-law increase or decrease the lengths of periods of time when maximum school zone speed limits are in effect
- ❖ A municipality may by by-law lower the maximum school zone speed, but it cannot be lower than 20 km/h

MANITOBA

The Highway Traffic Act

- ❖ Traffic authority, in accordance with this act and [*The Drivers and Vehicles Act*](#), can make rules or by-laws regarding the traffic on streets in the vicinity of public schools
- ❖ Traffic authority or local government may by by-law designate school zones, establish the maximum speed within a school zone, and display associated traffic control devices

Reduced-Speed School Zones Regulation (2013)

- ❖ “Reduced-speed school zone” defined as:
 - A portion of a highway designated by traffic authority as a school zone which has a reduced maximum speed at all times or specific times
- ❖ The “reduced-speed school zone” by-law must:

- Not have a maximum speed limit less than 30 km/h if the current speed is less than 80 km/h
- Not have a maximum speed limit less than 50 km/h if the current speed is 80 km/h or more
- Establish and state the days and times in which the reduced speed is in effect
- Indicated where the “reduced-speed school zone” begins and ends with the use of traffic control devices

BRITISH COLUMBIA

The Motor Vehicle Act

Law and regulation regarding school zones are found in [Part III](#)

- ❖ A “school zone” is defined as:
 - A portion of a highway around the school building and grounds, marked by signs displaying the speed limit of 30 km/h, on a school day during the minimum times of 8 am to 5 pm
- ❖ Extension of “school zone” times cannot begin later than 8 am or end earlier than 5 pm
- ❖ A municipality may by by-law direct the rate of speed within its jurisdiction

School Zone Safety Measures among Vision Zero Partners

CANADA

Canada’s Road Safety Strategy 2025

- ❖ Strategy is based on the international best practice, Vision Zero
- ❖ Identified vulnerable road users and the general population as key risk groups

- ❖ Identified seven road safety interventions: policy / legislation / regulation, education / training, communication / awareness, enforcement, information / data / research, technology, linkages

Canadian Automobile Association (CAA)

- ❖ Advocates for and offers a variety of school safety programs across Canada
- ❖ Programs encourage road safety behaviour among students through Bus and Foot Patrollers (see Figure 5)
 - [Ontario](#)
 - [British Columbia](#)
 - [Alberta](#)
 - [Saskatchewan](#)



Figure 5: Example of student bus and foot patrollers

Source: CAA School Safety Program

ONTARIO

- ❖ Amendments made to the *Highway Traffic Act*
- ❖ Safety Villages which act as educational centres for road safety
 - [York Region](#)
 - [Halton Region](#)
 - [Peel Region](#)
 - [Belleville](#)
 - [Orillia](#)
 - [London](#)
- ❖ [Ontario Active School Travel](#), under [Green Communities Canada](#)
 - Promoting and advocating for the safety of active transportation to and from school

TORONTO, ONTARIO

Toronto Road Safety Plan 2017-2021

- ❖ Adopted Vision Zero
- ❖ School children have been identified as an area of emphasis
- ❖ E's of road safety interventions: engineering, education, enforcement, technology
- ❖ Some school zone safety measures:
 - School [“Watch Your Speed” Programs](#)
 - Automated enforcement
 - City of Toronto’s [Helmet Initiative](#)
 - [Active and Safe Routes to School \(ASRTS\)](#)
 - School zone reviews, evaluations, and improvements
 - [Traffic calming](#) geometric safety improvements

LONDON, ONTARIO

City of London Road Safety Strategy (LRSS) 2014-2019

- ❖ Adopted Vision Zero in May 2017 which aligned with the LRSS goal
- ❖ E's of road safety interventions: engineering, education, enforcement, and empathy
- ❖ Identify target areas based on factors such as severity of collisions, potential effectiveness of countermeasures, and capacity of implementation
- ❖ Some school zone safety measures:
 - Safe Neighbourhoods – [“Respect the Limit”](#) initiative (see Figure 6)



**Figure 6: London, ON, Safe Neighbourhoods
Respect the Limit initiative**

Source: Global News article

- Safe Routes to School with an emphasis on engineering concerns
- [Active and Safe Routes to School](#) through the Middlesex-London Health Unit
- Traffic calming engineering improvements
- Enforcement

DURHAM, ONTARIO

- ❖ [Durham Region](#) adopted Vision Zero in May 2017
- ❖ Currently in the process of creating a Strategic Road Safety Action Plan (SRSAP) by collaborating with road safety partners over the course of three workshops
 - [Workshop One](#) focused on introducing Vision Zero, creating a vision and goal, and reviewing collision data and the literature
 - Workshop Two determined eight emphasis areas for the SRSAP, with school safety being a separate priority
 - Workshop Three was focused on developing the action plan

