Attachment 1 – CRSS

Community Road Safety Strategy

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Background

Road safety impacts all members of the Guelph community, regardless of their age, ability, or mode of transportation. A safe road network benefits all users. The goal of the Community Road Safety Strategy (CRSS) is to provide strategies that will improve road safety to benefit all users, whether you are walking, cycling, riding transit, using a mobility device or driving.

The CRSS is a high-level road safety plan that outlines emphasis areas and appropriate countermeasures for implementation through educational campaigns, enforcement strategies, and engineering/infrastructure modifications. The implementation and evaluation of each strategy will rely on the following principles:

Evidence informed decision making: locations selected for road safety modifications through the CRSS shall be informed by data through network screening and selected interventions shall be informed by best practices.

Equitable approach: studies have shown that socioeconomic inequities exist in the distribution of roadway environment features that reduce speed and enhance pedestrian safety (e.g. traffic calming measures).[1] As such, demographic data should be considered when prioritizing projects for implementation. The CRSS will use census data and infrastructure data from the city to determine if there are any gaps in locations that require a road safety intervention (e.g. traffic calming).

Continuous evaluation: the CRSS is a living document that will be revisited on a regular basis and amended as new evidence informed strategies become available. Engineering and Transportation Services staff will add, remove, or revise countermeasures over time so that the strategy remains timely and relevant.

Development of the CRSS

The CRSS was developed by reviewing best practices in other municipalities, engaging with stakeholders on the update of the traffic calming policy, community engagement to develop emphasis areas and strategies for the CRSS which will be further implemented and evaluated (see Figure 1).

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[1] Rothman L, et al. Inj Prev 2019;**0**:1–5. doi:10.1136/injuryprev-2018-043125

Figure 1: Development of the CRSS

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│ countermeasures     │      │ Safety Coalition    │
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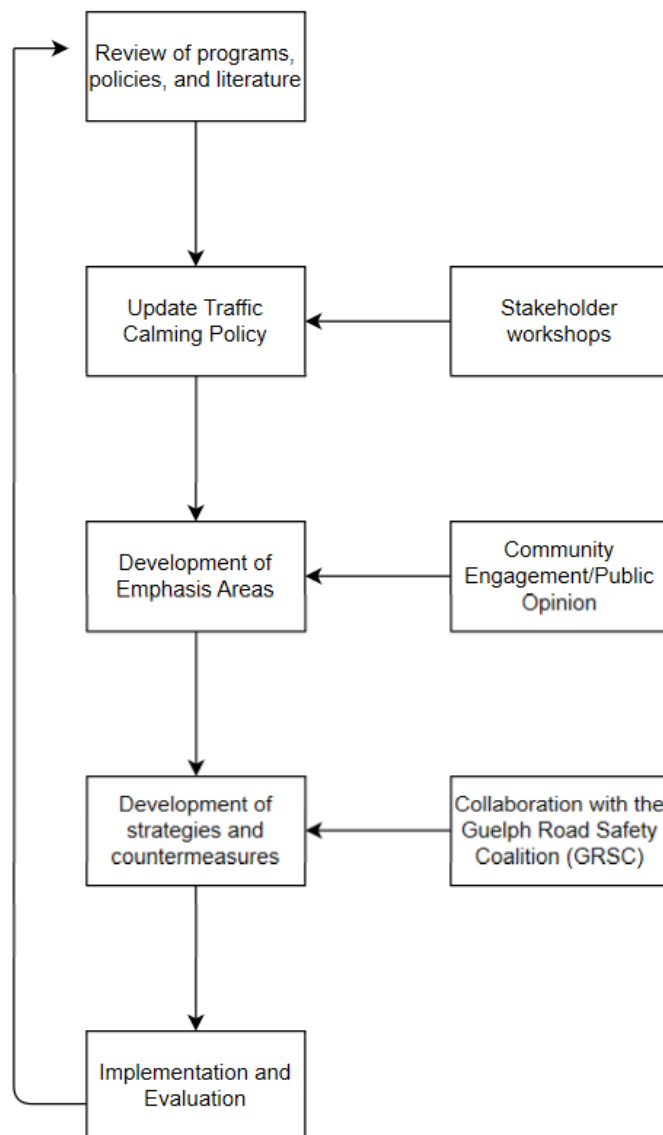
The main goals of the CRSS include:

- Enhancing the safety of vulnerable road users (pedestrians and cyclists)
- Leveraging innovative technologies such as red-light cameras
- Improving road infrastructure for all road users
- Raising public awareness about the importance of road safety
- Focusing on a data driven approach to road safety
- Implementing and evaluating proven countermeasures

Vision Zero is a traffic safety initiative that is based on the philosophy that no loss of life is acceptable on our roadways. In a Vision Zero community, the main belief is that people may make mistakes and therefore the road system (i.e. infrastructure) must be optimally designed to eliminate fatalities and serious injuries. This requires

a focus on safe drivers, safe vehicles, safe roads and the right speed for each type of road.

Although the City of Guelph has not formally adopted a Vision Zero approach, many of the safe systems principles and preferred strategies to address road safety are in line with Vision Zero principles. These include:

- Enhancing the safety of vulnerable road users (pedestrians and cyclists)
- Leveraging innovative technologies such as red-light cameras
- Improving road infrastructure for all road users
- Positioning road safety as a top priority in policies
- Raising public awareness about the importance of road safety
- Focusing on a data-driven approach to road safety
- Implementing and evaluating proven countermeasures

The City will continue to monitor best practices and may explore a formal Vision Zero program in a future strategy if the Transportation Master Plan adopts a similar approach.

