
Subject: Niagara Annual Road Safety Report 2015 - 2019

Report to: Public Works Committee

Report date: Tuesday, June 15, 2021

Recommendations

1. That Report PW 32-2021, **BE RECEIVED** for information.

Key Facts

- The 2019 Niagara Annual Road Safety Report (NARSR) contains general information and collision statistics on Niagara region roads. The report primarily includes data collected for the years 2015 - 2019.
- Transportation Services have been encoding collisions for both regional and municipal roadways since January 2009 as recommended by Niagara Region Road Safety Committee to have better statistics for all collisions across the Niagara Region that will result in greater analysis and treatment. Accordingly, the collision data includes collisions on regional and local municipal roadways, with an appendix containing collision data for regional roads only.
- The statistics between the period of 2015 – 2019 show the total number of collisions in Niagara region continue to increase with an average of 5,695 collisions annually. The number of fatal and injury collisions has been consistent with an average of 736 collisions per year over the past five years. Although 2019 experienced the highest total number of collisions (6,238 collisions), the number of fatal and injury collisions was the lowest (678) in the past five years.
- Niagara region experienced one (1) collision every 89 minutes, two (2) injuries every day, one (1) fatal collision every forty (40) days, one (1) cyclist collision every two (2) days, and one (1) pedestrian collision every three (3) days.
- On average, the societal cost to the region during this reporting period exceeds \$350 million per year, with the year of 2018 recording more than \$380 million in societal collision costs. The year of 2016 had the highest societal cost of \$428 million.
- Road safety is a shared responsibility and requires a commitment from the public and all the agencies to work together to make the roads safer for everyone. It is important that all road users understand their responsibilities when using roadways, whether they are operating a motor vehicle, riding a bicycle or walking.

- Transportation Services brought forward the Vision Zero Road Safety approach, which was approved by Regional Council in November 2019 to highlight the need and commitment to implement safer roads through many different technological and non-technological measures.
- Transportation Services is committed to implementing and working in partnership with the 12 Local Area Municipalities on the Vision Zero Road Safety Program.
- Transportation Services Staff will present Niagara Region's Vision Zero Road Safety Plan that will include a more extensive set of improvements, a collection of comprehensive, proactive and targeted initiatives, informed by data and aimed at eliminating injuries and fatalities on Niagara's roads.

Financial Considerations

Initial funding of the proposed immediate safety initiatives will be covered under the approved 2021 Transportation Services Operating Budget, including hiring a consultant to review and recommend a five-year Vision Zero Road Safety Action Plan.

The Niagara Region's Vision Zero Program was approved by Council as part of the 2020 budget, contingent on approval by the local area municipalities (LAMS) of the required amendments to the intermunicipal agreement (IMA) in support of a financially sustainable Region-led Vision Zero Program. Programs of automated enforcement, including but not limited to, Red Light Camera and Automated Speed Enforcement, will be launched once the approval and execution of the required amendments to the IMA by all twelve LAMs and Regional Council has been completed.

Analysis

In November 2019, Regional Council adopted the Vision Zero Road Safety Program to be referred to the 2020 budget process. Next steps included Transportation Services Staff engaged in the preparation of a Vision Zero philosophy; a departure from the traditional approach of building roads or addressing concerns. To accomplish that, a thorough review of regional collision data was in progress with a key focus of prioritizing Vision Zero, based on data-driven decision-making that will include the following areas:

- Using predictive analytics to more effectively prioritize and target Niagara safety measures;
- Incorporating a social justice and equity lens;

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- Implementing key performance monitoring and evaluation to measure the impact of the safety programs;
 - Working with partners from Niagara Regional Police and Local Area Municipalities to acquire better data; and,
 - Being active members of road safety advocate groups across Ontario and Canada, including the Transportation Association of Canada (TAC), Ontario Traffic Council (OTC), and Road Safety Committee of Ontario (ROSCO), to leverage lessons learned from other Municipalities and adopt the latest techniques with other road safety stakeholders. By continuing to work with road safety partners and monitoring trends captured in NARSR, Niagara Region will be able to develop new and innovative road safety strategies that will help save lives and keep Niagara's roads among the safest in Ontario.

Niagara Annual Road Safety Report (NARSR)

NARSR allows Niagara Region to monitor its progress in improving road safety year-by-year. The report provides valuable data and guides to areas that require more attention. As technology, vehicles, and attitudes evolve, so do transportation needs and demands. With shifting economic and demographic factors, new road safety challenges arise.

