



REPORT FOR ACTION

Improving Road Safety of School-Age Children

Date: December 20, 2019

To: Infrastructure and Environment Committee

From: General Manager, Transportation Services

Wards: All

SUMMARY

The purpose of this report is to respond to two requests made by City Council concerning accelerating the roll-out of Vision Zero in school safety zones; including:

- a) investigating opportunities for allowing in-year acceleration when other projects are delayed; and
- b) presenting costed options for accelerating roll-out.

No loss of life as a result of traffic collisions is acceptable in a Vision Zero approach, and addressing road safety is a priority for residents, elected officials and staff. A key focus of the Council adopted Vision Zero 2.0 strategy is a renewed emphasis on data-driven decision making and prioritization. This focus involves directing funding and staff resources to the locations and programs which are most likely to reduce Killed and Serious Injury collisions.

Currently, the number of Killed and Serious Injury collisions in the immediate vicinity of schools is significantly less than impacts to school aged youth along arterial roadways outside of school zones. Yet, at this time 60 percent of the Vision Zero budget is spent in the immediate vicinity of schools.

Schools are typically located on local roadways with lower speeds, lower traffic volumes and shorter crossings. The safety of school-aged children and of all road users is better addressed through targeted improvements to arterial roadways where traffic volumes and travel speeds are higher and where the majority of people who are involved in crashes are killed or seriously injured.

In the past five years, approximately 23 percent of Killed and Serious Injury collisions among school-age children and 15 percent of overall Killed and Serious Injury collisions have occurred in the immediate vicinity of schools. At this time, 60 percent of the overall Road Safety Plan budget is dedicated to delivering safety measures in the immediate vicinity of schools. Therefore, accelerating the rate of School Safety Zone delivery is not aligned with the Council approved and data-driven Vision Zero 2.0 Strategy towards

eliminating traffic fatalities and serious injuries rapidly among school-age children and all road users across the city. Transportation Services' approach is to continue to deliver school zone safety improvements city-wide, consistent with the existing schedule and accelerate the delivery of Vision Zero improvements along arterial roads.

The report outlines limitations with acceleration of the School Safety Zone program and highlights various other programs and initiatives within the Council approved Vision Zero 2.0 Strategy that are underway such as the Speed Management Strategy, road design improvements, pedestrian head start signals, and proactively addressing high-risk mid-block crossings which more effectively improve safety outcomes for all road users, including school-age children.

Acceleration and enhancement of these Road Safety Plan programs are reflected in the proposed 2020 - 2029 Capital Budget and Plan for Transportation Services.

RECOMMENDATIONS

The General Manager, Transportation Services recommends that:

1. The Infrastructure and Environment Committee receive this report for information.

FINANCIAL IMPACT

There is no financial impact resulting from the adoption of the recommendation in this report.

The Chief Financial Officer and Treasurer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

At its meeting of October 2 and 3, 2019, City Council directed the General Manager, Transportation Services to consider and report back, in advance of City Council's consideration of the 2020 Budget, on options to accelerate the roll-out of Vision Zero in school safety zones. This includes opportunities for in-year acceleration when other projects are delayed as well as costed options for accelerating roll-out. The council decision can be found at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2019.MM10.8>

At its meeting of July 16, 17 and 18, 2019 City Council unanimously approved the Vision Zero 2.0 - Road Safety Plan Update, as amended. The Council decision can be found at: <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2019.IE6.8>

COMMENTS

Road Safety of School-Age Children – Data-Driven Decision Making and Prioritization Strategy

Road safety solutions in the Vision Zero Road Safety Plan (RSP) are focused on seven emphasis areas: pedestrians, cyclists, motorcyclists, school-age children, older adults, aggressive and distracted driving, and heavy trucks. School-age children constitute 14 percent of the population of the City and were involved in 5 percent of Killed and Serious Injury collisions over the past five years.