1.0 Review of programs, policies, and literature

There are few municipalities with a road safety program on the Council approved comparator municipality list, so the city referenced leading documents from across the country. The CRSS is based off evidence informed best practices identified through experimental research studies and existing programs and policies in other municipalities including[2]:

- B.C. Road Safety Strategy Update: Moving to Vision Zero (2016)
- Calgary Safety Mobility Plan 2019-2023
- Canada's Road Safety Strategy 2025
- City of London's Road Safety Strategy 2014-2019
- Edmonton Road Safety Strategy 2016-2020
- Halifax Strategic Road Safety Plan
- P.E.I. Road Safety Strategy 2015: Toward Zero Tolerance
- Region of Peel Vision Zero Road Safety Strategic Plan 2018-2022
- Toronto's Vision Zero Road Safety Plan 2017-2021
- Town of Milton and Halton Hills Road Safety Strategy

2.0 Update Traffic Calming Policy

The Traffic Calming policy (previously referred to as the Neighbourhood Traffic Management Review) was last updated in 2006. As part of the CRSS, the Traffic Calming policy which outlines procedures for initiating, reviewing, implementing,

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[2] Parachute Canada. Policy Information. https://parachute.ca/en/professional-resource/vision-zero-collection/?resources=policy-information

and evaluating traffic calming plans in residential neighbourhoods to address traffic safety concerns related to speeding and high vehicle volumes has been updated. Stakeholders including Accessibility, Emergency Services, Operations, Police, Public Health, Sustainable Transportation, Transit, and Waste provided feedback on the updated policy through a set of in-person workshops. Strategies that belong in the CRSS were also identified through these consultations.

3.0 Development of Emphasis Areas

3.1 Community Engagement/Public Opinion

The City's Engineering and Transportation Services department engaged with the community through several in person and online engagement events that took place between February 18th and March 23rd 2020. These events were communicated through:

- Public notices on Guelph.ca
- A city news ad in the Guelph Mercury Tribune
- The HQ online platform: haveyoursay.guelph.ca
- Social media promotion through Facebook and Twitter and;
- A radio ad on CJOY and Magic FM

Additionally, in-person drop in events were held at City Hall, the Delta conference centre, the Evergreen Seniors Centre, the University of Guelph, and Immigrant Services. The top five road safety priorities identified by the community in order of importance were: pedestrian safety (19.1%), distracted driving (17.4%), aggressive driving (15.5%) which includes red-light running, cycling safety (13.9%) and speeding (13.0%) (see Figure 2). Further information about the demographic and ward distribution of online participants can be found in Figure 3 and Figure 4 accordingly. City staff also mapped data from service requests that were received by Engineering and Transportation Services between 2015 and 2019, these top road safety priorities have been highlighted in Figure 5 by ward. In addition to identifying top safety priorities, the community was asked to outline strategies that they would like to see the city consider in the CRSS. The themes from this activity are summarized below.

3.2 Summary of community engagement road safety themes

1. Need for increased enforcement using automated measures such as red-light cameras and speed enforcement. Other recommendations include increasing RIDE programs and fines/penalties in school zones.

2. Need for infrastructure improvements including physically separating drivers from cyclists and pedestrians.

3. Improved crossings at signalized intersections using leading pedestrian intervals and removal of pedestrian push buttons

4. Lowering speeds in areas with vulnerable populations

5. Improvement of safety in school zones by advocating for more crossing guards, reducing parking and installing kiss and ride zones

6. Updating the Traffic Calming Policy (formerly the 'Neighbourhood Traffic Management Review')

7. Increased connectivity using sidewalks and multi-use paths

8. Awareness and education campaigns for speeding, red-light running, sharing the road with cyclists and distracted driving

9. Winter maintenance to ensure that our roads, bicycle lanes, and sidewalks are safe to use

10. Focus on data driven solutions to collect information about dangerous areas and to evaluate if safety measures are working

4.0 Development of strategies and countermeasures

The included CRSS measures are outlined in Section 4.2 CRSS Strategies - below. These measures are categorized under the applicable road safety topics. Strategies were selected based on a review of the identified solutions that were received through the engagement opportunities and alignment with evidence informed best practices. Strategies have been subdivided and summarized under education, engineering, and enforcement techniques (see Table 1). Strategies that are out of scope for the CRSS or are being reviewed through another policy at the city are also described in Section 4.4.

Table 1: Summary of Road Safety Strategies by Topic and Type of Initiative

Road Safety Topic	Education	Engineering	Enforcement
Pedestrian Safety	Pedestrian routes map/app	Leading pedestrian intervals (LPIs) Pedestrian crossings (flashing signs and/or pavement markings)	N/A
Distracted Driving	Distracted driving awareness campaign	N/A	Out of scope
Aggressive Driving	Red light running awareness blitz	N/A	Red light cameras

Road Safety Topic	Education	Engineering	Enforcement
Cycling Safety	1-meter passing law share the road awareness campaign Avoiding right hook awareness campaign Dooring educational campaign	Addressed through another city policy or strategy	Out of scope
Speeding	Radar speed display boards Slow down lawn signs	Updating Traffic Calming Policy Speed limit reductions In road flex signs Slow streets	Automated speed enforcement cameras
Impaired Driving	Impaired driving awareness campaign	N/A	Out of scope
School Safety	Permanent radar display boards 'Walkers are winners' program'	Will be addressed through traffic calming policy update	Automated speed enforcement cameras
Senior Safety	Senior safety zone awareness campaign	Creation of 'senior safety zones' that offer a package of interventions which can include LPIs, reduced speed limits, flexible in road signs, pavement markings, etc.	N/A
Transit Safety	Working with Guelph Transit to review midblock bus locations to evaluate the safety of pedestrian crossings	Addressed through another city policy or strategy	N/A

Road Safety Topic	Education	Engineering	Enforcement
Railway Safety	Collaborate with Guelph Junction Railway to promote rail safety week and other initiatives that address at-level rail crossings	Controls to limit traffic through neighborhoods when trains are at level crossings by working with CN to amend switching operations	Out of scope

4.1 Guelph Road Safety Coalition

Educational strategies that require awareness campaigns will be developed through the Guelph Road Safety Coalition (GRSC). The GRSC is a coalition of organizations including the City of Guelph's Engineering and Transportation Services department, the Guelph Junction Railway, Wellington-Dufferin-Guelph Public Health, Guelph Police, University of Guelph Campus Police, and the Ministry of Transportation. The purpose of the GRSC is to bring community stakeholders together to coordinate and bolster road safety efforts in the City of Guelph through public education & awareness raising; capacity building; sharing of resources; and to explore future opportunities to collaborate.