Moving forward, Transportation Services Staff will submit NARSR to Regional Council on an annual basis to provide valuable insights about long-term and emerging trends in Niagara and across other jurisdictions in North America. This report will be used as a tool for policy and program analysis and development, road safety research, public education and performance measurements.

Key components from the 2015 - 2019 collision data in Niagara Region identified the following:

#	Challenge Areas	Analysis
1	Weekdays	There is a strong correlation between the peak period of traffic and the number of collisions during weekdays. Most collisions, regardless of their severity occur in the AM peak of traffic (8:00 AM – 9:00 AM), mid-day peak of traffic (around noon), and PM peak of traffic (3:00 PM – 6:00 PM).
2	Weekend	The pattern of collisions during the weekend is different from weekdays. The number of collisions during weekends are smaller than weekdays, and the hours with the largest number of collisions are spread from 10:00 AM to 6:00 PM

#	Challenge Areas	Analysis
3	Surface Treatment	The majority of collisions (74%) occurred on dry surface conditions. Collisions that occurred on wet and snow/ice-covered road surfaces were (15.2%) and (10.5%) respectively. The percentages of fatal collisions by road surface condition is almost consistent with the percentages of total collisions; the statistics do not show that more severe collisions occur on non-dry road surface conditions
4	Intersections	Intersections constituted (50.6%) of all collisions in Niagara Region.
5	Signalized intersections	• (52.5%) of intersections collisions occurred at signalized intersections • Rear-end collisions were (46.4%) of all collisions at signalized intersections followed by angle collisions (18.3%). The rear-end collision trend is similar to other jurisdictions in Ontario, however the angle collisions being higher than in other municipalities. Red-light running could be a potential contributing factor to angle collisions.
6	Midblocks	Single motor vehicle (SMV) collisions constitute (48%) of total collisions followed by rear-end collisions (18%); promoting that several engineering countermeasures, including review of curves and left-turn lanes and increased enforcement activities, can improve road safety at midblock locations.
7	Vulnerable Road Users	• (84%) of pedestrian collisions resulted in an injury, and (2.6%) of pedestrian collisions resulted in a fatality • (68%) of cyclist collisions resulted in an injury, and (0.2%) of cyclist collisions resulted in a fatality • (69.9%) of pedestrian collisions occurred at intersections, and among those, (59.2%) occur at signalized intersections. • (68.4%) of cyclist collisions occurred at intersections among those, (46.8%) occur at signalized intersections.
8	Impaired Driving	Drug and alcohol were a contributing factor in (4.5%) of fatal and injury collisions.

#	Challenge Areas	Analysis
9	Distracted Driving	Distracted driving was a contributing factor to (25.1%) of fatal and injury collisions.
10	Aggressive Driving	Aggressive driving, including speeding, contributed to (19%) of all fatal and injury collisions.

For comparison purposes, recently available public data was obtained from a selection of Canadian jurisdictions. The table below provides fatal and injury collisions for 2018, normalized by 100,000 population. The same data for 2019 is not yet publicly available.

Table 1: Summary of Fatal and Injury Collisions for Various Canadian Cities

Region	Population	Fatal Collisions	Injury Collisions	Fatal+ Injury Collisions per 100,000 Population
Niagara Region	459,260	10	696	153.6
Halifax Region	430,601	14	745	176.3
City of Calgary	1,267,344	16	2496	198.2
City of Ottawa	1,070,338	26	2670	251.9
City of Hamilton	572,575	11	1551	272.8
Canada	37,058,856	1743	108,371	297.1

Breakdown of Collisions by Emphasis Area

On average, there were 722 injury and 13 fatal collisions per year on Niagara roads; fatal and injury pedestrian and cyclist collisions formed 13% and 9% of the total fatal and injury collisions in the region. These injuries and deaths affect the victims and their families and impact healthcare, the community, and social services.

Traffic collisions impose direct and indirect costs on society. Direct costs include property damage, emergency response services, hospital and medical care, insurance and traffic delays. Examples of indirect costs include human consequences such as victim disability, workdays lost and pain and suffering of victims and their families. The year of 2016 recorded the highest societal cost of collision with more than \$433 million, while the year of 2014 was the lowest with \$266 million.

