

An aerial photograph of a city, likely Kitchener, showing a mix of modern and older buildings, parking lots, and green spaces. The text is overlaid on the top left portion of the image.

CITY OF KITCHENER VISION ZERO STRATEGY 2022-2025

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EXECUTIVE SUMMARY

The City of Kitchener's Vision Zero Strategy provides a framework to improve street safety for all street users regardless of age, ability, or mode of transportation. The goal of this strategy is to achieve zero serious injuries and fatalities on City of Kitchener streets

To identify and prioritize safety improvements, emphasis areas have been identified. The emphasis areas have been selected based on background research, industry best practices, collision analysis, public and stakeholder engagement and the City's strategic goals. The emphasis areas include:

- Vulnerable Street Users: pedestrians, cyclists, motorcyclists, school children, seniors, and people using mobility devices;
- High Risk Locations: school zones, residential zones and hot spots; and,
- High Risk Driving: aggressive driving, distracted driving and speeding.

Collision analysis shows that on average over 1,200 collisions occur annually on Kitchener streets. This includes more than 200 injury collisions per year. Additionally, over the past decade, the City of Kitchener has averaged one fatality per year on City streets. Although most of the collisions involve vehicles only, the data shows that vulnerable road users are disproportionately represented in injury or fatal collisions. Collision analysis also showed no significant increasing or decreasing trend in the number of injury and fatal collisions on Kitchener roads since 2005. This Vision Zero Strategy is aimed at changing this to a declining trend that observes fewer collisions resulting in serious injuries and fatalities in future years.

For the development of the City of Kitchener Vision Zero Strategy, The City has engaged with wide-range of stakeholders including residents, City of Kitchener advisory committees and municipal and regional agencies related to street safety. A project team and a project consultation groups was created and consisted of representatives from the Waterloo Region Police Services, Region of Waterloo Transportation Services Division, Region of Waterloo Grand River Transit, Region of Waterloo Public Health and Emergency Services, Regional of Waterloo School Travel Planning, City of Waterloo, City of Cambridge and City of Kitchener internal divisions including Transportation Services, Corporate Communications and Marketing, Operations – Roads and Traffic, Parks and Cemeteries and Fleet.

City staff also collaborated with the University of Waterloo Transportation Engineering team to leverage their expertise in the development of the strategy. The partnership is a three year (2021-2023) collaborative effort with the University of Waterloo, City of Kitchener, City of Waterloo, Region of Waterloo, and an industry partner; Miovision Technologies; aiming to develop optimal Vision Zero safety improvement programs.

Community engagement included meetings with the City of Kitchener Advisory Committees and two online public surveys through the Engage Kitchener platform. In 2020/2021 staff met with advisory committees including Mayor's Advisory Council for Kitchener Seniors, Kitchener Active Transportation and Trails Advisory Committee, Kitchener Youth Action Council, Grand River Accessibility Advisory Committee and Safe and Healthy Communities Advisory Committee. The intent of these meetings was to raise awareness about Vision Zero and to receive feedback. Through these sessions staff received valuable feedback including street safety priorities and concerns, action item options, data collection and evaluation.

To better understand street safety concerns and priorities for Kitchener residents, an online survey was released using the Engage Kitchener platform. The survey was released in November 2019 and was open for a duration of two months. A total of 443 responses were received. The survey showed that speeding/aggressive driving, distracted driving, and geometry design issues are the top three concerns for Kitchener residents. A second online survey was released on the Engage Kitchener platform to gauge resident feedback on the proposed action items within the City of Kitchener's Vision Zero Strategy. The survey was released in October 2021 and remained open for a duration of three weeks. A total of 296 responses were received. The survey showed that on average 62% of the respondents are supportive of the proposed action items, with 17% neither supportive or opposed and 21% opposed.

The action items included in the proposed Vision Zero Strategy were determined based on the identified emphasis areas, best practices, stakeholder engagement, data, and available resources. The action items are categorized into The Five E's of Vision Zero - Evaluation, Engineering, Enforcement, Education and Engagement. The Vision Zero Strategy action items identified in this strategy will be implemented over four years from 2022 to 2025.

Some action items are an enhanced/expanded version of an existing program. As a result, they will have minimal cost impact and will be supported using existing budget. Some of the action items can be funded through reallocating existing budget from other projects. This will help ensure that the existing budget is utilized in the areas most needed through a holistic data driven approach. Some action items require a more in-depth review prior to determining the required budget and resources. These reviews will be completed as part of the Vision Zero Strategy during the next four years and the recommendations, and the associated budget ask will be presented to Council separately in the future.

The action items are prioritized based on the City's strategic priorities, available resources, and the required timelines. Some of the action items such as network screening, countermeasure evaluation and educational campaigns will occur on an annual basis while others, such as developing new policies and guidelines, will be one-time projects. Considering that this Vision Zero Strategy is an evolving document, the prioritization of the action items is subject to change depending on a number of factors such as evolving street safety priorities, resident engagement, success of the proposed countermeasures, available resources, etc. Staff will be monitoring and evaluating the effectiveness of the proposed action items and will be reporting back on the progress and success of the programs on an annual basis.



INTRODUCTION

In March 2020, City of Kitchener Council directed staff to develop a Vision Zero Strategy for the streets under the jurisdiction of the City of Kitchener. The goal of a Vision Zero strategy is to improve street safety for all road users regardless of age, ability or mode of transportation.

On average over 1,200 collisions occur annually on Kitchener streets. This includes more than 200 injury collisions per year. Additionally, over the past decade, the City of Kitchener has averaged one fatality per year on City streets. Although most of the collisions involve vehicles only, the data shows that vulnerable road users are disproportionately represented in injury or fatal collisions.

Vision Zero is a far-reaching safety strategy with the stated goal of eliminating traffic related fatalities and serious injuries.

Since its inception in Sweden over 20 years ago, Vision Zero has become a global movement adopted by municipalities around the world. As of March 2021, 47 American cities and 18 Canadian cities have adopted the Vision Zero approach within their roadway safety strategies and many other cities are also conducting research on the potential benefits of this approach.

Vision Zero is based on the following principles:

- **No preventable loss of life is acceptable.**
- **Mistakes and driver error should be expected and anticipated.**
- **Road safety is a shared responsibility.**

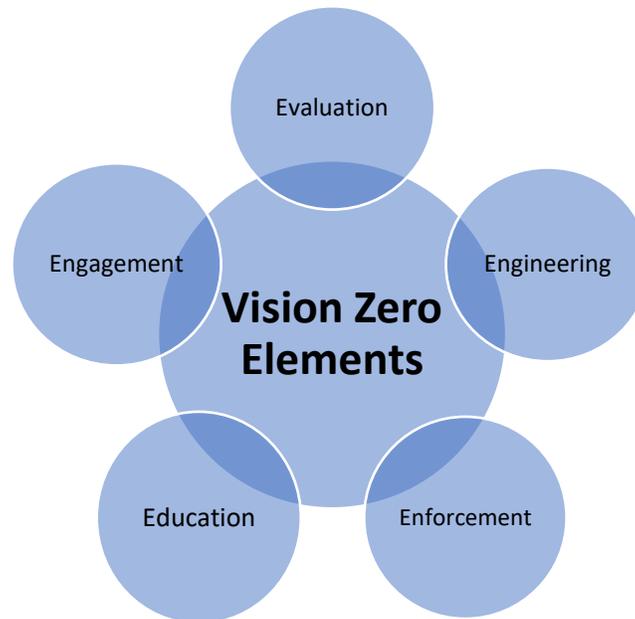
A NEW WAY OF THINKING

Vision Zero requires a new way of thinking about safe streets. Here’s how Vision Zero strategies approach street safety versus some traditional safety approaches.

