Road Safety
Action Plan

Chatham-Kent
Cultivating Growth, Shore to Shore

Contents

Introduction

The Municipality of Chatham-Kent's road safety responsibility is twofold:

1 As a municipal government, it has a general responsibility to see to the well-being of those who live in and visit the municipality.

2 As a road authority, it has an ethical duty to address safety issues on the roads under its jurisdiction.

These responsibilities are met by unique challenges. With an area of approximately 2,500 square kilometers and 3,385 kilometers of road, Chatham Kent has a high rate of personal motor vehicle use on what are often high speed roadways.

At the same time, as a single-tier municipality with a population of 104,321 (2021 census), the tax base of Chatham-Kent dictates that any municipal road safety program must "do more with less," prioritizing the initiatives that will be most effective, and cost-effective, at saving lives. Further, as a single-tier municipality made up of urban and rural areas, Chatham-Kent's road network serves many different functions and users: not only travel within the municipality - including significant numbers of agricultural vehicles - but also inter-regional travel through the municipality and connections to the provincial highway network.

Over the last 5 full years (2018 to 2022), 38 people, or approximately 8 people per year, were fatally injured in collisions on Chatham-Kent roads; this number is approximately double the provincial average per capita. To address this issue, this Road Safety Action Plan has been developed, using measures that have worked in other jurisdictions to address the emphasis areas identified from trends in Chatham-Kent road collision fatalities and major injuries.

This report is intended to:

⊙ Confirm the need for and outline the approach for a Road Safety Action Plan.

⊙ Identify emphasis areas based on observed trends and patterns in Chatham-Kent collision data.

⊙ Provide a list of actions and next steps for the Municipality focused on the identified emphasis areas.

This report has been informed by the Vision Zero framework and the Safe System Approach to road safety.

Key Principles

The Road Safety Action Plan is based on the following key principles:

- Road crash deaths are unacceptable and preventable.

- Prevention of fatalities and major injuries, as opposed to prevention of collisions, should be the focus of road safety initiatives.

- A safe system approach should be used for the municipality's road safety program.

- The municipality's road safety program should be data-driven, based on real-life safety experience in Chatham-Kent as well as relevant experience in other jurisdictions.

- The municipality's road safety program should be equity-centred, recognizing that:
  - When deficiencies in road safety occur, people and groups with high equity needs are often disproportionately impacted.
  - Road safety countermeasures can have the potential for negative equity impacts if not designed to avoid and address those impacts.
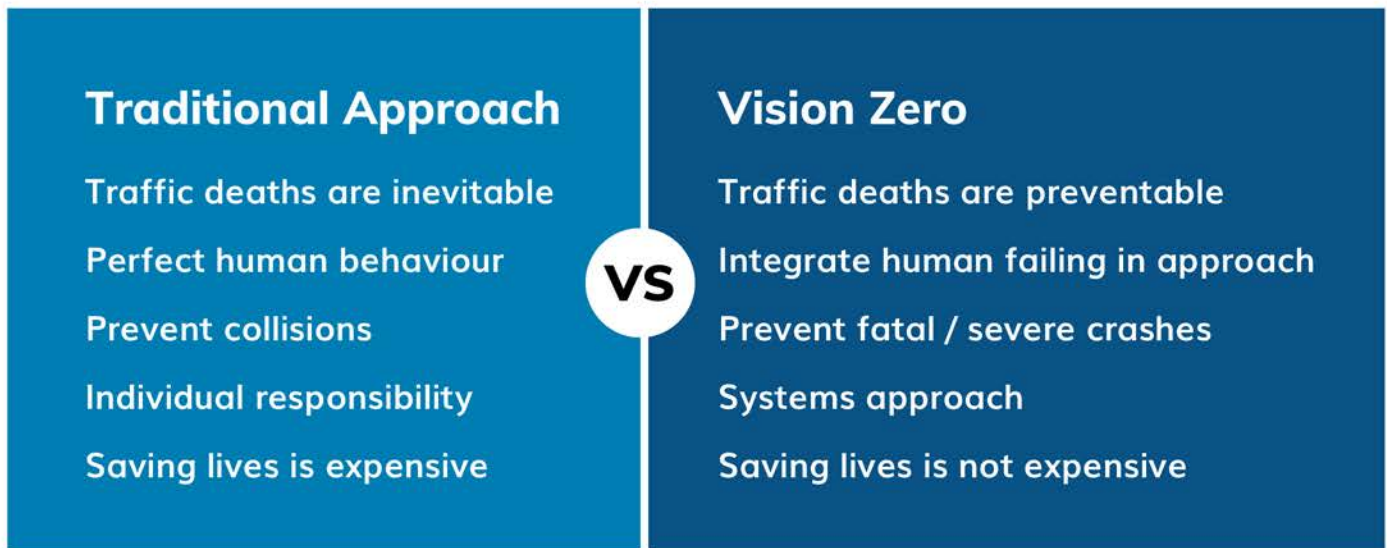
Vision Zero and the Safe System Approach

Vision Zero is a strategy to eliminate severe and fatal injuries due to collisions. Since first being introduced in Sweden in 1997, it has been adopted in numerous jurisdictions around the world, including 23 Canadian municipalities.

Vision Zero represents a departure from traditional approaches to road safety, as summarized in Figure 1 (source: Vision Zero Network).