Similar to other vulnerable road users, school-age children have been, and are more likely to be, tragically killed or seriously injured on higher speed, higher volume arterial roadways, and less so along local roadways, where schools and School Safety Zones tend to be located. See Figure 1 below for additional information.

In the past five years, 77 percent of Killed and Serious Injury collisions among school-age children did not occur in the immediate vicinity of schools and over 80 percent of Killed and Serious Injury collisions in all age groups occur on arterial roadways, where traffic volumes and travel speeds are higher. Schools are typically located on local roadways with lower speeds, lower traffic volumes and shorter crossings. The overrepresentation of Killed and Serious injury collisions on arterial roadways has informed the prioritization of focused actions in Vision Zero 2.0 Strategy which will improve the safety of school-age children and all road users by targeting key programs to the places where people are most likely to be killed or seriously injured.

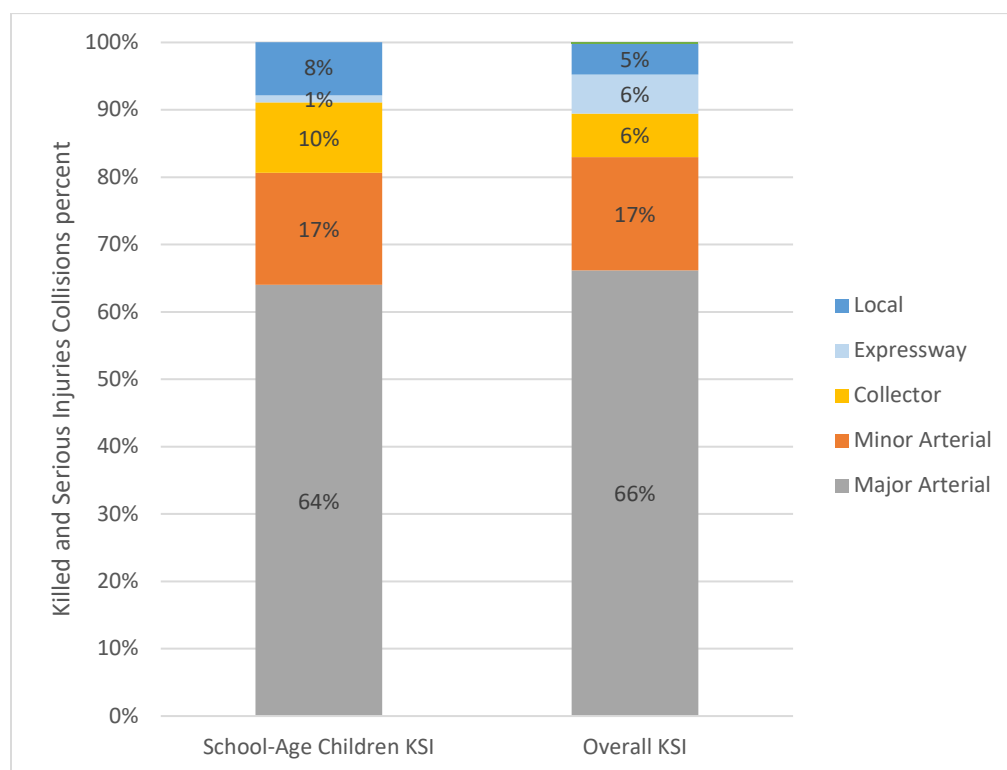


Figure 1. Breakdown of School-Age Children Killed and Seriously Injured by Road Classification

Vision Zero Initiatives Addressing Safety of School Age Children

Currently about 60 percent of the overall capital and operating RSP budget and a significant portion of Vision Zero staff efforts are spent on safety initiatives in the immediate vicinity of schools. These initiatives include:

- The School Safety Zone program,
- Automated Speed Enforcement,
- The School Crossing Guard program,
- School Travel Planning and
- The Active and Safe Routes to School program.