REGION OF PEEL, ONTARIO

- ❖ The Vision Zero framework was recommended to the [Region of Peel](#) in December 2017
- ❖ The [City of Mississauga](#) motioned to adopt Vision Zero in February 2018
- ❖ Some school zone safety measures within Peel and Mississauga:
 - [The Traffic Safety Council](#) initiatives
 - [Peel Safe and Active Routes to School](#) (PSARTS)
 - [Walk and Roll Peel](#)
 - Mississauga's [Student Speed Watch Program](#)
 - Traffic calming engineering improvements
 - Enforcement

EDMONTON, ALBERTA

- ❖ [First](#) major Canadian city to adopt Vision Zero in 2015

Edmonton Road Safety Strategy 2016-2020

- ❖ E's of road safety interventions: engineering, education, enforcement, engagement, evaluation
- ❖ Some school zone safety measures:
 - [School Safety Committee](#) who helped implement 30 km/h school zones at junior high schools in addition to elementary schools and increased school zone and playground zone hours
 - [Safe Healthy Active People Everywhere](#) (SHAPE) Alberta
 - [Way to Be!](#)
 - [Traffic calming](#) engineering improvements
 - Enforcement
 - Road safety audits

STRATHCONA COUNTY, ALBERTA

Traffic Safety Strategic Plan 2020

- ❖ Strategic plan follows the Safer System approach, similar to Vision Zero
- ❖ Created the [Neighbourhood Traffic Safety Action Plan](#) (2017) which focuses on residential traffic
- ❖ E's of road safety interventions: engineering, education, enforcement, engagement, evaluation
- ❖ Some school zone safety measures:
 - School resource officer offered through the Royal Canadian Mountain Police (RCMP)
 - [Integrated Traffic Units](#)

- Evaluation of safety measurements
- [School Traffic Safety Partnership](#)
- Traffic calming engineering improvements
- Enforcement

MONTREAL, QUEBEC

❖ [Montreal](#) adopted Vision Zero in [late 2016](#)

❖ Currently launching [road safety and public awareness campaign](#) regarding Vision Zero

- Making the public sensitive to road deaths and serious injury (see Figure 7)
- Publicizing Vision Zero
- Raising awareness about shared road responsibility

❖ Some school zone safety measures

- [“Corridor Streets”](#)
- [Safe Active Transportation](#)
- Traffic calming engineering improvements
- Enforcement



Figure 7: Montreal Vision Zero public awareness campaign sign

Source: Radio-Canada website

MANITOBA

❖ The *Highway Traffic Act*

❖ Reduced-Speed School Zones Regulation (2013)

[Manitoba Road Safety Plan 2017-2020](#)

❖ [Manitoba](#) adopted Vision Zero in 2017

- ❖ Their first plan to utilize the [Safe System Approach](#), a concept of Vision Zero
- ❖ Road safety interventions include: safe roads, safe speeds, safe road users, and safe vehicles
- ❖ Does not explicitly focus on safe school zones

BRITISH COLUMBIA

- ❖ The *Motor Vehicle Act*
- ❖ [British Columbia](#) adopted Vision Zero in January 2016 and updated their road safety strategy

British Columbia Road Safety Strategy 2015 and Beyond

- ❖ Utilizes the Safe System Approach
- ❖ Road safety interventions include: safe roads, safe speeds, safe road users, and safe vehicles
- ❖ Does not explicitly focus on safe school zones

SUMMARY

The solutions and strategies highlighted throughout the case study have been organized according to Vision Zero's 5 E's.

Table 2

Solutions and strategies organized by Vision Zero's 5 E's

5 E's	Solutions & Strategies
Engineering	<ul style="list-style-type: none"> ❖ Traffic calming improvements <ul style="list-style-type: none"> • Curb radius reductions, curb extensions, roundabouts, speed humps, chicanes ❖ Built Environment <ul style="list-style-type: none"> • Sidewalks, street light intersections, green space, pedestrian walking signals • Crosswalks, tactile truncated domes, zebra crossings ❖ Creation of school zones ❖ Road safety audits
Education	<ul style="list-style-type: none"> ❖ Bus and Foot Patrollers (CAA), Corridor Streets ❖ Safety Villages ❖ Active Routes to School & Safe Routes to School ❖ Safe Neighbourhood initiatives ❖ School Resource Officers
Enforcement	<ul style="list-style-type: none"> ❖ Amendments to laws and regulations ❖ "Watch Your Speed", Student Speed Watch program ❖ Automated enforcement ❖ Police, crossing guard, and/or authoritative presence
Engagement	<ul style="list-style-type: none"> ❖ Working with various stakeholders <ul style="list-style-type: none"> • Promotional events, clubs, groups ❖ Raising awareness
Evaluation	<ul style="list-style-type: none"> ❖ Road safety audits ❖ Research pertaining to road safety and active transportation in school zones ❖ Monitoring and addressing comments and feedback

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