Figure 1: Traditional Road Safety Approach vs. Vision Zero

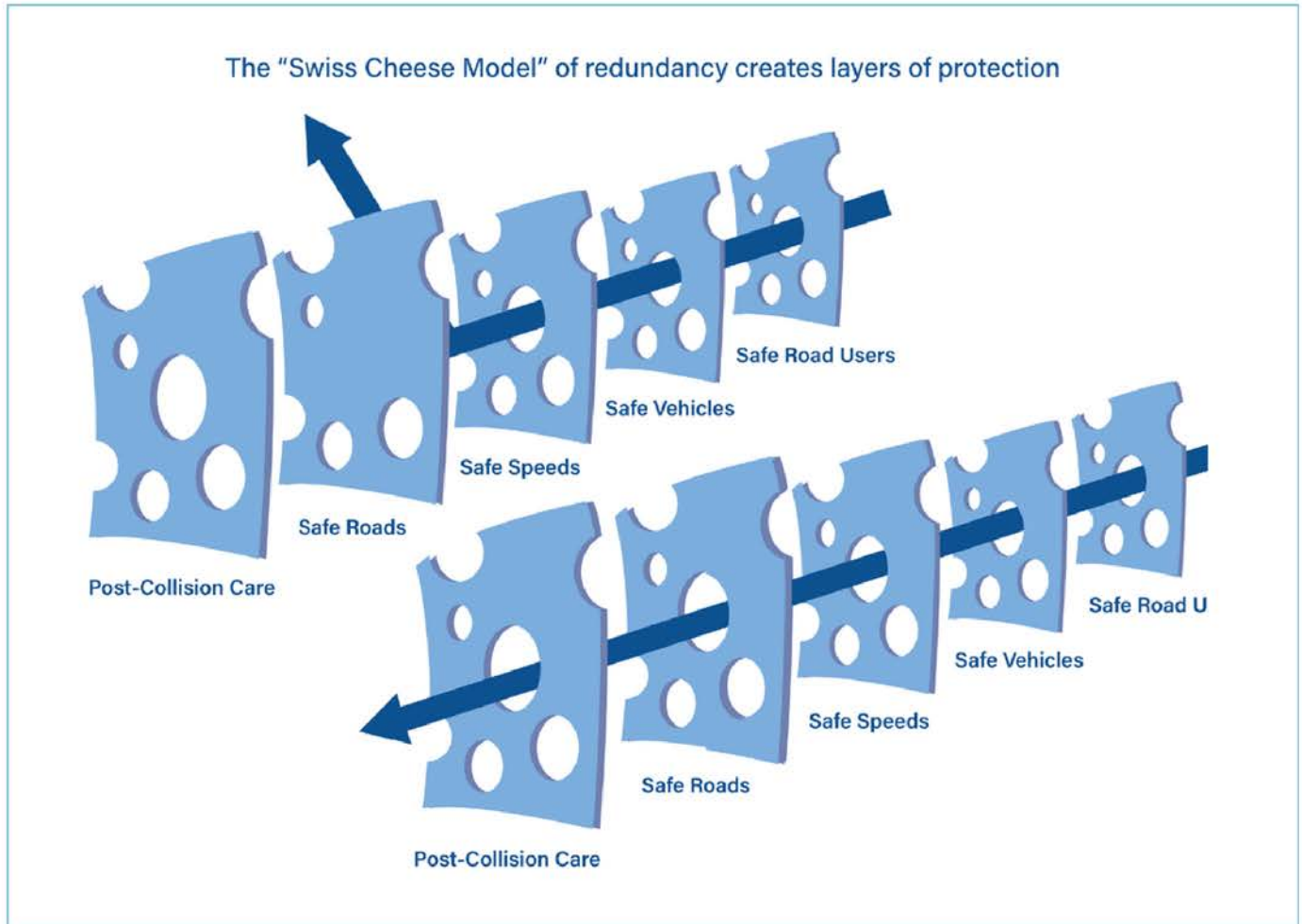| Traditional Approach	VS	Vision Zero
Traffic deaths are inevitable		Traffic deaths are preventable
Perfect human behaviour		Integrate human failing in approach
Prevent collisions		Prevent fatal / severe crashes
Individual responsibility		Systems approach
Saving lives is expensive		Saving lives is not expensive

A key element of Vision Zero is the Safe System approach. The core concepts of the Safe System approach are as follows:

- Responsibility for road safety is shared, though recognizing that the road authority has a special level of responsibility since the road authority has the greatest influence over roadway design and the policies that regulate its use.

- Redundancy in the system is crucial, since:
  - The system should acknowledge that human beings make mistakes and should be designed so that these mistakes do not have fatal consequences.
  - No road safety intervention is perfect, so multiple layers of intervention are needed to prevent severe collisions.

The concept of multiple layers of intervention is often illustrated with the "Swiss cheese model," shown in Figure 2 (source: Ontario Traffic Conference): as long as the "holes" in each slice do not line up, fatalities will be prevented, as illustrated in the first image. However, if there is a continuous hole through all slices, then the potential for a fatal collision is present.

Figure 2: "Swiss Cheese" Model of Road Safety Interventions

The "Swiss Cheese Model" of redundancy creates layers of protection

Safe Road Users

Safe Vehicles

Safe Speeds

Safe Roads

Post-Collision Care

Safe Road U

Safe Vehicles

Safe Speeds

Safe Roads

Post-Collision Care

Going into more detail, the US Federal Highways Administration provides the following explanation of the Safe System Approach:

> The Safe System Approach considers five elements of a safe transportation system—safe road users, safe vehicles, safe speeds, safe roads, and post-crash care—in an integrated and holistic manner. Achieving zero traffic deaths and serious injuries requires strengthening all five elements. A Safe System cannot be achieved without all five elements working in synergy. Within a Safe System Approach, weaknesses in one element may be compensated for with solutions in other areas. A true systems approach involves optimizing across all the elements to create layers of protection against harm on the roads.

Five Elements of a Safe System Approach

1 **Safe Road Users**

The safety of all road users is equitably addressed, including those who walk, bike, drive, ride transit, or travel by other modes.

2 **Safe Vehicles**

Vehicles are designed and regulated to minimize the frequency and severity of collisions using safety measures that incorporate the latest technology.