While the above initiatives are focused on mostly local roadways in the immediate vicinity of schools, the majority of school-age children are killed or seriously injured outside of these areas, on arterial roadways. As such, Vision Zero 2.0 key focus actions, which are mainly targeted at arterial roadways, are more effective at improving safety for all road users, including school-age children. In particular, the following Vision Zero 2.0 focus actions directly help improve safety of school-age children:

- Speed Management Strategy,
- Road Design Improvements,
- Pedestrian Head Start Signals,
- Proactively Addressing High-Risk Mid-Block Crossings, and
- Education and Engagement Targeted at School-Age Children.

The acceleration of efforts in each of these areas, as reflected in the proposed 2020-2024 RSP budget, is a more responsible, efficient and data driven approach for improving safety of school age children instead of further acceleration the School Safety Zone program or other measures in the immediate vicinity of schools.

The following subsections provide further information on the status initiatives in the immediate vicinity of schools, and those more effective initiatives targeted at areas if higher risk.

School Safety Zones

The School Safety Zone (SSZ) program was developed in 2016 as part of the City's initial Vision Zero Road Safety Plan. The program includes a variety of safety measures such as enhanced pavement markings, flashing school zone signs and speed feedback display signs in the immediate vicinity of schools. The safety measures are intended to improve the safety of all schools across the city by promoting greater attention to and respect for traffic laws near schools. To date, 180 of 785 Toronto District School Board (TDSB) and Toronto Catholic District School Board (TCDSB) elementary, middle and secondary schools have received SSZ treatments. At the current rate of completing 80 SSZs per year, it is estimated that it will take approximately six additional years to complete all SSZ implementations across the City.

The implementation process for SSZs is not well suited for in-year acceleration due to the timelines associated with the following key tasks, which amount to up to 27 weeks in total, including:

- Design and review of SSZ layouts – four weeks
- Communication process including mail-out of letters to residents whose home frontages will be impacted by SSZ signage – four weeks
- Addressing resident concerns about proposed sign installations – up to three weeks
- Utility locates - up to eight weeks
- Pavement markings (cannot be installed during winter months) and sign installations by contracted services – eight weeks

Even if additional staff and capital budget resources were allocated to SSZs, the vendor community (pavement marking contractors and suppliers of flashing signs and speed feedback display signs) is limited in their capacity to deliver additional SSZs in a more aggressive pace than the current rate. Therefore, it is unlikely that SSZs could be implemented more quickly, unless the vendor community slowed down the implementation of other more impactful road safety initiatives such as speed limit reductions, interim geometric road modifications, adding and refreshing high visibility zebra crosswalks at all signalized intersections and the roll out of Automated Speed Enforcement

If the timelines, staff resources, and capacity of the vendor community were not limiting factors, at a cost of about \$33,000 per SSZ, the additional cost of completing 10 more SSZs per year would be approximately \$330,000. This could theoretically result in completing all school zones in five years regardless of the noted constraints, instead of the six years currently anticipated.

SSZs are just one tool of many that Transportation Services uses to improve the safety of school-age children and all road users. While SSZs are used to specifically improve safety around school zones, they are not the most impactful tool to reduce killed and serious injury collisions. Experiences of other jurisdictions has informed the focus of Vision Zero 2.0 on initiatives such as the speed management strategy, road design improvements pedestrian head start signals and proactively addressing high-risk mid-block crossings. Wherever possible, staff are accelerating the implementation of these types of improvements in order to have the greatest reduction of killed and serious injury collisions for school-age children, and for all road users.

Automated Speed Enforcement (ASE)

ASE is a tool for school safety and has been found to be an effective strategy in reducing vehicle speeds, reducing collisions resulting in fatalities or serious injuries and reducing the overall number of collisions. On May 30, 2017, the Province of Ontario passed the Safer School Zones Act, 2017 to facilitate the municipal adoption of automated speed enforcement (ASE) technology on roads with speed limits under 80 km/h in school and Community Safety Zones.