4.2 CRSS Strategies

The CRSS recommends 24 strategies below that fit within 10 road safety emphasis areas.

Pedestrian Safety

- Leading pedestrian intervals (LPIs)
- Pedestrian crossing improvements
- Safe pedestrian routes application

Distracted Driving

- Distracted driving awareness campaign coordinated through the GRSC

Aggressive Driving

- Red light cameras
- Red light running awareness campaign coordinated through the GRSC

Cycling Safety

- Educational campaigns about the 1-metre passing rule (sharing the road), conflicts between drivers turning right and cyclists riding in a bicycle lane (right hook awareness), and dooring coordinated through the GRSC

Speeding

- Automated speed enforcement cameras
- Flexible in-road signs
- Slow streets
- 'Please slow down' lawn signs
- Radar speed boards
- Speed limit reviews
- Updating the Traffic Calming Policy

Impaired Driving

- Safety awareness campaign coordinated through the GRSC

School Safety

- Permanent radar display boards
- School safety reviews
- 'Walkers are winners' program

Senior Safety

- Creation of senior safety zones
- Senior safety zone awareness campaigns coordinated through the GRSC

Transit Safety

- Review midblock bus locations for safer pedestrian crossings

Railway Safety

- Rail safety awareness campaign coordinated through the GRSC
- Review at level crossings

Each strategy is described in detail below with references to other municipalities who have explored similar options through their road safety programs where applicable.

4.2.1 Pedestrian Safety

Leading pedestrian intervals. A LPI provides an advanced walk signal for pedestrians to begin to cross the street before vehicles get a green signal. The LPI is used to improve driver yielding behavior towards pedestrians when they enter the crosswalk. This strategy is particularly helpful in areas where there are increased senior pedestrians who may take more time to cross the road. LPIs are currently operational in cities such as Toronto and Hamilton.[3] Recommended locations for implementation include roads where there are heavy vehicle turning movements and heavy pedestrian volumes, high crash locations due to right and

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[3]City of Toronto. Leading Pedestrian Intervals. https://www.toronto.ca/services-payments/streets-parking-transportation/traffic-management/traffic-signals-street-signs/types-of-traffic-signals/leading-pedestrian-interval-phase/

left turning vehicles, school crossing locations, and areas with high population of seniors or people with physical disabilities.[4] As part of the CRSS, the City of Guelph will review police reported collision data to determine which locations are eligible for an LPI.

Pedestrian crossing improvements (including pavement markings such as ladder crosswalks). The City of Guelph uses provincially accepted guidelines when deciding where to put a pedestrian crossing and which style of crossing to use.[5] Under the CRSS, city staff will review the road network to determine if there are any locations that warrant a pedestrian crossing or could benefit from enhanced pavement markings (i.e. ladder crosswalks). Locations identified during network screening will be prioritized if they meet the appropriate criteria and minimum thresholds.

Safe pedestrian routes application. Through the community engagement surveys, residents identified the utility of having a website or phone app to identify safer walking routes throughout the city (e.g. routes where a pedestrian would have to cross the least amount of times thereby reducing potential for conflicts with vehicles). The Active and Safe Routes to School program is a provincial initiative that maps out the safest walking routes for children to get to and from school. A similar methodology could be used to create a safe pedestrian routes application that would highlight trails and other paths of travel that are safer for active transportation.

4.2.2 Distracted Driving

Distracted driving safety awareness campaign. Approximately one quarter of all car crashes involve phone use. Each year in Canada, driver distraction is a factor in about 4 million motor vehicle crashes.[6] Distracted driving was identified as a top priority in all wards across Guelph (see Table 2). The city cannot control enforcement strategies that target distracted drivers, however, staff will work with Guelph Police on a distracted driving awareness campaign through the GRSC. As part of their 'Art of Distraction' educational campaign, the City of Toronto has highlighted vignettes of collisions that have involved driver distraction.[7] The CRSS is advocating for similar educational strategies to be used to address distracted driving in Guelph. Through GRSC's social media platforms including Facebook and Twitter, similar messages and stories can be shared with Guelph's community to

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[4]City of Hamilton. Routine Accommodation and Toolbox Solutions. http://www2.hamilton.ca/NR/rdonlyres/3205E0DC-3EE5-4329-A461-174B376FF620/0/Appendix17RoutineAccommodationandToolboxSolutionsasofFall2011.pdf
[5] City of Guelph. Pedestrian Crossings. https://guelph.ca/living/getting-around/cycling-and-walking/pedestrian-crossings/
[6] CAA. Distracted Driving Statistics. https://www.caa.ca/distracted-driving/statistics/
[7] City of Toronto. Art of Distraction. https://www.toronto.ca/services-payments/streets-parking-transportation/road-safety/vision-zero/educational-campaigns/the-art-of-distraction-campaign/

highlight the importance of putting down a device while operating a vehicle. The GRSC will explore the option of collaborating with community groups to spread this message. Distracted driving will also be addressed through research collaborations and partnerships identified in Section 5.2.1.

4.2.3 Aggressive Driving

Red light cameras. Per Council direction in January 2019, the City of Guelph is proceeding with the implementation of the red-light camera enforcement program. The red-light camera program has been in Ontario since the early 2000's and is running in eight municipalities across Ontario with four more joining within the next few years (including Guelph). The red-light camera program is an automated enforcement program with a goal to improve road safety by reducing the amount of right-angle collisions at signalized intersections which are typically classified as severe. A systematic review that examined red-light camera effectiveness on the prevention of road traffic crashes, found that red-light cameras are effective at reducing total casualty crashes rather than total collisions.[8] These findings suggest that the severity of these collisions may be reduced when this strategy is implemented. The City of Guelph is continuing to work on the implementation of this program, and it is scheduled to be operational at six locations by mid-2022.