3 **Safe Speeds**

Humans are less likely to survive high-speed crashes. Reducing speeds can accommodate human-injury tolerances in three ways: reducing impact forces, providing additional time for drivers to stop, and improving visibility.

4 **Safe Roads**

Designing transportation infrastructure to accommodate human mistakes and injury tolerances can reduce the severity of crashes that occur. Examples include physically separating people traveling at different speeds, providing dedicated times for different users to move through a space, and alerting users to hazards and other road users.

5 **Post-Crash Care**

People who are injured in collisions rely on emergency first responders to quickly locate and stabilize their injuries and transport them to medical facilities. Post-crash care includes forensic analysis at the crash site, traffic incident management, and other activities.

Figure 3:
The Safe System Approach

Source: FHWA
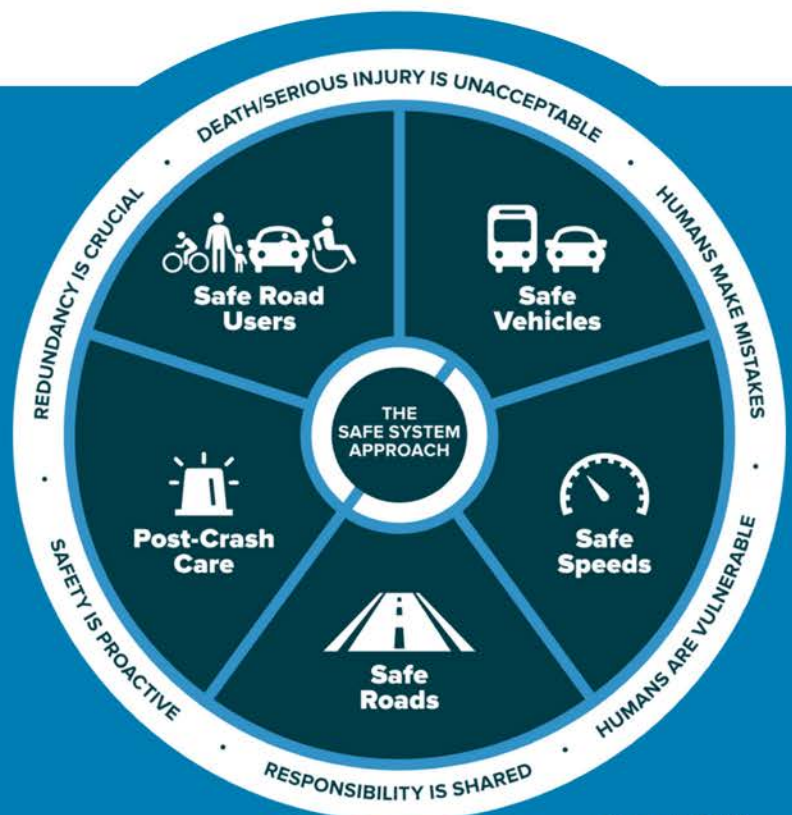
Six Foundational Principles for the Safe System Approach

Deaths and serious injuries are unacceptable.

While no crashes are desirable, the Safe System Approach emphasizes a focus on crashes that result in death and serious injuries. Regardless of road users' socio-economic backgrounds, their abilities, and the modes they use, no one should experience death or serious injuries when using the transportation system.

Humans make mistakes.

Road users will inevitably make mistakes, and those mistakes can lead to crashes. The Safe System Approach expects the road system to be planned, designed, and operated to be forgiving of inevitable human mistakes so that serious injury outcomes are unlikely to occur.

Humans are vulnerable.

Humans have a limited ability to tolerate crash impacts before harm occurs. Although the exchange of kinetic energy in collisions among vehicles, objects, and road users has multiple determinants, applying the Safe System Approach involves managing the kinetic energy of crashes to avoid serious injury outcomes.

Responsibility is shared.

All stakeholders (transportation system users and managers, vehicle manufacturers, etc.) must work collaboratively to ensure that crashes don't lead to fatal or serious injuries.

Safety is proactive.

Transportation agencies should use proactive and data-driven tools to identify and mitigate latent risks in the system, rather than waiting for crashes to occur and reacting afterward.

Redundancy is crucial.