In anticipation of provincial approvals, every school zone has been designated as a Community Safety Zone, installation of signage for all of which will be completed in

2020. This designation doubles set fines for Highway Traffic Act offenses, such as speeding and disobeying traffic signals

In December 2019, the Ministry of Transportation proclaimed the legislation and enacted the regulation enabling the implementation ASE. Staff must enter into an agreement with the Province before the ASE program can be launched. The City expects to have 50 ASE cameras in operation in early 2020 with two per ward, located within school zones.

School Crossing Guard Program

On August 1, 2019, the School Crossing Guard Program operated by the Toronto Police Service was fully transferred to the City of Toronto. School Crossing Guards are a key piece of the tool kit to implement Vision Zero in School Zones. Crossing guards maintain the safety and well-being of schoolchildren as they walk to and from their schools. The City of Toronto provides crossing guard services at 705 locations through two contracted vendors. An upcoming review of the School Crossing Guard Warrants will further incorporate Vision Zero criteria and is expected to be completed in the first quarter of 2020.

School Travel Planning

School Travel Planning (STP) is a process for promoting and identifying barriers to walking and cycling to school and has the potential to improve safety by reducing traffic around schools, improve health by increasing daily physical activity and improve the environment by reducing greenhouse gas emissions and air pollution. In the first year of the Vision Zero Road Safety Plan, staff worked closely with the School Boards to coordinate the delivery of the SSZs and STP programs to maximize the benefits and effectiveness of both programs. The program is currently limited to 15-25 schools per year between both Boards based on their current funding levels.

With the accelerated pace of SSZ delivery, the City has proposed increasing funding to the School Boards by \$320,000 annually through the 2020 budget for the STP program to match the delivery of SSZs.

Active and Safe Routes to School

An Active and Safe Routes to School project was launched in 2018 at three locations (five schools) and funded in part by Bloomberg Philanthropies through its Partnership for Healthy Cities program. The project involves the introduction of education awareness and engineering interventions, including the installation of various new signs, painted sidewalk stencils, and pavement marking treatments along designated walking/biking routes around each school to help reduce vehicular speed and increase safety. The City is expanding the project to three additional locations (four additional schools) in the year 2019/2020 through the Ontario Active School Travel Fund and the Bloomberg Philanthropies Partnership for Healthy Cities program.

Speed Management Strategy - Speed Limit Reductions

Speed limits on a total of 250 km of major arterials have been reduced since the introduction of Vision Zero 2.0. 129 km of these roads are within school zones. Further speed limit reductions are planned and proposed in 2020 for an additional 218 km of collectors and 39 km of minor arterials. 44 km of these collectors and 8 km of these minor arterials are in the immediate vicinity of schools. These speed limit reductions target 21 percent of roadways that have been the location of recent school-age children Killed and Serious Injury collisions.

Following the implementation of the minor arterial and collector roadway speed limit reduction, staff will begin developing the program for reducing speed limits on local residential roads to 30 km/h on a neighbourhood basis.

As outlined in the Vision Zero 2.0 staff report, this is envisioned to be a multi-year program, starting in 2021. The reductions will be rolled out on a systematic, ward-by-ward basis. This approach will reduce speed limits on about 970 km of local roadways within school zones.

Road Design Improvements

Geometric Modifications

Geometric modifications to the design of the road are known to be one of the most effective ways of achieving the intended target speed for the context and improving road user behaviour. Geometric modifications, however, are costly and take several years to plan, design, coordinate and deliver. Since the Vision Zero RSP was approved in 2016, geometric safety improvements have been made at 9 locations in the immediate vicinity of schools. These improvements are programmed to take advantage of bundling opportunities with other capital works and using a data-driven approach. As such, high injury school areas will receive geometric safety treatment through this approach.