VISION ZERO APPROACH	TRADITIONAL STREET SAFETY APPROACHES
Traffic fatalities and serious injuries are preventable	Traffic fatalities and serious injuries are not preventable
Humans make mistakes. Therefore, traffic facilities should be designed to account for these mistakes and errors	Human mistakes are the cause of collisions
Prevent collisions that result in serious injuries and fatalities. No serious injuries or loss of life is acceptable	Prevent all collisions
Safety is a shared responsibility between those who design, operate, maintain, and use transportation infrastructure	Road users carry more responsibility for their safety.
Proactive and systemic prioritization of street safety improvements	Reactive approach to collisions



The most common framework used in developing a Vision Zero Strategy is referred to as the “five E’s” of traffic safety. These are Evaluation, Engineering, Enforcement, Education and Engagement. Vision Zero can be achieved if all of the “five E’s” are successfully incorporated.



Evaluation: An effective Vision Zero program requires a continuous data driven evaluation and analysis of the safety of the road network. This includes the ability to continuously track the impact of safety related efforts and understanding the causality behind the traffic related serious injuries and fatalities. Annual collision analysis and network screening are prime examples of an ongoing evaluation strategy.

Engineering: The design, operations and maintenance of the transportation network can have a significant impact on the frequency and severity of collisions occurring. Engineering tactics contained in a Vision Zero Strategy acknowledges the role of human error and aims to account for these errors. For example, countermeasures such as dedicated infrastructure for vulnerable street users are proven to improve traffic safety for all street users.

Enforcement: Inappropriate driver behaviour such as impaired driving, distracted driving and speeding are major contributors to severe collisions. These high-risk behaviours can be reduced through different types of police enforcement and related programs. Targeted enforcement of speeding, distracted driving and ride programs are common tools in this area.

Education: Increased awareness and education related to street safety is fundamental to all Vision Zero programs. Educational programs/campaigns should be strategically used to target at different groups and issues including children, young drivers, fleet drivers, distracted and aggressive driving, etc.

Engagement: The continuous involvement of communities and other stakeholders is key to a successful and effective Vision Zero program. Engagement provides the opportunity for community stakeholders to contribute to ideas and focused areas of priority contained within a Vision Zero action plan. Supporting advocacy groups that both promote and challenge street safety programs and plans is an example of a Vision Zero engagement strategy.

REVIEW OF OTHER VISION ZERO STRATEGIES

To leverage the experiences of other jurisdictions that have developed and incorporated a Vision Zero plan, a review was conducted on the following jurisdictions:

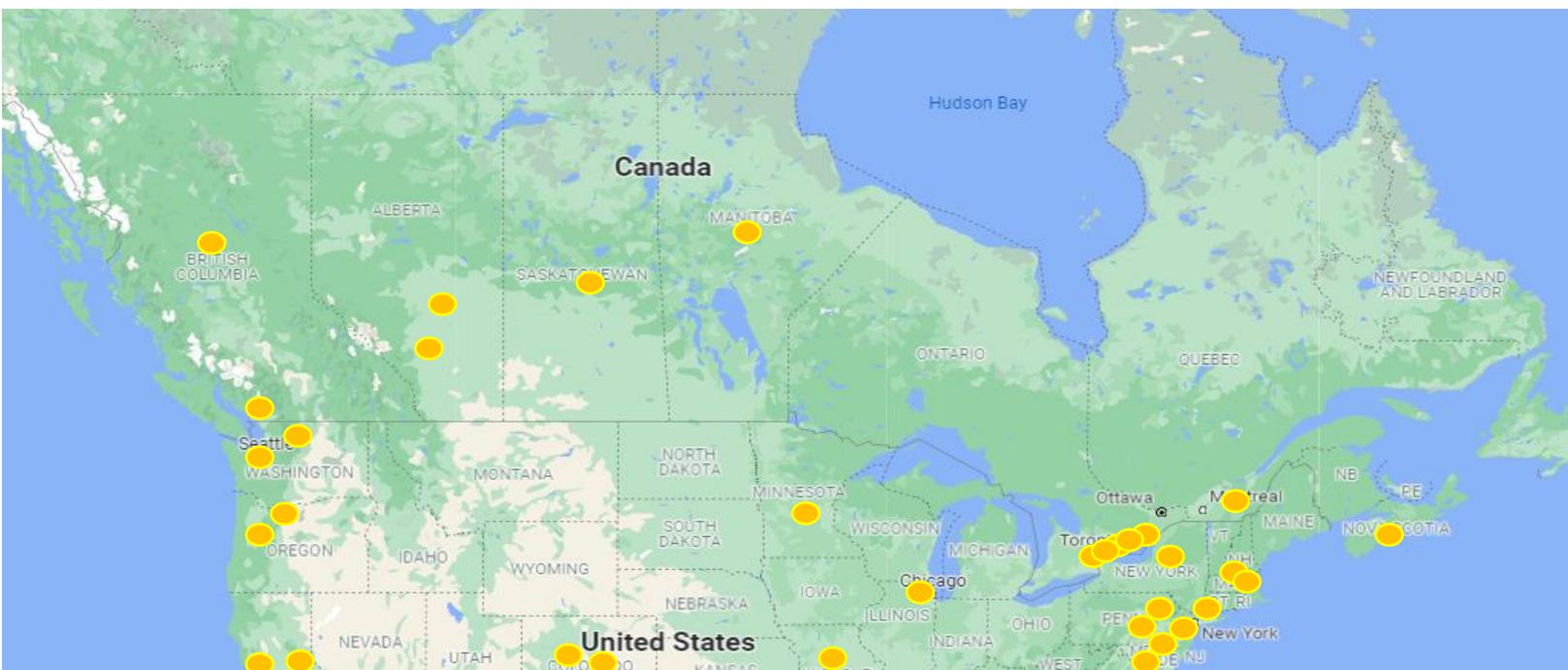
- Canadian cities: Toronto, Hamilton, Vancouver, Edmonton and Ottawa;
- US cities: San Francisco, New York City, Chicago, Portland, Seattle, Washington D.C., Boston, and Los Angeles; and,
- European countries: Sweden and Netherlands.

The experience from a mix of locations were considered in this review including early adopters in the US, road safety leaders in Europe, as well as the experience from Canadian municipalities. The review shows that the Vision Zero plans adopted have generally been successful in reaching the goal of reducing serious injuries and fatalities.

A common theme across the successful Vision Zero plans is the involvement and cooperation of multiple stakeholders including but not limited to enforcement, public health and emergency services and community stakeholders. These plans all acknowledge that Vision Zero is a multi-disciplinary effort that is successful when all stakeholders combine efforts in achieving a common goal.