Reducing the risk of severe crash outcomes requires all parts of the system to be strengthened so that if one element fails, the others still protect road users.
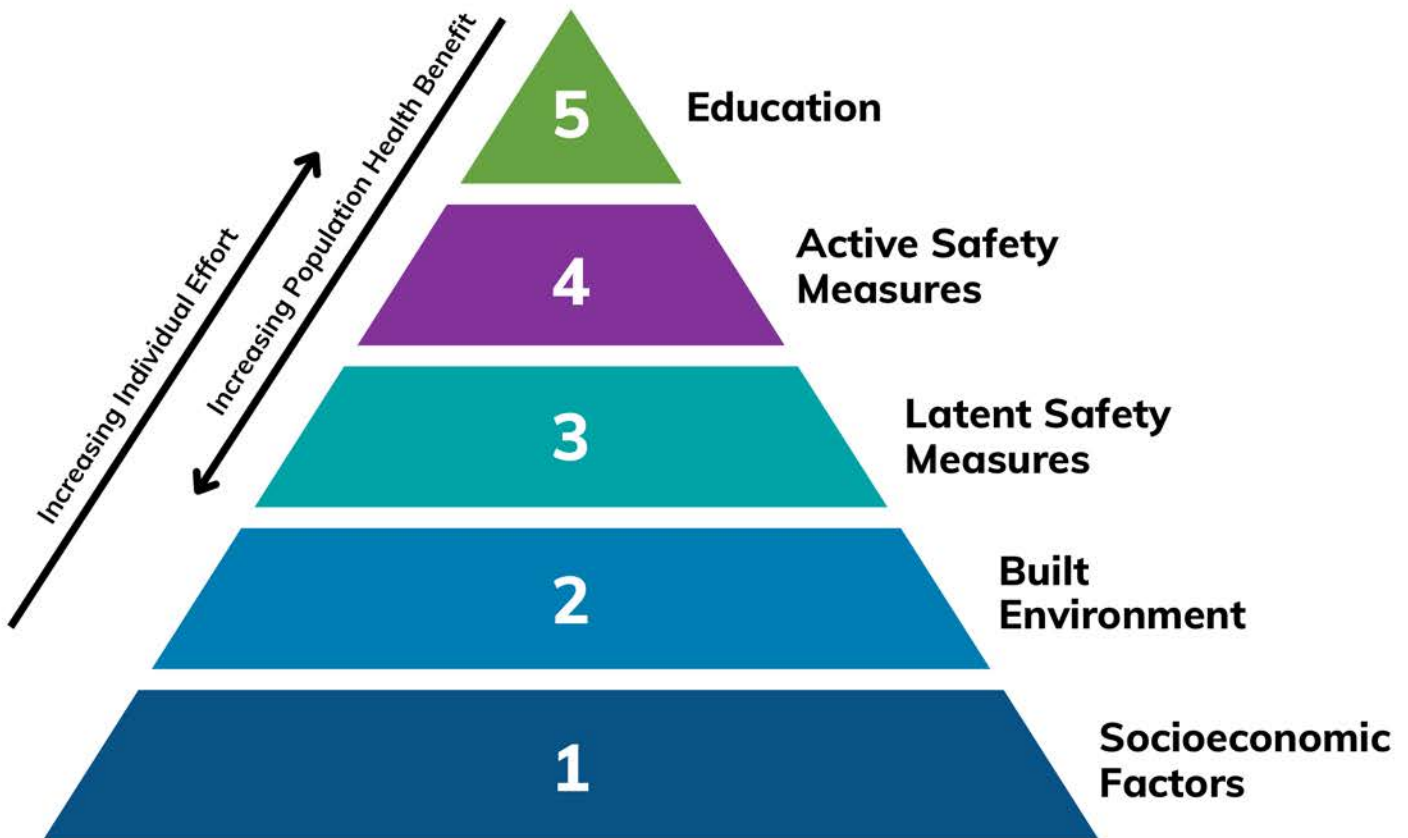
Safe System Pyramid

The safe system approach can incorporate a wide spectrum of initiatives; these initiatives vary in cost and effort to implement as well as effectiveness at reducing and preventing life-ending and life-altering injury. In other settings, such as public health and occupational health and safety, a framework called the hierarchy of controls is used to help identify the best safeguards for the health and safety of the public or workers; recently, this framework has been adapted to a road safety context as the Safe System Pyramid, shown in Figure 2 and summarized in Table 1 (source: "The Safe Systems Pyramid: A new framework for traffic safety", Transportation Research Interdisciplinary Perspectives, Vol. 21 Sept 2023, David J. Ederer et al.).
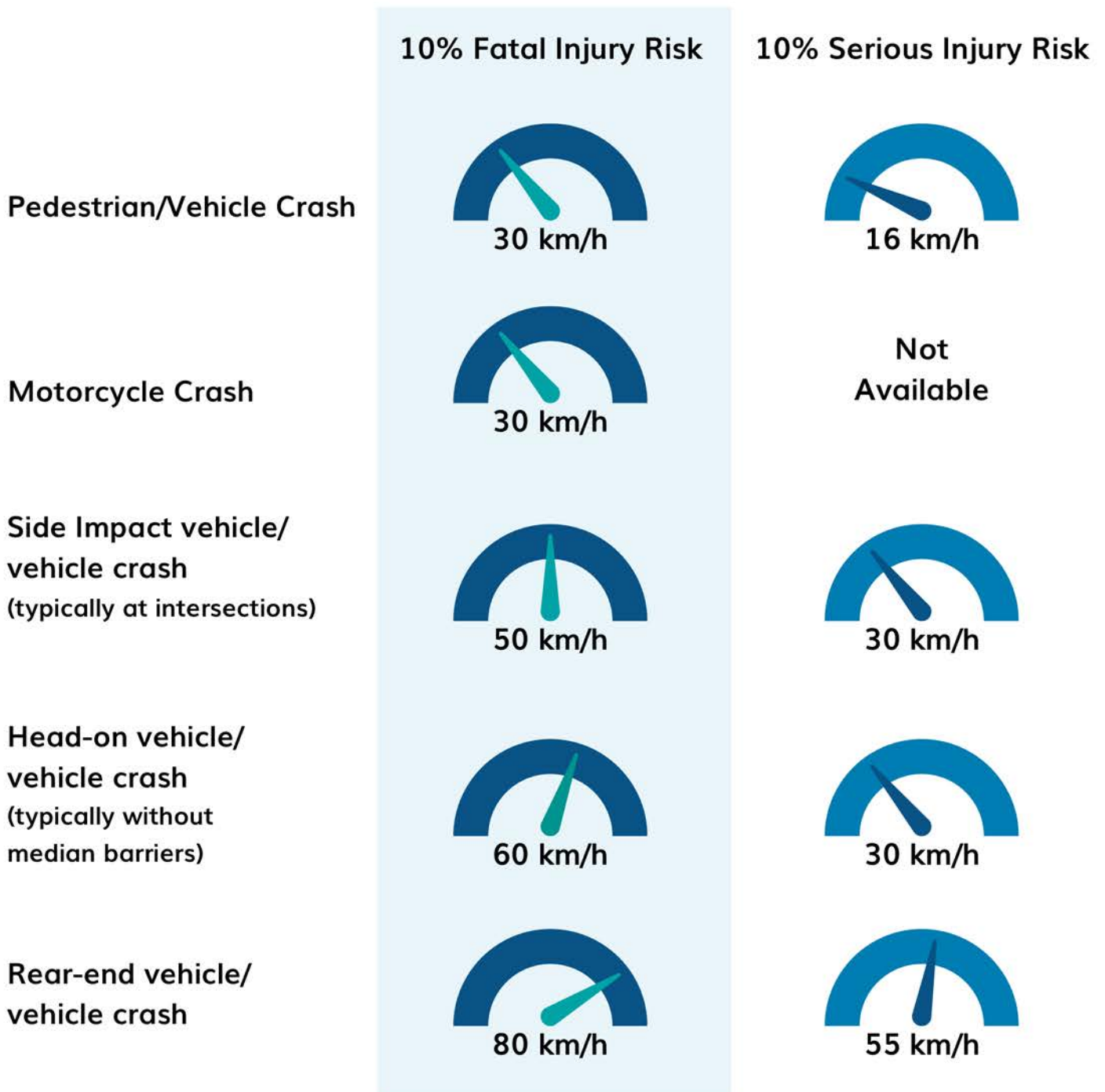
Figure 4: The Safe System Pyramid