Red light running awareness campaign. The City of Guelph will collaborate with Guelph Police and other organizations through the GRSC on a red-light running awareness campaign. The GRSC will explore opportunities to enhance awareness about red light running through targeted events leading up to the installation of red-light cameras in 2022. Additionally, the GRSC will run a social marketing campaign bringing awareness to red-light running infractions and penalties.

4.2.4 Cycling Safety

Educational campaigns. Engineering modifications including physically separated infrastructure will be considered under other city policies including the Cycling Master Plan, road design standards, and the Transportation Master Plan (TMP). The CRSS will address cycling safety by providing education and awareness initiatives around topics such as the 1-metre passing law, conflicts between right turning drivers and cyclists (avoiding right hooks), and dooring. These awareness activities will be coordinated through the GRSC. Additionally, the GRSC will use their social media platforms to share cycling safety messages throughout the year and during targeted campaigns such as bike month and Canada road safety week.

4.2.5 Speeding

Automated speed enforcement cameras. The Province of Ontario passed the Safer School Zones Act in 2017, allowing municipalities to use Automated Speed Enforcement (ASE) technology in school zones and community safety zones. The

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[8] Cochrane Library. Red-light cameras for the prevention of road traffic crashes. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6492462/

cities of Toronto, Brampton, Ottawa and Niagara Region are launching ASE programs in Spring 2020. Additionally, 13 other municipalities are also looking at implementation in the coming months. The City of Guelph belongs to a working group that is evaluating the effectiveness of the ASE program in Ontario before proceeding with implementation. Components of the ASE program that are still being deliberated on include how to process tickets through a joint processing centre, updating by-laws in school and community safety zones, determining threshold speeds, defining warning period times and letters, signage, and privacy concerns. The City of Guelph will continue to be a part of the ASE working group and tailor a potential ASE program based on lessons learned and best practices from other municipalities who have had the opportunity to adopt, implement, evaluate and revise the program to function at an optimal capacity.   More information about ASE in Ontario can be found on the ASE Ontario Website.

Flexible in-road signs. Flexible in-road signs are signs that are installed in the centre of the road between opposing traffic lanes. If struck, they are designed to withstand impact and will not damage the vehicle. The signs can have a narrowing effect which can give drivers' the perception that they need to slow down. These signs are typically installed in the spring and removed by winter to allow for road maintenance. Toronto and Kitchener are both piloting these signs. Kitchener has reported a 3 km/h average vehicle speed reduction on streets where flexible in road signs have been implemented.[9] The CRSS is recommending that flexible in-road signs be considered as a measure in identified school and/or senior safety zones based on a network screening review.

Slow Streets. Slow streets are one tool that can be considered to encourage drivers to slow down and open up streets for other road users who walk and wheel. This initiative involves placing signs and temporary barricades (i.e. bollards/chicanes) at the entrance to a neighborhood to discourage through traffic. Slow streets may be considered under the CRSS on a temporary or permanent basis.

 'Please Slow Down' lawn signs. As part of their educational road safety campaigns, other municipalities including Burlington, Hamilton, London, Mississauga, and Toronto have produced 'please slow down' lawn signs that residents can use to help encourage motorists to practice safe driving habits. These signs also help to create awareness of driving the speed limit in residential areas where there may be higher volumes of pedestrians, cyclists, and children. Similar lawn signs will be created as part of the CRSS and residents will be able to request these signs online or through their ward councilors.[10]

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[9] City of Kitchener. Seasonal Traffic Calming Measures. https://www.kitchener.ca/en/city-services/traffic-calming.aspx#Seasonal-traffic-calming
[10] City of Toronto. Please Slow Down Lawn Sign Campaign. https://www.toronto.ca/services-payments/streets-parking-transportation/road-safety/vision-zero/educational-campaigns/fall-safety-campaign/

Radar speed boards. Radar speed boards have been shown to reduce vehicle speeds in several studies. In school zones, radar boards reduced speeds by 17.5%.[11] The Community Speed Awareness Program (CSAP) has been in place in Guelph since 2018. This safety initiative displays the operating speed of drivers and brings awareness about speed limits on residential roads. These temporary radar speed boards are installed spring through fall each year subject to weather and available staff resources. The program typically runs from April to November each year and can cover up to 64 streets between solar and battery-operated radar speed boards. More information about the CSAP program can be found on Guelph's website. The CRSS is recommending that this program be expanded to include permanent radar speed display boards in identified school and/or senior safety zones based on a network screening review.

Speed limit reviews. There is a well-established relationship between speed and injury severity when a collision occurs. Researchers reported a 28% reduction in pedestrian motor vehicle collisions in the City of Toronto after speed limits were reduced from 40 km/h to 30 km/h.[12] Severe and fatal injuries further decreased by 67% on speed limit reduced streets. The CRSS will undertake a review of speed limits within the City of Guelph's road network to determine if any roads can be reduced to lower speed limits. This work also aligns with the TMP.

Reduced lane widths. Lane widths can have a significant impact on operating speeds. For every 0.3 m reduction in lane width, speeds tend to be reduced by 1 km/h to 2 km/h.[13] As part of the CRSS, city staff will review roads that may benefit from lane width reductions to decrease operating speeds where appropriate. The TMP's Complete Street Design Guidelines will also support this work.