Another common theme throughout the various action plans is a focus on the safety needs of vulnerable street users such as pedestrians, cyclists, seniors, and children; all of whom are typically overrepresented in serious traffic related injuries and/or death.

Although the Vision Zero action plans vary from one city to another due to differing views and priorities, the “five E’s” of Evaluation, Engineering, Enforcement, Education and Engagement are the common principles that the safety action items all adhere to.



Engineering countermeasures are a significant part of all Vision Zero plans reviewed. Each countermeasure was evaluated based on how widely it is accepted and utilized in various parts of the world and how effective it has been in reducing traffic fatalities and serious injuries.

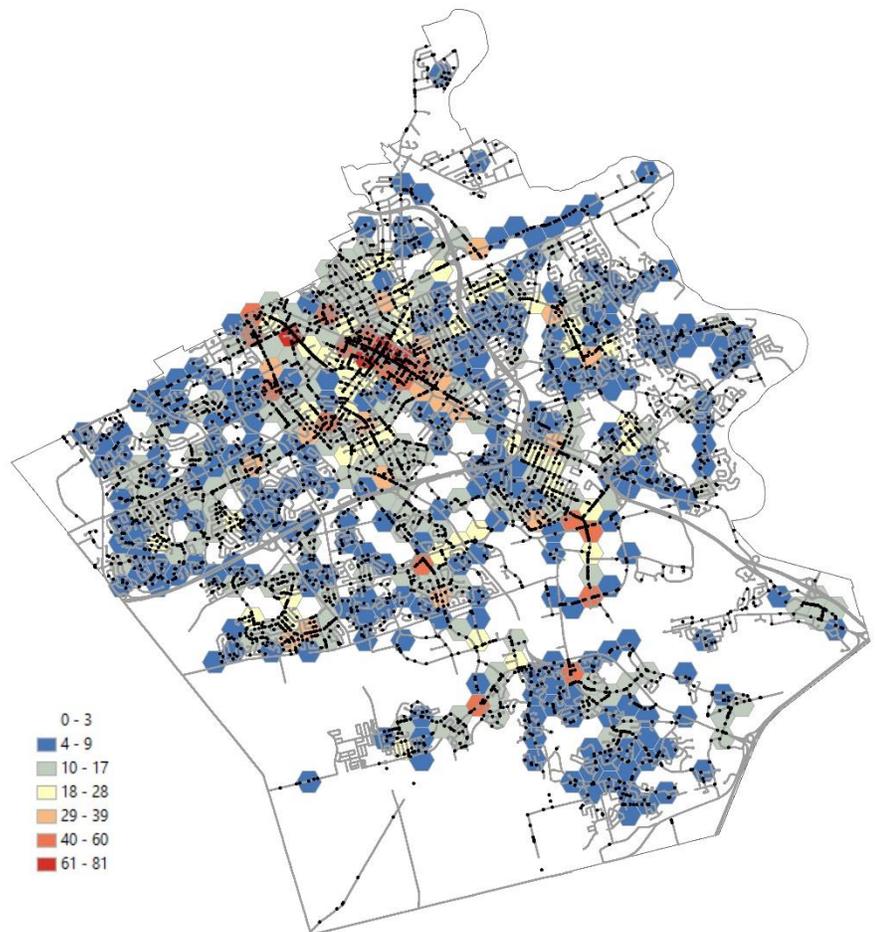
COLLISION ANALYSIS

An analysis of the City of Kitchener’s historical collision data was conducted to help guide the development of a Vision Zero strategy. This analysis was focused on collisions that have occurred on the streets under the jurisdiction of the City of Kitchener. Due to the impacts of the pandemic and the data availability when the analysis was conducted the collision analysis does not include the 2019 and 2020 data.

Of the 2,217 lane km of roads within the City of Kitchener, 1,569 lane km of roadways are under the jurisdiction of the City of Kitchener, 499 lane km of the roadways fall under the jurisdiction of the Region of Waterloo, and 149 lane km of roadways fall under the jurisdiction of the Ministry of Transportation.

For the purposes of this review, roadways under the jurisdiction of the Region of Waterloo and the Ministry of Transportation have not been included. Staff have worked collaboratively with the Region of Waterloo on efforts that impact roads under the jurisdiction of the City of Kitchener and the action items under this Strategy are in alignment with the Region’s Road Safety Program (RSP).

Map 1 shows the location of all the collisions that have occurred on Kitchener streets for a five-year period of 2014-2018. As shown in the map, the downtown area shows a higher concentration of collisions which is likely due to the higher level of exposure of different modes of traffic. Other neighbourhoods within the City show a fairly uniform distribution of collisions.



City of Kitchener Vision Zero Strategy (2022-2025)

Chart 1 illustrates the trend of collisions on Kitchener streets since 2005. The blue line shows the collisions resulting in property damage only (PDO), the orange line shows the collisions that have resulted in injuries and the red line shows the collisions that have resulted in fatalities. As shown in Graph 1, no significant increasing or decreasing trend is observed in the number of collisions since 2005 for any of the categories. The goal of this Vision Zero Strategy is to change this to a declining trend that observes fewer collisions involving serious injuries and fatalities in future years.

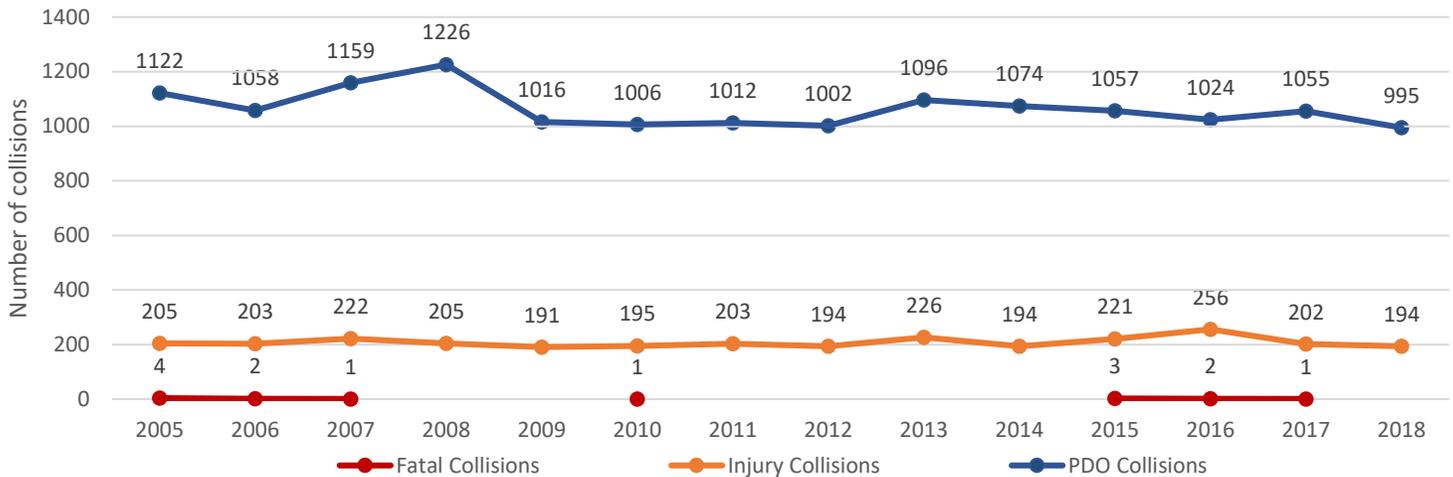


Chart 1 – Collision Trend on Kitchener Streets (2005-2018)

Map 2 shows the location of the injury and fatal collisions for a five-year period from 2014 to 2018. The collisions involving property damage only or minimal injuries that did not require admission to a hospital have been excluded from this map.