Table 1: Tiers of the Safe System Pyramid

Tier	Approach	Description	Programs & Interventions	Relevant Policy
5	Education	Measures that urge behavioural change in users.	Driver education programs; Slow Down Campaigns	Driver's education requirements for licensing
4	Active Safety Measures	Measures that require human intervention in order to decrease the level of risk.	Signals and signs indicating that one should stop or yield; forward, rear, and side collision warning; seat belts; helmets	Standards and guidance on where to place signs and signals; vehicle standards requiring safety features
3	Latent Safety Measures	Measures that decrease the level of risk without requiring human intervention.	Signal timing that encourages slower traffic progression; leading pedestrian intervals; air bags; automated emergency braking systems; speed governors; alcohol ignition interlocks	Standards and guidance on signal placement and cycle length; vehicle standards requiring the installation of latent safety features
2	Built Environment	Physical elements within the right-of-way, including the roadside.	Roundabouts; speed humps; chicanes; raised crosswalks; sidewalks; bicycle infrastructure	Design guidance that emphasizes safety over capacity; sidewalk ordinances
1	Socio-economic factors	Factors that influence when and where a person needs to travel, and under what circumstances.	Affordable housing near transit; Zoning reform that reduces vehicle miles traveled; Safety features on commercial fleets	Zoning policies; housing policy; occupational safety policy

Speed Management

At its core, preventing serious injury in collisions is about limiting the forces and kinetic energy exerted on human beings. A key factor in the amount of kinetic energy in a collision is vehicle speed. The summary below gives an indication of the speeds required for a 10% risk of fatal or serious injury in different scenarios.

Figure 5: Risk of Injury at Various Speeds

	10% Fatal Injury Risk	10% Serious Injury Risk
Pedestrian/Vehicle Crash	30 km/h	16 km/h
Motorcycle Crash	30 km/h	Not Available
Side Impact vehicle/vehicle crash (typically at intersections)	50 km/h	30 km/h
Head-on vehicle/vehicle crash (typically without median barriers)	60 km/h	30 km/h
Rear-end vehicle/vehicle crash	80 km/h	55 km/h

Source: "Safe System Approach for Speed Management", Federal Highway Administration, 2023

Scope and Scale of the Problem

Measuring Road Safety

As noted in Section 2, Key Principles, a data-driven approach has been used for the development of the Road Safety Action Plan. The safety performance of a roadway, intersection, or the entire road network of a municipality, can be investigated through a review of its collision history. This safety performance is often expressed as a collision rate (e.g. X collisions per year) or injury rate (e.g. Y major and fatal injuries per year). For comparisons between jurisdictions, rates that are normalized by population are often used (e.g. X fatal injuries per 100,000 population per year).

Police prepare an MVA report for every reported collision in Ontario. Municipal staff receive digital copies of these reports for all collisions occurring in Chatham-Kent; information from these reports is compiled into the municipality's collision database, which is the source for all Chatham-Kent collision statistics provided in this report. For comparisons with Ontario as a whole, Ontario-wide data was obtained from the Ontario Road Safety Annual Report, published annually by the Ontario Ministry of Transportation.
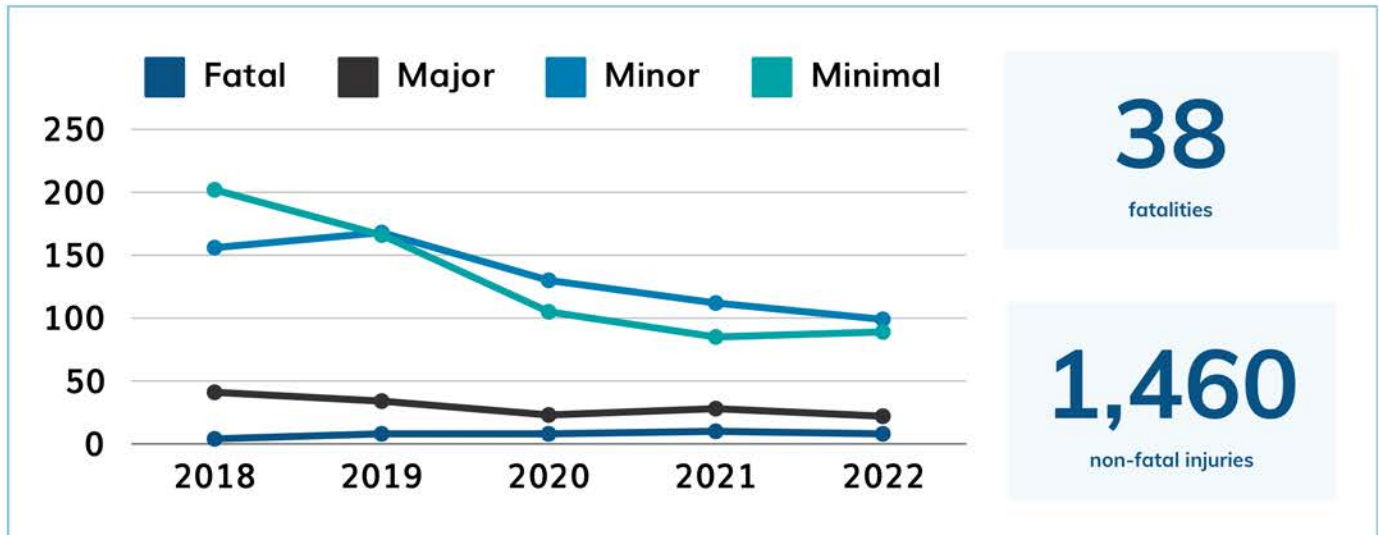
For the 5-year period of 2018 through 2022, 1,498 injuries occurred in reported collisions on roads under the jurisdiction of the Municipality of Chatham-Kent; this corresponds to an average of 300 injuries per year. Over the same period, 38 fatalities occurred in reported collisions on Chatham-Kent roads, or approximately 8 fatalities per year, on average.