Most of these collisions can be prevented through strategic and practical road safety initiatives that include, but not limited to: infrastructure planning and design changes;

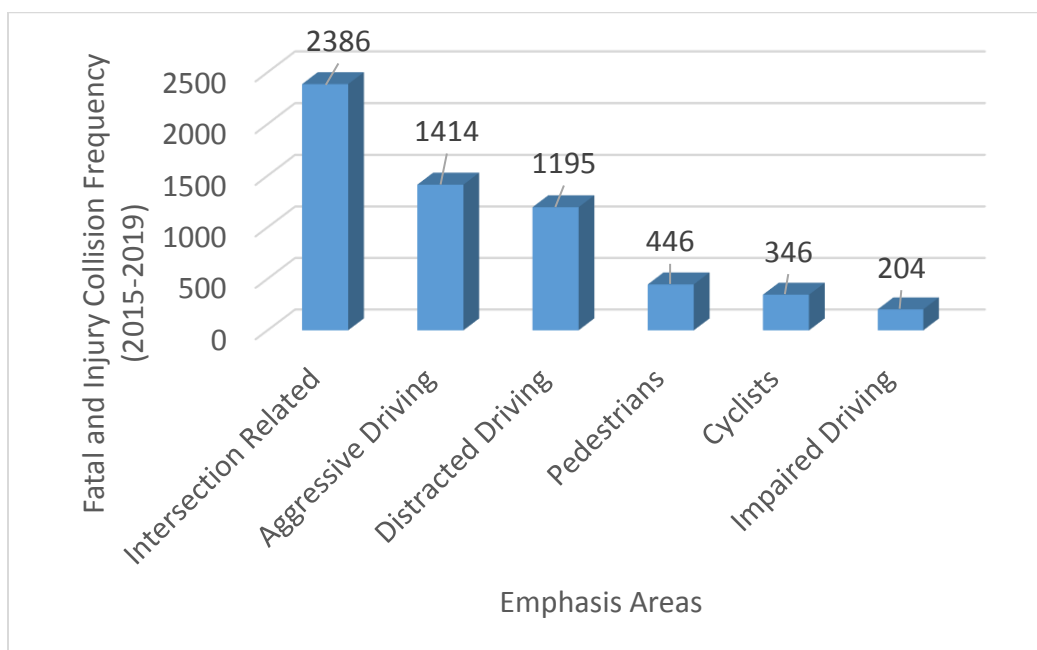
enforcement; public education; and empathy – putting one road user in the position of another to understand the consequences of their actions.

Table 2: Fatal and Injury Collisions (2015-2019)

Collision Severity	Driver/Passenger	Pedestrian	Cyclist
Fatal	55	13	1
Injury	2992	433	345
Percentage of Fatal and Injury Collision	79%	12%	9%

The following chart provides the two-year average collisions representing each of the emphasis areas identified in the Framework. There is a crossover between emphasis areas (i.e., one collision could occur at an intersection and involve aggressive driving and a pedestrian); therefore, these values do not add up to the total average number of fatal and injury collisions. Similarly, countermeasures targeting one emphasis area may impact others as well.

Graph 1: Fatal and injury collisions frequency per emphasis areas



Road Safety Update

Transportation Services Staff will continue to consult with other Niagara Region Departments on the Transportation Master Plan (TMP) and Complete Streets Design

Manual and Guidelines, with a comprehensive plan to improve road safety to include, but not limited to, the following:

- A review of best practices including Vision Zero from comparable jurisdictions;
- A review of existing Regional policies, strategies, and guidelines with respect to road safety;
- Enhanced analysis of Region-wide traffic collision data;
- Specific recommendations to improve road safety, particularly for pedestrians and cyclists, over short, medium, and long periods;
- An implementation plan and funding strategy, as appropriate;
- A regular reporting mechanism and tracking of progress;
- Continued consultation with the Niagara Active Transportation Committees and sub Committees, Niagara Student Transportation Boards, Niagara Catholic School Board, Niagara Regional Police, Niagara Public Health; Niagara Court Services; and,
- The creation of a Road Safety Task Force to be led by the Transportation Services Division.