Map 2 shows that collisions involving injuries and fatalities are not limited to major roadways and are also occurring within local neighbourhood streets. This is a critical piece of information that will be utilized in determining the focus areas of this Vision Zero Strategy.

This data will be further used to develop a collision prediction model that incorporates observed collisions and exposure factors to identify priority locations for intervention.

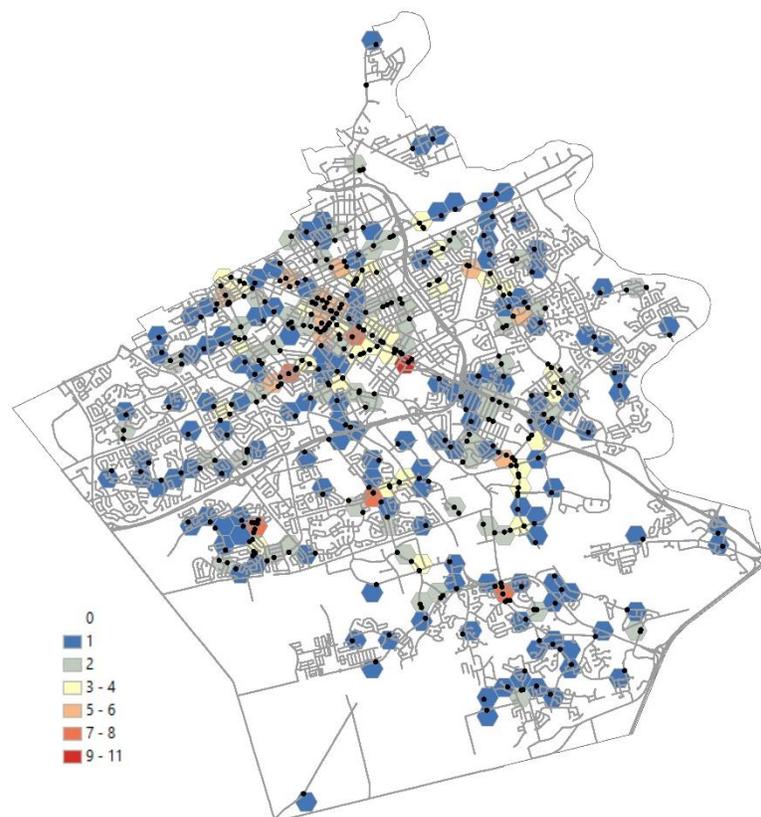


Chart 2 breaks down the number of serious injury and fatal collisions from 2014 to 2018 by the involved user type including drivers, motorcyclists, cyclists and pedestrians. Graph 1.1 shows that the number of serious injury and fatal collisions are disproportionately higher for collisions involving a vulnerable street user including pedestrians, cyclists or motorcyclists. In other words, a vulnerable street user has a significantly higher chance of being killed or seriously injured in a collision.

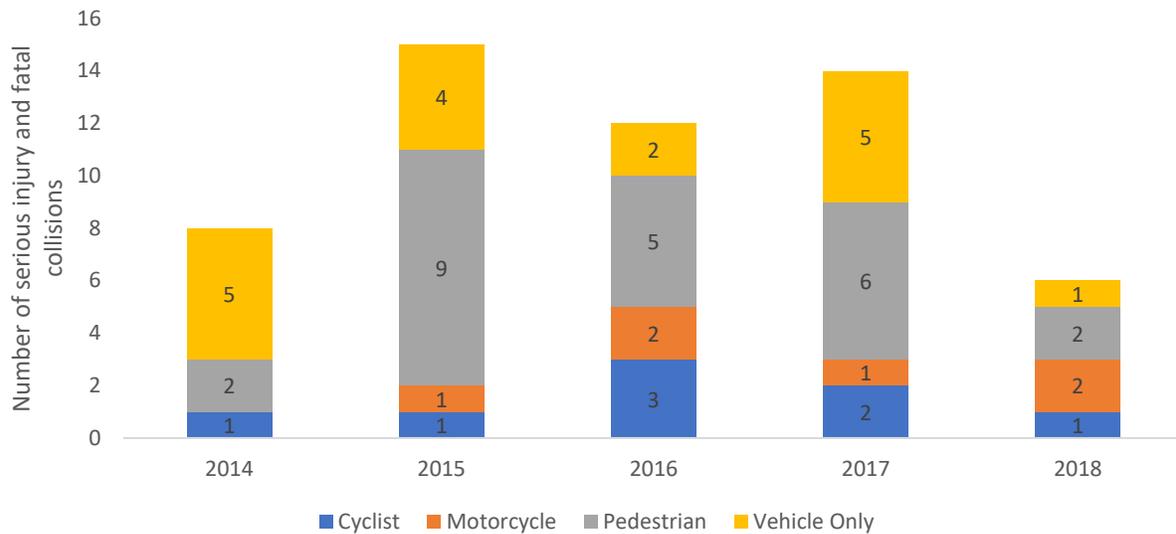


Chart 2 – Serious Injury and Fatal Collisions on Kitchener Streets (2014-2018)

A detailed analysis has been conducted on the serious injury and fatal collisions to identify the most contributing factors in the occurrence of these collisions. Chart 3 below shows that distracted driving, aggressive driving/speeding, are the top two contributing factors in these collisions.

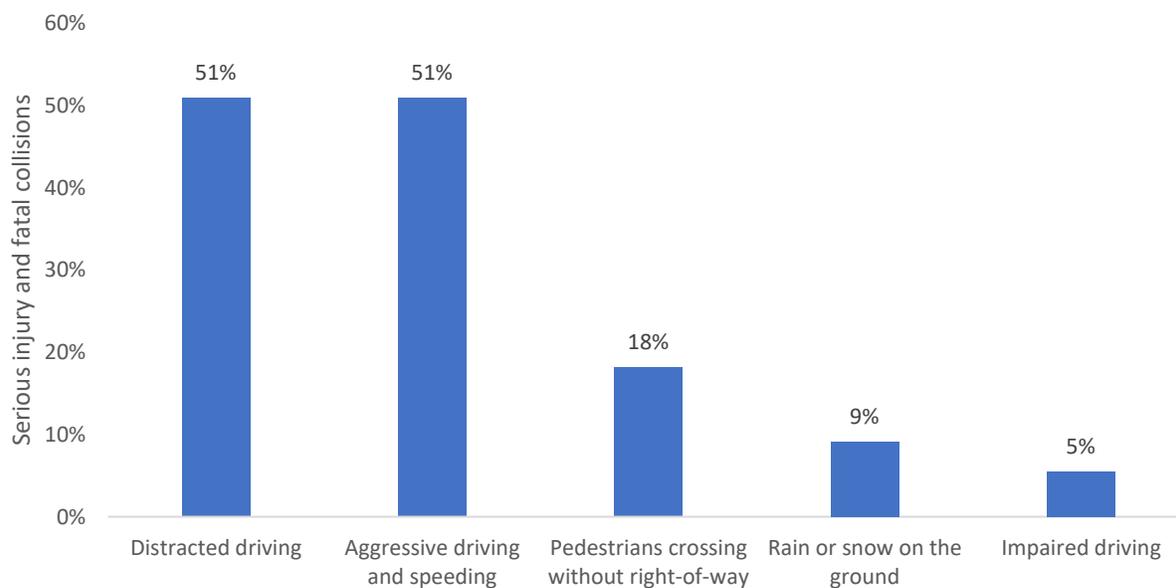


Chart 3 – Contributing Factors in Serious Injury and Fatal Collisions on Kitchener Streets