Updating the former 'Neighbourhood Traffic Management Review' (now referred to as the Traffic Calming Policy). The physical measures included in this policy mainly address speeding concerns but may also have positive effects on pedestrian safety, aggressive driving, school safety, cycling safety, and senior safety. These measures include:

- Centre island medians
- Chicanes
- Concrete medians with flexible bollards
- Curb extensions (including traffic calming curbs)
- Curb radius reductions
- Directional closures
- Diverters
- Intersection channelization

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[11] Lee C, et al. Transportation Research Record 2006; doi.org/10.1177/0361198106197300104
[12] Fridman L, et al. BMC Public Health 2020; **20**:56. https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-019-8139-5
[13] Peterniak R, et al. Safety Evaluation of Lane Widths in the City of Edmonton. https://www.tac-atc.ca/sites/default/files/conf_papers/peterniakr_-safety_evaluation.pdf

- Lateral shifts
- Raised median islands
- Raised median islands through intersections
- Roundabouts
- Sidewalk extensions
- Speed cushions
- Speed tables
- Traffic circles
- Traffic islands

4.2.6 Impaired Driving

Safety awareness campaign. The City of Guelph will collaborate with Guelph Police and other organizations through the GRSC on an impaired driving road safety campaign. Other municipalities have implemented programs such as Project Drive Thru in Halton Region to report impaired drivers on the road.[14] The GRSC will explore opportunities to enhance awareness about impaired driving through targeted events during increased risk periods (e.g. Christmas, St. Patrick's Day, etc.)

4.2.7 School Safety

Permanent radar display boards (see 'radar speed boards' under section 4.2.5 Speeding). Under the CRSS, permanent radar display boards will be considered on adjacent streets surrounding a defined school zone and on some arterial roads. City staff will limit the use of these permanent display boards as long-term exposure can reduce their effectiveness on speeding.[15]

School safety reviews. As part of the CRSS, school officials can contact the city to do a school safety review. City staff will review school travel plans, previous safety initiatives that have been implemented and any gaps/opportunities to improve safety around school zones. These may include strategies such as improving pedestrian crossings, placing restrictive signage (e.g. no parking, no U-turns), or penalty reminders (e.g. signs that show the fines for violations). Other options include recommending the 'Walkers are winners' program outlined below. School safety reviews will be performed on a request and case by case basis. The city has been supporting school travel plans through the Active and Safe Routes to School (ASRTS) committee for over 10 years. The city will continue their involvement with the ASRTS committee and will invite them to take part in school safety reviews as necessary.

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[14] Milton Halton Hills Road Safety Strategy. https://www.haltonpolice.ca/community/traffic/documents/Milton_HaltonHills_Road_Safety_Strategy.pdf
[15] Churchill A.E. et al, Transportation Association of Canada Conference Proceedings. Speed feedback signs as a tool to manage demand for lower residential speeds. https://www.tac-atc.ca/sites/tac-atc.ca/files/conf_papers/churchill.pdf

Walkers are winners (WaW) program. The WaW program encourages active transportation to school by using ballots/a draw to incentivize children to walk or wheel. This program is one item in the CRSS toolkit that can be implemented by school officials. The city shall provide the WaW program as one educational option that schools can implement but the expenses of running the program are the sole responsibility of the participating school.

4.2.8 Senior Safety

Creation of senior safety zones. Under the CRSS, senior safety zones will be created that will be eligible for a package of road safety interventions. Other municipalities have explored enhanced pavement markings and signage to raise awareness of the older population, analysis of pedestrian crossing times, and conducting in-road safety reviews.[16] Some of the strategies that may be implemented in a senior safety zone in Guelph include LPIs, reduced speed limits, improved pedestrian crossings, and in road flexible signs. Each senior safety zone will be reviewed on a case by case basis to determine eligibility.

Senior safety zone awareness campaign. The city will collaborate with members of the GRSC to raise awareness about newly installed senior safety zones. Through Facebook and Twitter, the GRSC will use their social media platforms to make residents aware of upcoming locations where senior safety zones will be implemented including the proposed changes (e.g. speed limit reductions).

4.2.9 Transit Safety

Review midblock bus locations. Many residents provided feedback about transit safety solutions including implementing transit priority lanes. These strategies are being considered under the Transportation Master Plan. The CRSS will address transit safety by working with Guelph Transit to review all midblock bus locations in the city that may require a safety improvement (e.g. improving pedestrian crossings where warranted).

4.2.10 Railway Safety

Review at-level crossings. The city is working with railway owners on amending switching operations to limit traffic through neighbourhoods when trains are switching at level crossings. The city will continue to explore this relationship through the CRSS to prioritize railway safety in Guelph.

The infrastructure and geometric requirements at level railway crossings are governed by Transport Canada. The City of Guelph continuously works with local railway operators Metrolinx, Canadian National and Guelph Junction Railway to ensure all Transport Canada (regulations/ guidelines) are being met.

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[16] City of Toronto. Senior Safety Zones. https://www.toronto.ca/services-payments/streets-parking-transportation/road-safety/vision-zero/vision-zero-dashboard/senior-safety-zones-vision-zero/

Rail safety awareness campaign. Under the CRSS, the city will collaborate with the Guelph Junction Railway through the GRSC to promote rail safety week and other initiatives that address at-level rail crossings. Additionally, the GRSC will run a social media campaign to share rail safety tips.

4.3 Safety strategies under review through another policy at the City of Guelph

Below are strategies that were identified through community engagement that are being address through another policy, program, or study at the city or from an external organization including but not limited to the Transportation Master Plan, sidewalk needs assessment study, school crossing guards program, and the walking school bus program through the Active and Safe Routes to School Committee (ASRTS).

4.3.1 Transportation Master Plan

One of the main objectives of the Transportation Master Plan is to recommend new policies and guidelines that balance all road users' needs while prioritizing safety and access for all travelers. Through CRSS engagement staff received a lot of feedback about designing safer roads and neighbourhoods. Specifically, the following suggestions were made:

- Installing protected infrastructure including separated bike lanes
- Transit priority and carpool lanes
- Providing more off-road multi-use paths
- Design innovations including beautifying streetscapes

Although these strategies are out of scope for the CRSS, they will be addressed through the Transportation Master Plan.