This 5-year period includes the years from 2020 through 2022 when pandemic-related closures impacted travel patterns. The year-over-year trend for Chatham-Kent is similar to other jurisdictions: an overall reduction in number of collisions (and minor injuries) during the years where travel was impacted by the pandemic, but also no decrease – or in some cases an increase – in fatalities over the same period. While a detailed review of causes for Chatham-Kent was not carried out for this report, this trend is consistent with the finding in other jurisdictions: decreased traffic volumes during the pandemic led to an increase in operating speeds, which tended to worsen the severity of the collisions that did occur.

## Figure 6: Overall Collision Trends in Chatham-Kent (2018-2022)

Non-fatal injuries are falling, but fatalities are rising.

Legend: Fatal · Major · Minor · Minimal

Chart (y-axis 0 to 250, years 2018–2022)

38 fatalities

1,460 non-fatal injuries

While full collision data for 2023 will not be available until 2024, the Chatham-Kent Police Service reports 13 fatalities in motor vehicle collisions to date in 2023 (as of October 1, 2023). For the 5-year period of 2018 through 2022, 1,498 injuries occurred in reported collisions on roads under the jurisdiction of the Municipality of Chatham-Kent; this corresponds to an average of 300 injuries per year. Over the same period, 38 fatalities occurred in reported collisions on Chatham-Kent roads, or approximately 8 fatalities per year, on average. Additional details on fatal and major injury collisions and their relationship to the emphasis areas are provided in Appendix A.

Figure 7: Trends for Fatalities and Major Injuries (2018-2022)

Non-fatal injuries are falling, but fatalities are rising.
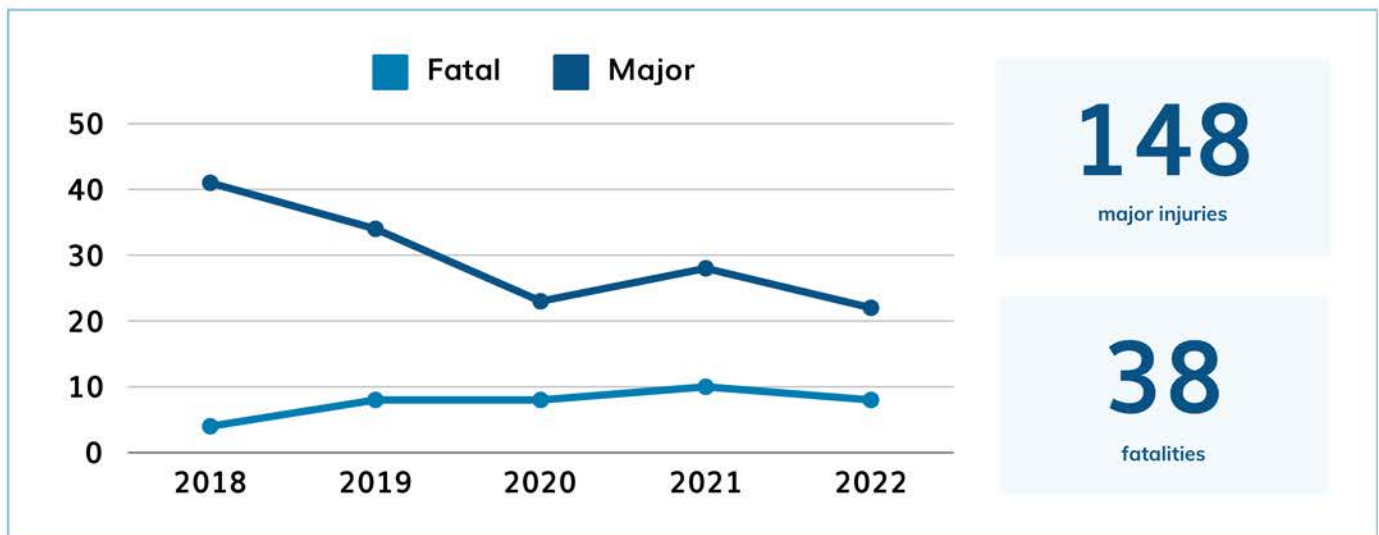
Legend: Fatal · Major

Chart (y-axis 0 to 50, years 2018–2022)

148 major injuries

38 fatalities

While full collision data for 2023 will not be available until 2024, the Chatham-Kent Police Service reports 13 fatalities in motor vehicle collisions to date in 2023 (as of October 1, 2023).