Traffic Calming Program

The Traffic Calming program is targeted at local and collector roadways with the aim of slowing down traffic through physical measures. Since 2016, traffic calming features have been implemented in the immediate vicinity of 73 schools. The proposed 2020 RSP budget includes continued funding for the Traffic Calming program. Staff are exploring the option of an open year-round contract in 2020 for delivering the Traffic Calming program in a more flexible manner.

Missing Links Sidewalk Program

The Missing Links Sidewalk program aims to provide safe, comfortable and accessible sidewalks on all public streets. Nearly one-quarter of all local roads in Toronto, or 800 km, are without a sidewalk. This program improves the safety of school children through providing more safe routes to school and also promotes active transportation. Within this program, a sidewalk construction project's priority is higher on streets where connections to schools can be enhanced. Since 2016, 16 percent of new sidewalk installations through this program have been within school zones.

Pedestrian Head Start Signals

Pedestrian head start signals, also known as Leading Pedestrian Intervals (LPI), are one of the most effective, low cost safety features applicable to signalized intersections for addressing turning collisions with pedestrians. In the past five years, 40 percent of school-age children Killed and Serious Injury collisions have occurred at traffic signals. Since 2016, pedestrian head starts have been added to 146 signalized intersections city-wide, including 41 signalized intersections in the immediate vicinity of schools. Under Vision Zero 2.0, staff are currently developing a proactive approach for application of pedestrian head start signals as a default safety feature for the majority of existing and new signalized intersections across the City, where feasible.

Proactively Addressing High-Risk Mid-Block Crossings

As reported in Vision Zero 2.0 staff report, every year about 62 pedestrians are killed or seriously injured while crossing mid-block, away from controlled crossings. More pedestrians are killed or seriously injured in this type of collision than any other collision scenario in Toronto. Mid-block collisions account for 31 percent of school-age pedestrian Killed and Serious Injury collisions.

In 2020, a systemic network-wide review will be conducted in order to proactively identify and prioritize mid-block segments prone to high-risk mid-block collisions and develop appropriate solutions for these segments. Solutions will include application of the new contextual traffic signal warrant, resulting in additional signalized crossing opportunities, addressing speeding, and TTC stop rationalization.

Education and Engagement Targeted at School-Age Children

One unique feature of pedestrian Killed and Serious Injury collisions involving school age children is that 20 percent involve children crossing without the right of way, compared to 12 percent for Killed and Serious Injury collisions amongst pedestrians 19 years or older. Human factors research suggest that children's ability to assess the speed and acceleration of an oncoming vehicle is not fully developed¹. This has informed ongoing efforts in the area of school-age children education. An example is a recently developed educational poster by Toronto Public Health, in consultation with Transportation Services, TDSB, TCDSB and Toronto Police, to be used by police officers when teaching school-age children about crossing the road safely. Providing information to children at schools is also an effective way to spread information to their parents and siblings to increase overall understanding of road safety.

Conclusions

Currently approximately 60 percent of the overall RSP budget and a significant portion of Vision Zero staff efforts are spent on safety initiatives in the immediate vicinity of schools when 15 percent of overall Killed and Serious Injury collisions occur within

¹ David C. Schwebel., Aaron L. Davis., & Elizabeth E. O'Neal, (2013). Children Pedestrian Injury: A Review of Behavioral Risks and Preventive Strategies, 3

school zones. As such, accelerating the rate of School Safety Zone delivery is not aligned with the Council approved and data-driven Vision Zero 2.0 Strategy towards rapidly eliminating traffic fatalities and serious injuries when Vision Zero resources could be spent more effectively to reduce Killed and Serious Injury collisions for children and all road users.

The proposed 2020 RSP budget includes a request for additional staff resources in order to ramp-up delivery of Vision Zero. With this increased delivery capacity it is expected that additional RSP funding will be requested in the following years. Any additional funding or staff resources in the future years should be directed towards the data-driven focus areas highlighted in Vision Zero 2.0.

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