4.3.2 Sidewalk needs assessment study

Another strategy that was recommended through community engagement was to review connectivity and missing sidewalk links throughout the city.

This strategy is being address under the sidewalk needs assessment study at the city.

4.3.3 School crossing guards' program

During community engagement we also heard that residents would like:

- To perform a review through gap analyses to identify schools that warrant additional crossing guards

This recommendation is outside the scope of the CRSS as the city already has a school crossing guard program in place. The City of Guelph Crossing Guard Program utilizes the 2017 Ontario Traffic Council School Crossing Guard Guide to determine if an adult crossing guard is warranted. The guide outlines school crossing guard warrant methodologies which include gap and an exposure index. The type of data collection is dependant on the type of intersection. The guide also notes other qualitative factors that should be considered other than relying strictly on

quantitative data analysis. The school crossing guard program will continue to operate and evaluate eligible locations that warrant a school guard.

4.3.4 Active and safe routes to school (ASRTS)

As a strategy to address school safety, the community identified that they would like to see:

- Programs to promote active transportation to and from school (e.g. walking school bus program)

These initiatives are run by the ASRTS committee and are therefore being addressed through an external organization. The walking school bus (WSB) pilot is one initiative that promotes active transportation. The program which is supported by Green Communities Canada and the Government of Ontario hires adult walking supervisors who pick up children along a walking route on the way to school. The City of Guelph will continue their involvement with the ASRTS program.

4.4 Out of scope

The strategies outlined below are out of scope and therefore will not be recommended under the CRSS.

1. **Longer left turn signals for drivers.** This recommendation was identified through community engagement but is not feasible under the CRSS. Increasing a left turn phase can have adverse effects on the road signal network including causing further delay for drivers proceeding through an intersection where the volume of traffic is higher than in the left turn lanes. This can lead to aggressive driving behaviors as well as an increase in noise and air pollution. It can also cause the increase of the intersection cycle length by removing that intersection from a synchronized network of adjacent coordinated intersections. The ability for these intersections to move traffic subsequently decreases and causes more congestion. Therefore, adding unnecessary longer left turn signal for drivers will not be considered under this strategy. Where longer left turn signals are justified they will be reviewed on a case by case basis by the City's Traffic Signals team.

2. **Prioritize winter maintenance clearing for sidewalks before roads.** This recommendation was identified through community engagement but is not feasible under the CRSS. Snow clearing standards are set by the Province of Ontario. The City of Guelph follows the minimum maintenance standards for municipal highways and these standards will continue to guide the Public Works department on winter road maintenance. The Transportation Master Plan may make some operational recommendations based on the proposed street hierarchy that in part addresses this.

3. **Driver education/training.** The need to improve driver education/training was identified through community engagement. This recommendation is outside the scope of the CRSS as the Ministry of Transportation (MTO) is responsible for driver training. However, the MTO is one of the organizations involved in the GRSC and the Road Safety Coalition of Ontario (ROSCO) which Guelph is a

member of, therefore through the CRSS the city can share residents' recommendations to improve driver education training and programs with external agencies.

4. **Enforcement/tickets.** Residents requested that increased enforcement efforts and penalties be issued for unsafe driving behaviours including speeding, distraction, and impairment. The ability to increase RIDE programs, and fines/penalties in school zones for speeding or distracted driving is under Guelph Police's jurisdiction. However, through the GRSC, staff from Engineering and Transportation Services will work with Guelph Police to determine if any safety awareness campaigns can be created to educate the public about these topics. Additionally, as part of their [2019-2021 Strategic Plan](), Guelph Police has identified road safety as one of their top priority areas. Guelph Police will continue to monitor indicators of road safety as part of their strategic plan including traffic crime rate, collisions, and satisfaction with traffic services/feelings of road safety.

5.0 Implementation and Evaluation

5.1. Implementation

There are multiple ways in which a strategy identified in the CRSS may be implemented:

1. **Through a traffic calming measure request.** Residents who initiate a traffic calming request in accordance with the Traffic Calming policy outlined in Attachment 2.1 and are deemed ineligible will be reviewed under the CRSS. City staff will review the identified location to determine if another measure (e.g. radar speed display board) can be implemented depending on the identified concern (e.g. speeding). These locations will be prioritized based on the same rankings identified in the Traffic Calming policy.

2. **Selecting sites using available data.** City staff will annually run network screening to proactively identify locations that are eligible for CRSS measures. Collision data will be used to identify site specific locations for engineering countermeasures. Site selection for strategy implementation will also be informed by reviewing equity data (e.g. census tract). Educational countermeasures will be largely identified and implemented to align with federal, provincial and international timelines (e.g. National injury prevention day).

5.1.1 Data Driven Solutions

1. **Streamlining collision data collection.** Police-reported collision data is used as one of the variables in traffic calming decision making. City staff will also review police-reported collision locations to determine where safety measures outlined in the CRSS should be implemented. Police-reported collision data is being obtained through the MTO Authorized Requester Information Services (ARIS). The MTO's ARIS system allows city staff to obtain detailed collision reports including information on collision location (i.e. intersection vs. midblock), driver condition (impaired, distracted, etc.), demographics including age and sex, injury severity, as well as weather conditions, lighting, driver action, etc.

that occur on Guelph's roads. This data will also be used to evaluate the safety effects of CRSS measures (e.g. pre/post analysis of speed limit reductions).

2. **Exploring smart cities volume data collection.** Many municipalities are moving towards leveraging video analytics to narrow down problem areas and conflicts (i.e. near misses).[17] To effectively implement and evaluate CRSS measures, city staff need to understand which locations have a larger volume of drivers, pedestrians, and cyclists interacting with the road environment.