Vulnerable Street Users Collisions

Vulnerable street users include pedestrians, cyclists and motorcyclists and are a main focus of the Vision Zero Strategy. A detailed analysis has been conducted on collisions involving these users.

Map 3 shows the location of the collisions involving vulnerable road users for a five-year period of 2014-2018.

Chart 4 below shows the trend of these collisions from 2005 to 2018. As shown in the chart, no significant increasing or decreasing trend is observed in the data.

This Vision Zero Strategy will attempt to change this to a declining trend in future years that observes fewer collisions involving vulnerable street users.

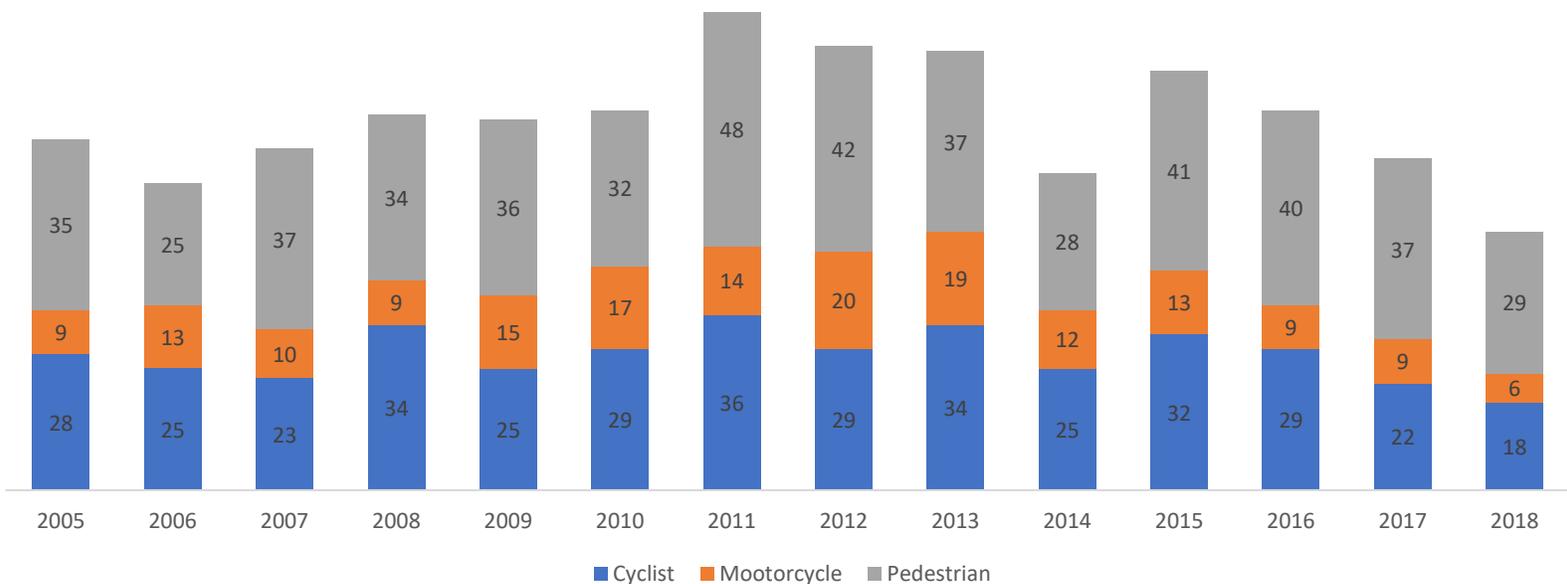
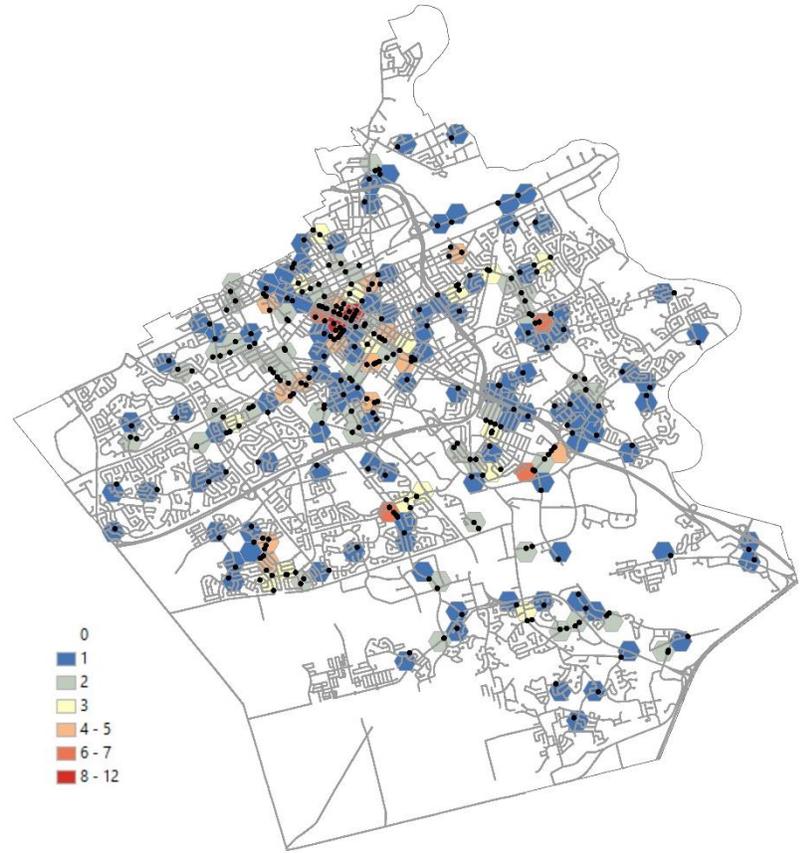


Chart 4 – Trend of Collisions Involving Vulnerable Street Users on Kitchener Roads (2005-2018)

Chart 5 compares the breakdown of the collisions by property damage only, injury and fatal collisions for collisions involving vehicles only versus collisions involving vulnerable street users. The charts show that more than 84% of the collisions involving vulnerable street users result in injuries or fatalities while approximately 13% of the collisions involving vehicles only result in injuries and fatalities. This shows that vulnerable street users are overrepresented in injury and fatal collisions and therefore should be a focus when implementing street safety improvements.