Transportation Services implemented many initiatives over the years to address safety concerns or follow the updated regulations or best practices; such initiatives have become a regular part of the Annual Work Plan for the Division. The following is a list of some of those initiatives:

1. Completion of In-Service Safety Reviews at high-frequency collision intersections
Work is in progress to identify short, medium and long-term countermeasures targeting all road users at seven locations in partnership with Mohawk College as per the attached map.
2. "Why Active Transportation Matter"
As approved by the Regional Council, Transportation Services Staff initiated the annual grant program to Local Area Municipalities for Bike and Active Transportation Network improvements. As outlined in the Bikeways Master Plan, this promotes the provision for a safe, comfortable, and accessible Active Transportation (AT) network on all municipal streets. This is also a fundamental objective of Vision Zero as AT supports safety, accessibility, affordable transportation, physical activity, safe routes to school, ageing in place, and sustainable growth;
3. Addition of Ladder Crosswalks at Signalized Intersections Program;

4. Pedestrian Crossover Installation Program;
5. New Traffic Signal installation and Rehabilitation Program;
6. Audible/Accessible pedestrian signals upgrades;
7. Adopt A Road Program;
8. Dynamic speed boards;
9. School zone reviews and Safe Routes to School;
10. Pedestrian countdown signals upgrades and extended pedestrian crossing times review;
11. Enhancing road safety during the review and approval process of development applications;
12. Initiate policies and guidelines in the areas of access management, traffic impact studies;
13. Municipal 511:
Similar to Ontario 511, and in partnership with Local Area Municipalities and Niagara Emergency Services, Transportation Staff adopted Municipal 511 software for faster communication on road closures, emergency management, shared situational awareness, and reduced road works and event conflicts to ensure all road users' safety. An information report to PWC is forthcoming on this initiative;
14. SmartCity pilot project:
Transportation Services installed Miovision SmartCity technology at two (2) regional intersections to calculate travel times between intersections, pedestrian compliance, red-light running, split trends and occupancy ratios. These intersections are actively being monitored twenty-four hours, seven days a week (24/7); and,
15. Community Safety Zones (CSZs):
Transportation Services Staff launched twelve (12) new community safety zones in 2019 and 2020. The designation as CSZs is a tangible step to make Niagara streets safer, especially for vulnerable road users like children. This initiative has proven to lower driving speeds, when enforcement is available, and enhance safety for schoolchildren in our communities.

Preparation for Automated Enforcement Programs

Automated Speed Enforcement (ASE):

Niagara Region is negotiating the revision of the IMA with the local area municipalities following the province of Ontario's direction that all revenues generated from ASE be directed to road safety initiatives, community engagement and education.

Ontario enabled ASE in December 2019 when it passed regulations under the Safer School Zones Act to reduce speeds in school zones and community safety zones. The municipalities of Toronto, Hamilton, Brampton, York, Mississauga, Peel, Durham, Ottawa, and Waterloo have the cameras in operation.

The initial evaluation and feedback from those operational municipalities, the media and the ASE Steering Committee is that ASE is an effective strategy in: reducing vehicle speeds; reducing collisions resulting in fatalities or injuries; and reducing the overall number of collisions. This additional safety tool has been well-received by the public. It augments police enforcement, especially when placed in speed-related collision hot spots in a sustained and equitable way by broadly enforcing safe speed across all road users.

The Hospital for Sick Children is completing a safety review of 138 schools throughout Niagara Region to select sites to place the first cameras in Niagara Region Community Safety Zones; and to propose strategies for camera rotation, evaluation and expansion of the program. Agreements to operate the program with the Toronto Joint Processing Center (JPC) are in place. Transportation Staff are ready to operate the ASE cameras within 3-4 months of approval and execution of the amending agreement to the IMA. This timeframe considers the Ontario Ministry of Transportation (MTO) and Vendor outstanding agreements and time for camera delivery, installation, site testing, and coordination with MTO and JPC to launch the program.

Red Light Camera (RLC):

Red-light cameras have been in operation in Ontario since November 2000. The program and processes are well established and are well recognized by the court system for their high quality and proof of violations. Currently, eight municipalities are operating red light cameras. All parts of the process, from the equipment used to the processing of the violations, are identical for all participants. This is for legal and practical reasons.

Within the development of NARSR, it has been noted that red light running is a significant cause of severe collisions at signalized intersections. In Niagara, there are 210 four-legged signalized intersections and 44 three-legged signalized intersections. At these intersections, 1,429 angle and 3,621 rear-end collisions were recorded as occurring between 2014 and 2018.