Road Safety Statistics in Chatham-Kent and Ontario

To provide a broader context, a comparison between Chatham-Kent's road safety trends and provincial averages is given below for measures where provincial data is available.

As shown in Table 3, Chatham-Kent's 2022 motor vehicle collision fatality rate per capita was approximately double the provincial average. The rate of persons injured per capita per year was slightly lower than, but in keeping with the provincial average.

Table 2: Comparison between Chatham-Kent and Ontario Fatalities and Injuries Per Capita (2022)

Measure	Chatham-Kent	Ontario
Persons Killed per 100,000 population	7.7	3.9
Persons Injured per 1,000 population	2.0	2.2

The Ontario Road Safety Annual Report reports on a number of provincial road safety emphasis areas. Comparisons between Ontario averages and Chatham-Kent data are provided below based on 2018 to 2022 data.

Pedestrian and motorcyclist fatalities made up a smaller percentage of total fatalities in Chatham-Kent than for Ontario overall while drinking and driving fatalities and unbelted occupant fatalities made up a larger percentage of total fatalities in Chatham-Kent than they did in the province overall.

Figure 8: Percentage of Total Fatalities (2018-2022)

	Chatham-Kent	Ontario
Pedestrian Fatalities	13.2%	15.5%
Drinking and Driving Fatalities	21.1%	11.5%
Motorcyclist Fatalities	10.5%	14%
Unbelted Occupant Fatalities	39.3%	13.3%

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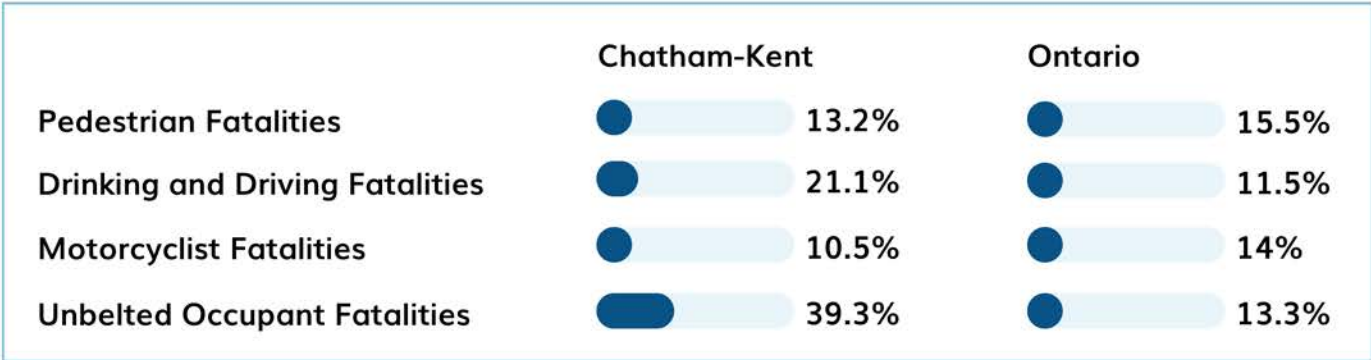
Road Safety Emphasis Areas

The five most recent years of collision data (2018-2022) were reviewed to identify common themes and patterns in fatal and major injury collisions in Chatham-Kent. Details of the review are provided in Appendix A. Based on this review, the following emphasis areas were used for development of the Road Safety Action Plan:

⊘ Collision Types

Roadway departure collisions
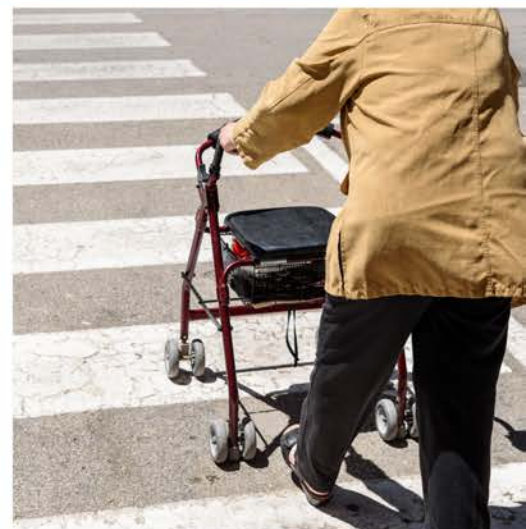Nighttime/dusk collisions on unilluminated roadways

⊘ Infrastructure

Roadway operating speeds

⊘ People

Impaired driving
Seat belt use
Pedestrians

⊘ Vehicles

Cyclists
Off-road vehicles
Motorcycles

Recommended Actions

The recommendations of the Road Safety Action Plan are provided below. These actions build on the emphasis areas identified in Section 4 and are categorized by their tier in the Safe System Pyramid, described in Section 2.2.

Category	Action	Description	Emphasis Areas
4 – Active Safety Measures	Speed Limits	Review and adjust speed limits based on a safe system approach, including a standardized speed policy for urban areas.	• Roadway departure collisions • Roadway operating speeds • Pedestrians • Cyclists • Motorcycles
1 – Socio-economic factors 2 – Built Environment	Complete Streets	Develop and implement a Complete Streets Policy, including developing or adopting multi-modal level of service guidelines.	• Roadway operating speeds • Pedestrians • Cyclists • Motorcycles
3 – Latent Safety Measures	Pavement Edge Lines	Install white pavement edge lines at all locations recommended by the Ontario Traffic Manual, with rural arterial roads being prioritized.	• Roadway departure collisions • Nighttime and dusk collisions on unilluminated roadways
2 – Built Environment	Review Roadway Departure, Hot Spots and Corridors	Based on collision history and risk, identify candidate locations for measures such as longitudinal rumble strips, roadway delineators, guide rails, and removal of clear zone hazards	• Roadway departure collisions • Nighttime and dusk collisions on unilluminated roadways • Motorcycles