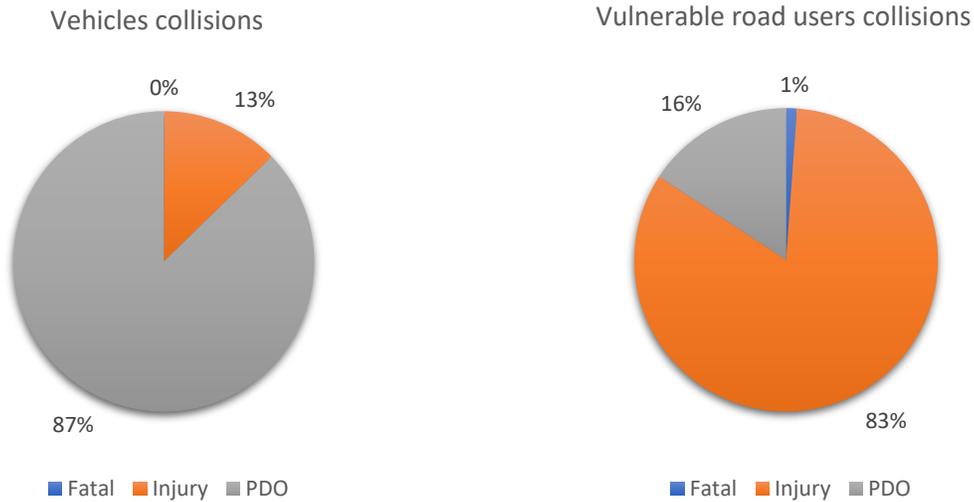


Chart 5 – Breakdown of Collisions by Injury



PUBLIC and STAKEHOLDER ENGAGEMENT

A successful Vision Zero program requires ongoing engagement from multiple functions and stakeholders. For the development of the City of Kitchener Vision Zero Strategy, the City has engaged with different stakeholders including residents, City of Kitchener advisory committees and municipal and regional agencies related to street safety.

Project Team and Project Consultation Group

The project team members were selected to ensure representation from each of the Vision Zero elements. The project team consisted of the City of Kitchener Transportation Services staff, the City of Kitchener Corporate Communications and Marketing staff, the Region of Waterloo Police Services and the Regional of Waterloo School Travel Planning.

In addition to the project team, a project consultation group was established consisting of representatives from the Region of Waterloo Transportation Services Division, Region of Waterloo Grand River Transit, Region of Waterloo Public Health and Emergency Services, City of Kitchener Engineering Division, City of Kitchener Operation - Roads and Traffic Division, City of Kitchener Parks and Cemeteries Division, City of Kitchener's Fleet Division, City of Waterloo and City of Cambridge. The project team met with the project consultation group on key milestones with the objective of identifying street safety priorities and brainstorming solutions/action items.

City staff also collaborated with the University of Waterloo Transportation Engineering team to leverage their expertise in the development of the strategy. The partnership is a three year (2021-2023) collaborative effort with the University of Waterloo, City of Kitchener, City of Waterloo, Region of Waterloo and an industry partner; Miovision Technologies; aiming to develop optimal Vision Zero safety improvement programs. Specifically, the partnership is set to achieve the goals of developing a new framework for assessing system-wide impacts of various countermeasures and optimizing the implementation strategies of specific programs. The University of Waterloo has assisted the City with research on best practices and network screening/hot spot identification.



Advisory Committees Engagement

Throughout 2020 and 2021 staff met with advisory committees including Mayor's Advisory Council for Kitchener Seniors, Kitchener Cycling and Trails Advisory Committee, Kitchener Youth Action Council, Grand River Accessibility Advisory Committee and Safe and Healthy Communities Advisory Committee. The intent of these meetings was to raise awareness about Vision Zero and to receive feedback. Through these sessions staff received valuable feedback including street safety concerns, action item options and data collection and evaluation requests.

Public Engagement

To better understand the residents' street safety concerns and priorities, and to gauge public's feedback on the action items proposed within the City of Kitchener's Vision Zero Strategy, two online surveys were released using the Engage Kitchener platform. The first survey was released in November 2020 and stayed open for a duration of two months. A total of 443 responses were received. The second survey was released in October 2021 and stayed open for a duration of three weeks. A total of 296 responses were received in the second survey. Participating in the surveys required email registration in order to reduce duplicate responses and to help prevent bias in the results.

An analysis was conducted on the demographic characteristics of the respondents which showed a balanced representation in the age, gender and income threshold of the respondents.

The main highlights of the survey are summarized below:

Kitchener Residents' Main Mode of Transportation

- 90% of the respondents drive on a daily/weekly basis
- 85% of the respondents walk on a daily/weekly basis
- 45% of the respondents cycle at least once a month
- 24% of the respondents use public transit at least once a month
- 4% of the respondents use mobility devices



Kitchener Residents' Road Safety Experience

- Most of the respondents feel safe when driving
- 20% of the respondents do not feel safe when walking
- Half of the respondents feel unsafe when cycling
- Most of the public transit users feel safe when using public transit
- Most of the respondents using mobility devices did not indicate that they feel safe when using Kitchener's transportation facilities