3. **Apply network screening to tackle road safety concerns proactively rather than reactively.** Network screening is a tool that municipalities can use to identify sites that may benefit from a safety intervention.[18] To proactively select locations for a CRSS intervention, safety performance functions will be developed (using volume and infrastructure data) to predict the likelihood of a crash occurring at a location. By utilizing network screening at the City of Guelph, city staff will be able to proactively implement safety interventions at the most dangerous intersection and midblock locations.

4. **Produce annual collision reports.** One of the suggestions the city received from community engagement was the need for data transparency. By producing annual collision reports, city staff will be able to provide the public with collision trends over the past 5 years. These reports will help contextualize the circumstances surrounding a collision by reviewing rates (i.e. volume data), injury severity, and existing infrastructure that may require improvement.

5. **Explore crowdsourced data collection applications to report road safety concerns.** Many residents expressed the need to report conflicts or near miss events on the roads. The city will explore producing a crowdsourcing map or phone application that helps to collect data that may not be reflected in traditional sources (i.e. police reported collisions).

6. **Data transparency through open data platforms.** The city will contribute to the existing open data platform by providing updates on safety infrastructure projects, as well as data on locations of radar speed boards, red light cameras, and other measures that may be installed in the future (e.g. automated speed enforcement cameras).

5.2 Evaluation

To determine if the strategies outlined in the CRSS are having their intended effects of improving road safety, several indicators need to be measured over time. Appropriate indicators will be determined based on availability of data. These may include operating speeds, changes in volume for all road users, severe and fatal

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[17] City of Kitchener. Cimcon Nearsky. https://www.smartcitiesworld.net/news/city-of-kitchener-develops-data-driven-cycling-master-plan-4661
[18] Federal Highway Administration Office of Safety. Safety Performance Function Development Guide. https://safety.fhwa.dot.gov/rsdp/downloads/spf_development_guide_final.pdf

injury collisions, change in perceptions of road safety, etc. Several years of data need to be collected after a strategy has been implemented to accurately determine (statistically) if a change has occurred. Staff will provide annual collision reports that will also outline evaluation metrics once appropriate data is available.

5.2.1 Research and Collaboration Partnerships

Road Safety Committee of Ontario (ROSCO). The City of Guelph is one of the member organizations of ROSCO. ROSCO meets on a quarterly basis to discuss best practices and how each municipality is tackling road safety concerns. Many of the road safety strategies that have been recommended in the CRSS have been identified through consultations with ROSCO members who have similar road safety strategies in their jurisdictions. The city will continue its partnership with ROSCO to stay up-to-date on industry best practices and to share knowledge around road safety.

Research partnerships

University of Guelph. The city is partnering with the University of Guelph on several initiatives related to road safety. These include:

- A data collection exercise to determine what data the city currently collects to help inform road safety projects (e.g. police-reported collisions, speed, volume data, etc.). This exercise will help highlight how data can be shared across departments, how data is stored and visualized, and how data can be used to make evidence informed decisions.
- An equity study examining the distribution of road safety infrastructure (i.e. traffic calming measures, speed display boards, etc.) among a variety of income quintiles will also be undertaken through a collaboration with the University of Guelph. This study will help inform the distribution of civic engagement across wards in the city.

University of Toronto. The city is also partnering with the University of Toronto on an initiative related to driver behavior and inattention/distraction. Research questions include:

- How does driver inattention differ at locations with varying infrastructure (e.g. protected intersections vs. areas with poor pavement marking/signage)?
- How do people with a physical disability navigate the roadway and how is this related to drivers' attentional failures at an intersection?

These findings will be used to help tailor educational campaigns related to driver distraction.

Through research and collaboration partnerships, the City of Guelph can continue to monitor which measures are effective at reducing severe and fatal injury collisions and improve road safety. As the CRSS is intended to be a living document, evaluation findings will be used to help improve future changes and recommendations.