Accordingly, CIMA+ has been retained to identify the cost-benefit analysis, rank intersections based on their potential for collision reduction after installation of RLC and identify the key candidate approach for each intersection.

A staff report will follow with the business case to seek Council approval to enter into agreements with: MTO and JPC; and the Ontario approved RLC Vendor for the supply, installation and operation agreements. The operation of RLC in Niagara is subject to approval and execution of the amending agreement to the IMA.

Future Reports

Transportation Services Staff will bring forward the following reports that are in support of the Vision Zero Road Safety Programs and implementation as follows:

1. Approval to operate the RLC program in Niagara with supporting business case and cost-benefit analysis;
2. Status of the Complete Streets Design Manual and Guidelines;
3. Launching Municipal 511 similar to Ontario 511;
4. Status of Access Management Policies and Guidelines;
5. Five-Year Vision Zero Action Plan; and,
6. Update on the ASE program after implementation, including the interim evaluation and proposed expansion.

Relevant Consultation

To produce NARSR, Transportation Services Staff collected data from several different sources, including the Niagara Regional Police Service, Ontario Ministry of Transportation and other ministries, and the Chief Coroner's Office.

NARSR is generated from Niagara Region's TES software by extracting collision data received and verified by the Ontario Ministry of Transportation and Niagara Regional Police. Similar to other road safety leaders in the world, the development of the collision database provides the opportunity to evaluate the effectiveness of many different

countermeasures through implementation at strategic locations based on the collision data. The impact of the countermeasures being implemented today will be reflected in the data of future years as we progress towards zero.

Alternatives Reviewed

Not applicable to this report.

Relationship to Council Strategic Priorities

Alignment to Niagara Regional Council Strategic Priority

Priority 2: Healthy and Vibrant Community - Foster a high quality of life through safe, healthy, and inclusive neighbourhoods through the delivery of quality, affordable and accessible human services.

Priority 3: Responsible Growth and Infrastructure Planning - Sustainable investments in Transportation, transit and infrastructure, while aligning infrastructure planning with preservation of the natural environment.

NARSR is intended to be a living document for improving road safety in Niagara Region, and will be updated annually. Transportation Services Staff will develop and submit a Vision Zero Road Safety Action Plan to Regional Council; the Plan requires dedication, time and resources from each partner agency to ensure the goal is reached. Road safety is a shared responsibility and requires a commitment from the public and all the agencies to work together to make the roads safer for everyone. It is important that all road users understand their responsibilities when using roadways, whether they are operating a motor vehicle, riding a bicycle or walking.

As a strategy will be developed in consultation with Local Area Municipalities and a broad range of stakeholders, the Road Safety Strategic Plan will allow staff and partners to effectively deliver on Niagara Region *Community for Life* vision, to create a community that promotes mobility, walkability and various modes of Transportation within a built environment that promotes health and considers the long-term benefits for current and future generations.

Corporate Value: *Equity* - Inclusive, acting with compassion for the community

The Vision Zero Road Safety Action Plan is a critical part of building a safe and inclusive Region. It is an important mechanism to remove equity-seeking groups' barriers by prioritizing vulnerable road users. The Safe System approach will provide a transportation network with safer walking, cycling, and motor vehicle routes.

NARSR has investigated the relationship between Killed and Injury collisions (KIC) and other demographic factors, including children and older adults. The implementation of Vision Zero Road Safety Action Plan will use this analysis to target improvements where they will benefit residents most vulnerable to injury or death.

Another common concern is a perceived unequal distribution of infrastructure improvements. Vision Zero's data-driven approach focuses on unsafe road environment characteristics and KIC wherever they may be throughout the Region. Vision Zero is widely embedded in infrastructure improvements, including Complete Street Implementation and the upcoming update to the Transportation Master Plan.

Other Pertinent Reports

CDS 81-2020 Amending Agreement to the Niagara Region Courts Inter-Municipal Agreement

PW 2-2020 Implementation of Automated Speed Enforcement

PW 4-2020 Designation of Community Safety Zones around schools

PW 35-2019 Automated Speed Enforcement – Safer School Zones Act

PW 36-2019 Red Light Camera

PW 38-2019 Community Safety Zones

PW 64-2019 Vision Zero Road Safety Program

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Appendices

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| Appendix 1 | 2019 Niagara Road Safety Annual Report |
| Appendix 2 | Corridor Map |