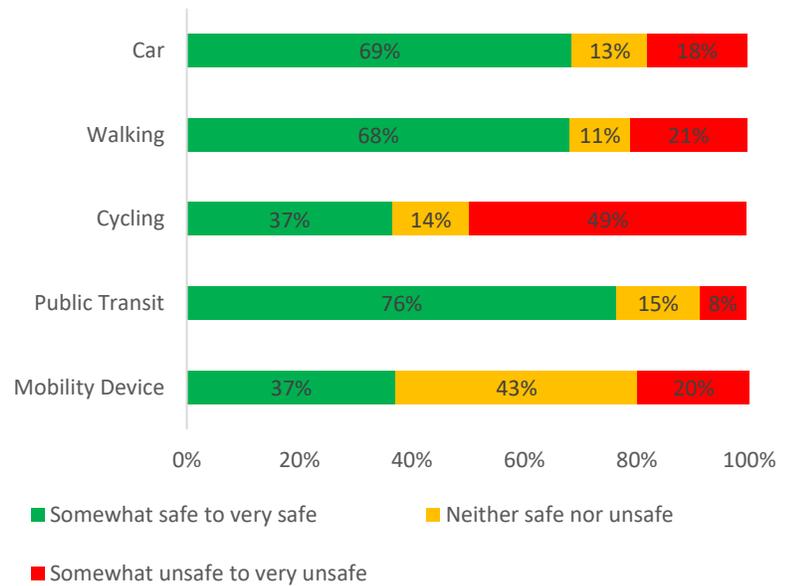


Chart 6 – Kitchener Resident's Road Safety Experience

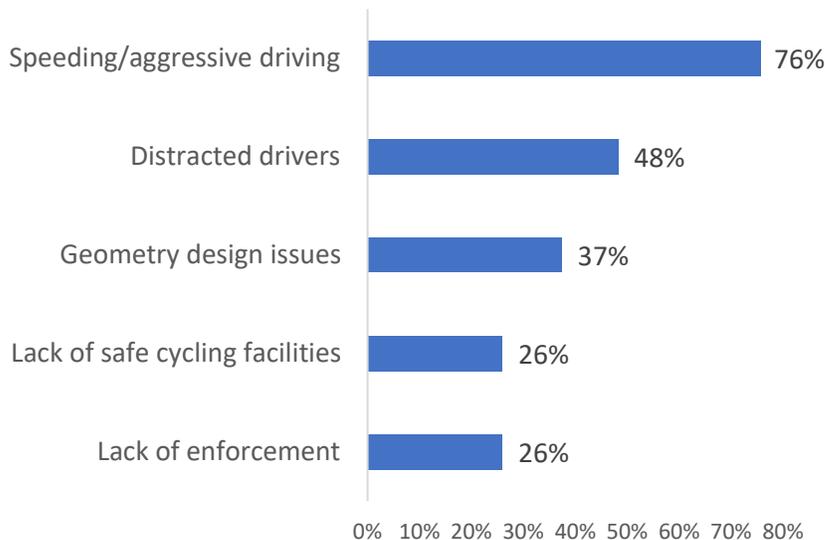


Chart 7 – Kitchener Residents' Road Safety Concerns

Kitchener Residents' Road Safety Concerns

- Speeding and aggressive driving is the top concern of the respondents (76% of the respondents).
- Almost half of the respondents are concerned about distracted driving.
- Almost 40% of the respondents believe that street design should be improved.
- About 25% of the respondents believe that the cycling facilities should be improved/expanded.
- About 25% of the respondents believe that enforcement should be increased.

October 2021 Survey Participant Feedback on the Proposed Action Items

- 62% of the respondents are supportive of the proposed action items, with 17% neither supportive nor opposed and 21% opposed.
- 53% of the respondents believe that the proposed action items address their concerns, reflect their street safety priorities and overall are the right action items to improve street safety in Kitchener. 14% are neither in agreement nor in disagreement, and 32% in disagreement with the statement above.

VISION and OBJECTIVES

Through collaboration with stakeholders and the project team, the following vision and mission statement have been developed for the City of Kitchener's Vision Zero Strategy:

Vision Statement:

To reduce collisions that result in severe injury or fatality to zero for all street users including drivers, cyclists, pedestrians, transit users and people using mobility devices on City of Kitchener streets.

Objectives:

Over a four-year plan we aim to achieve the following.

- A declining trend in the number of collisions involving serious injuries or fatalities
- Data driven decision making and focusing resources in areas with the highest expected impact
- Increased public awareness and education about Vision Zero
- Enhanced collaboration and data sharing with key stakeholders
- Ongoing engagement with Kitchener residents and other stakeholders



This vision is a long-term goal requiring significant support, collaboration and resources from different functions and stakeholders. The City is taking a multi-step approach towards this goal. At the end of each step, the outcomes and actions will be evaluated and revised to ensure continuous progress towards the vision.

EMPHASIS AREAS

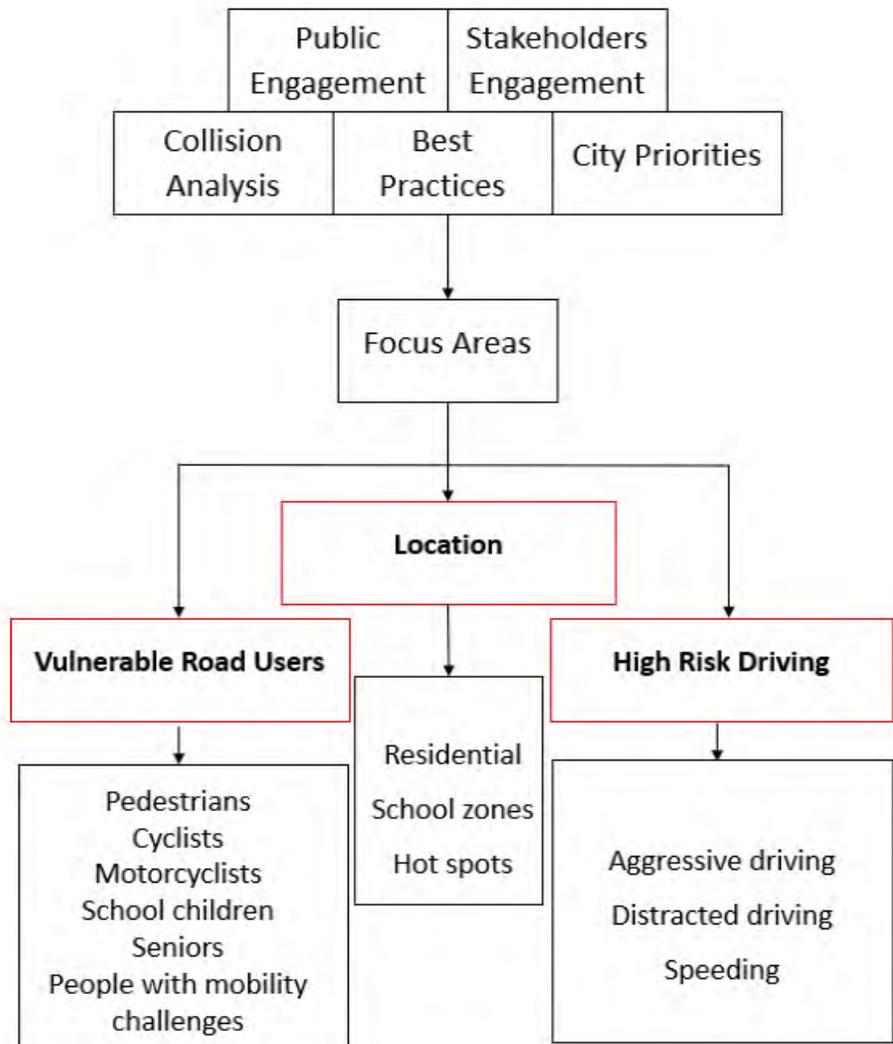
To help prioritize street safety improvements and to better utilize the available resources and funding in the most efficient way, The City has developed a number of Emphasis Areas.

Emphasis Areas are areas of opportunities to improve road safety. The proposed action items of the Vision Zero Strategy are selected in alignment with the Emphasis Areas.

The City has identified the Emphasis Areas based on data analysis, background research, and public and stakeholder engagement. The City of Kitchener’s strategic goals and priorities involving active transportation has also been considered in identifying the emphasis areas.

The emphasis areas identified are categorized into three groups:

- Vulnerable street users
- Location
- High risk driving



Vulnerable street users: data analysis, research from other municipalities and public and stakeholder engagement have consistently shown that vulnerable street users including pedestrians, cyclists, motorcyclists, school children, seniors and people living with mobility challenges, should be a key focus area of a Vision Zero Strategy.

Location: resources should be deployed in the most efficient way possible, focusing on specific locations such as residential zones, school zones and hot spots where the probability of a collision involving a serious injury or fatality is higher risk.

High risk driving: both the data analysis and public/stakeholder engagement showed that high risk driving behavior including aggressive driving, speeding and distracted driving are some of the most important contributing factors to collisions involving serious injuries or fatalities and should be a focus area.