Category	Action	Description	Emphasis Areas
2 – Built Environment	Review and update rural roadway standards	Review design standards for rural roads for encouraging appropriate speeds, pavement edge treatments (e.g. SafetyEdge, criteria for partially or fully paved shoulders, clear zone requirements, roadway edge marking and delineation, municipal drain location and buffer strip requirements.	• Roadway departure collisions • Roadway operating speeds • Cyclists • Motorcycles
2 – Built Environment	Pedestrian Crossing Program	Provide pedestrian crossovers at new locations, prioritizing locations with higher collision risk. Improve existing pedestrian crossings with a history of pedestrian collisions or where crossing is not compliant with current standards.	• Pedestrians
2 – Built Environment	Sidewalk Program	Update the Sidewalk Policy and implement more pedestrian connections.	• Pedestrians
2 – Built Environment	Traffic Calming Program	Develop and implement a traffic calming program addressing urban and rural roads.	• Roadway departure collisions • Roadway operating speeds • Pedestrians • Cyclists

Category	Action	Description	Emphasis Areas
2 – Built Environment 4 – Active Safety Measures 5 – Education	School Zone Safety Program	Review school zones for opportunities to reduce speeding and encourage walking and cycling to schools, including school zone speed limits, pedestrian crossings, sidewalks, safe routes to school and ladder crosswalks near schools.	• Roadway operating speeds • Pedestrians • Cyclists
2 – Built Environment	Signalized Intersection Upgrades	Implement measures focused on pedestrian safety at signalized intersections leading pedestrian intervals, pedestrian countdown timers, pedestrian signal timing – walk speeds, no right turn on red, conflict detection and monitoring.	• Pedestrians
2 – Built Environment	Channelized Right Turns	New intersections: implement a policy against new right turn channels. Retrofit projects where possible and eliminate existing right turn channels as part of road works at intersections. In cases where channels cannot be eliminated, reconfigure as "smart channels".	• Roadway departure collisions • Nighttime and dusk collisions on unilluminated roadways

Category	Action	Description	Emphasis Areas
2 – Built Environment	Transit Stops	Develop recommendations for existing and new transit stops aimed at where possible, avoiding installation of new mid-block transit stops where protected crossings are not available. Determining the most suitable location for transit stops while prioritizing the safety of pedestrians and cyclists.	• Pedestrians • Cyclists
2 – Built Environment	Cycling Network	Continue expanding the cycling network in Chatham-Kent, prioritizing locations with high cyclist collision frequency or high volumes of cyclists. In the upcoming Mobility Master Plan, include cyclist safety as a factor in prioritizing of cycling infrastructure.	• Cyclists
2 – Built Environment	Illumination Review for Collision Hot Spots	Review existing collision hot spot locations and identify countermeasures. This review will be focused on locations where the roadway or intersection is not currently illuminated, and the collision pattern indicates that night-time or dusk collisions are over-represented.	• Nighttime and dusk collisions on unilluminated roadways
3 – Latent Safety Measures	Automated Speed Enforcement	Investigate the feasibility of an automated speed enforcement program.	• Roadway operating speeds • Pedestrians • Cyclists

Category	Action	Description	Emphasis Areas
3 – Latent Safety Measures	Red Light Cameras	Investigate the feasibility of a red light camera program.	• Roadway operating speeds • Pedestrians • Cyclists
5 – Education	Develop Education Campaign Strategy	Work with Public Health, CKPS, and other stakeholders to develop a strategy for road safety education campaigns.	• All
5 – Education	Promote RideCK	In advertising messaging, promote RideCK as a responsible alternative to driving when drinking.	• Impaired driving
2 – Built Environment	Project Guidelines	Develop guidelines for use by staff on road-related projects to incorporate safety-related best practices into designs, including a feedback process to ensure that design standards are functioning as intended from a safety perspective.	• All
5 – Education	Vision Zero Dashboard	Provide a Vision Zero dashboard on the public website showing statistics for fatal and major injury collisions.	• All
Multiple	Annual Report	Annual report to Council on road safety efforts and progress.	• All
Multiple	Collaboration with CKPS	Engage with Chatham-Kent Police Service to identify new opportunities for collaboration focused on road safety.	• All

Category	Action	Description	Emphasis Areas
Multiple	**Road Safety Task Force**	Develop a task force of departments and agencies involved in responding to collisions or implementing road safety measures (municipal departments, emergency services, and health care providers) that would meet quarterly – or as needed – to collaborate on interdisciplinary road safety efforts.	• All
Multiple	**Fatal Collisions**	Implement measures focused on pedestrian safety at signalized intersections leading pedestrian intervals, pedestrian countdown timers, pedestrian signal timing – walk speeds, no right turn on red, conflict detection and monitoring.	• All

Moving Forward

Implementation of the Road Safety Action Plan will be contingent on available funding. Aspects of the Plan will require additional approvals by Council (e.g. Traffic By-law amendments). The anticipated schedule for major policy elements is as follows:

- **Mobility Master Plan**
  + Consultant Request for Proposal (RFP): first quarter 2024 (subject to budget approval)
  + Anticipated study duration: 12 to 18 months after RFP award

- **Traffic Calming Policy** - report back with a recommended policy in 2023.

- **Municipality-wide speed limit review** - report back in 2024 with recommended amendments to Traffic & Parking By-law 24-2004 and an implementation plan.

- **Complete Streets Policy** - report back with a recommended policy in 2024.

Work on low-cost and zero-cost actions of the Road Safety Action Plan will commence immediately upon Council approval, subject to staff and funding availability.

On an ongoing basis, a report to Council will be provided annually on road safety efforts and progress. This report will also provide an opportunity for changes to be recommended to the Road Safety Action Plan as trends change and as the effectiveness of the elements of the plan is measured.

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Appendix A