Attachment 1.1 – Community Engagement and Service Request Results

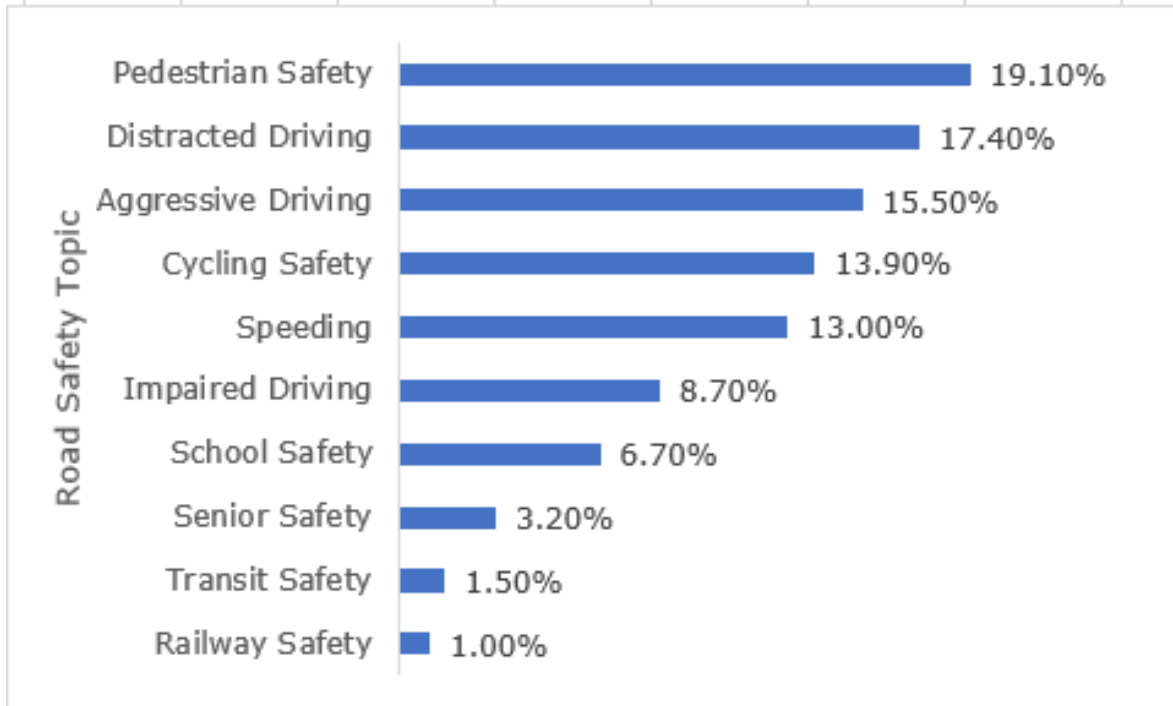**Figure 2: Top Road Safety Priorities for the Community Road Safety Strategy**
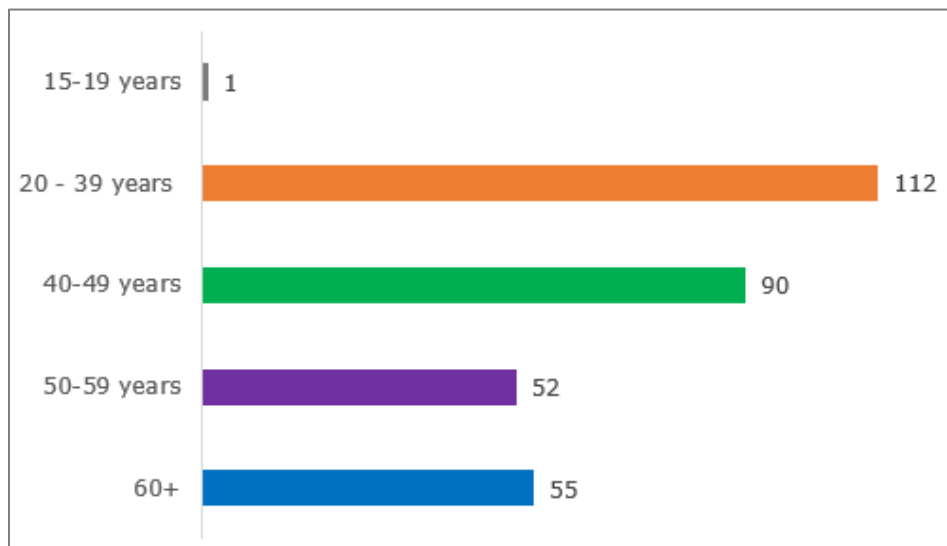

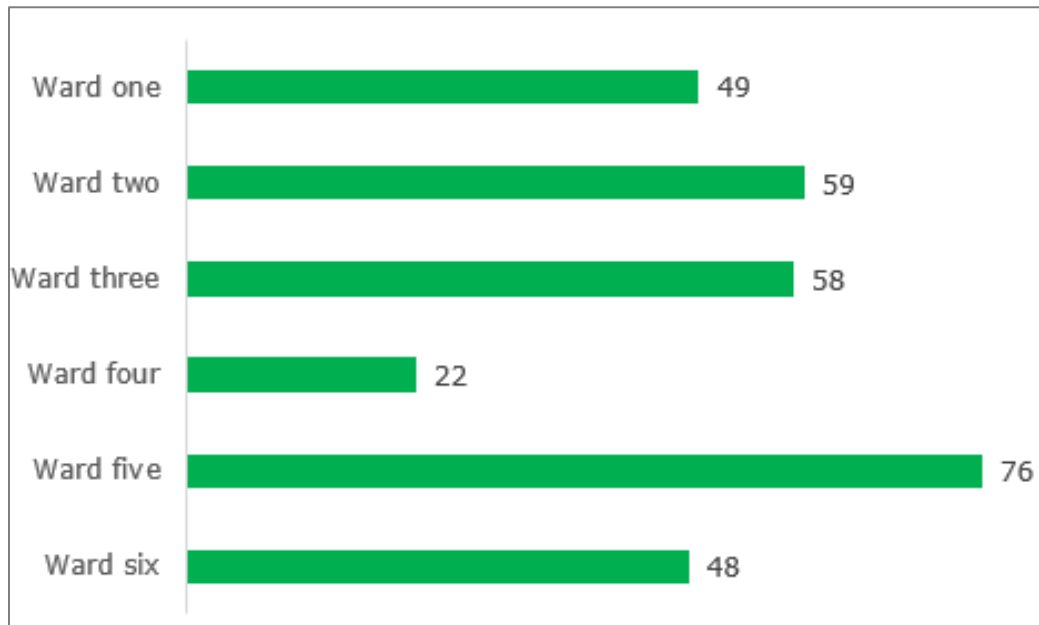**Figure 3: Online CRSS Response Demographics**

Figure 4: Online CRSS Responses by Ward

Table 2: Percent Ranking by Ward from Online CRSS Engagement

	Ward One	Ward Two	Ward 3	Ward 4	Ward 5	Ward 6
Aggressive Driving	17.8%	17.3%	14.4%	14.8%	14.2%	12.8%
Cycling Safety	8.2%	13.3%	16.8%	6.6%	17.8%	12.0%
Distracted Driving	19.2%	15.0%	15.6%	19.7%	16.0%	20.3%
Impaired Driving	10.3%	9.2%	5.2%	13.1%	6.2%	11.3%
Pedestrian Safety	17.1%	16.8%	20.8%	13.1%	20.9%	12.0%
Railway Safety	0.7%	1.3%	2.9%	3.3%	0.9%	0.0%
School safety	11.6%	7.5%	5.8%	8.2%	7.1%	12.0%
Senior Safety	1.4%	2.9%	3.4%	4.9%	2.2%	0.8%
Speeding	11.6%	15.0%	13.9%	14.8%	12.9%	18.8%
Transit Safety	2.1%	1.7%	1.2%	1.5%	1.8%	0.0%

The highlighted cells in this figure represent the top 3 road safety priorities in each ward.

Figure 5: Service Requests (2015 - 2019) by Road Safety Topic