ACTION ITEMS

The Vision Zero Strategy involves several street safety programs/initiatives that are important to reduce the probability of collisions resulting in a serious injury or fatality. Action items are selected based on data analysis, experience of other municipalities, public and stakeholder engagement, and available resources. The action items selected are in alignment with the Emphasis Areas described above.

Three categories of action items are considered under this Vision Zero Strategy:

- Existing Action Items: these are existing street safety programs in the City of Kitchener;
- Enhanced Action Items: these are existing street safety programs in the City of Kitchener that are proposed to be enhanced or expanded through the Vision Zero Strategy;
- New Action Items: these are new programs/initiatives that are proposed to be implemented in the Vision Zero Strategy.

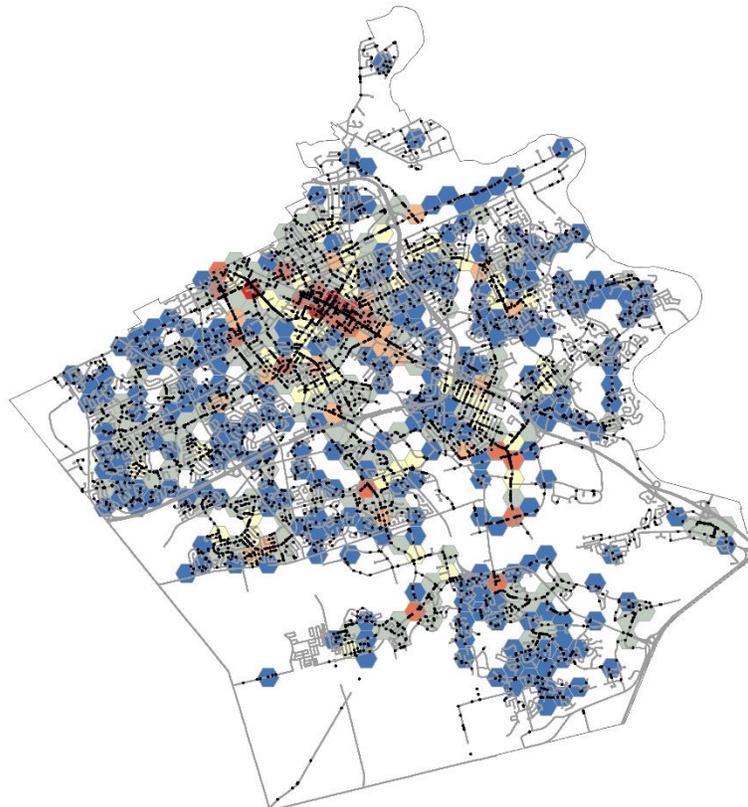
The proposed action items are further categorized into each element of Vision Zero. Each category is further expanded in the following sections.

1. EVALUATION

An effective Vision Zero program requires continuous data-driven evaluation and analysis of street network safety. This includes the ability to continuously track the impact of safety-related efforts to better understand the causality behind the traffic related serious injuries and fatalities. Annual collision analysis and network screening are examples of an ongoing evaluation strategy.

Safety evaluation of the transportation network enables a data driven approach towards the identification of high priority areas and countermeasure implementation. This approach ensures that the available City resources are utilized in the most efficient manner. Once a countermeasure is implemented, continuous evaluation of its effectiveness helps to develop an understanding of whether the safety objectives have been met or further improvements are required.

The accuracy and quality of street safety evaluation programs depend on the quality and quantity of the traffic and collision data available. Currently the collision data up to the end of 2019 has been used as the basis of the analysis in this Vision Zero Strategy. The analysis will be continuously updated as more recent data becomes available.



EXISTING EVALUATION ACTION ITEMS

- **Traffic Data Collection:** traffic data is collected on an annual basis to determine the best locations to install traffic calming measures. Traffic speed and volume data allow staff to make data-based recommendations about traffic calming and other transportation initiatives. Each year data is collected on approximately 300 roadways.
- **Selective Traffic Enforcement Program (STEP):** representatives from the Region of Waterloo, area municipalities and Waterloo Regional Police Services staff hold regular meetings to review traffic and collision data. In these meetings areas for targeted and increased enforcement are discussed and data is used to help prioritize high priority locations.
- **Reactive (complaint driven) safety evaluation:** upon receiving a traffic safety related complaint/concern, the necessary data is gathered and evaluated to identify the underlying causes of the traffic safety problem. Based on the evaluation results and available resources, a suitable countermeasure may be determined and implemented through existing programs and processes.

ENHANCED EXISTING EVALUATION ACTION ITEMS

The following street safety improvements are to be enhanced and are described in the next section.

- Project Impact Evaluation
- Collision Network Screening and Hot Spot Identification
- Safe Driving Practices Program for City Fleet

ENHANCED and NEW EVALUATION ACTION ITEMS

- **Collision Network Screening and Hot Spot Identification:** Currently the collision data is mainly used to prioritize traffic calming efforts. The database is updated every year and is used as a determining factor in the traffic calming scoring system. Collision data is also used as the means to evaluate different safety countermeasures on a reactive basis. Through the Vision Zero Strategy, a network screening process is proposed that provides a systematic method to proactively identify a list of locations with high collision risk (hot spots) by supplementing the collision data with multiple other factors including site characteristics, traffic volumes, speeds, exposure, etc.
- **Project Impact Evaluation:** The impact of all safety related projects including traffic calming projects, cycling facilities, speed reduction projects, and all other safety countermeasures implemented are quantified and evaluated. Depending on the project objectives, the impact evaluation plan details and timelines are designed, and the required data is collected before and after implementation. The result of project impact evaluation informs future decision makings around safety improvements. The project impact evaluation is planned to be enhanced through collecting new sources of data and conducting before-after studies to assess the effectiveness of the road safety improvements that will be implemented through the Vision Zero Strategy.

- **Safe Driving Practices Program for City Fleet:** The City of Kitchener has committed to safe driving practices and reduction of injuries as a result of collisions. In 2014 City installed AVL/GPS devices on all mobile motorized equipment to encourage municipal workers to practice safe driving behaviors. By having the capability to monitor aggressive or unsafe vehicle operation, including swerving, harsh braking, rapid acceleration, and speeding, Fleet and divisional managers can take steps to correct and coach this behavior immediately furthering the goals of Vision Zero. Staff will be assessing the content of the driver behaviour data through the quarterly Fleet Users Working Group as way to further enhance the Cities commitment to safe driving practices with possible incentive for drivers who exceptional safe and productive driving behaviours.
- **Severe Injury and Fatal Collision Investigation Program:** Develop and implement a program to systematically investigate severe injury and fatal collisions in collaboration with Region of Waterloo, Public Health and Emergency Services and Police Services. Reviews will be conducted to investigate the trends in collision causes, provide solutions and implement countermeasures within a given timeframe.
- **Collaboration and Data Sharing with the Region of Waterloo Public Health and Emergency Services:** Collaboration and data sharing with the Region of Waterloo Public Health and Emergency Services to maximize safety efforts and understand collisions causes and the nature of injuries. As part of this collaboration, the role of societal inequity and demographic characteristics in the occurrence of serious injury and fatal collisions will also be investigated. Targeted countermeasures to enhance street safety equity will be applied.



2. ENGINEERING

The design, operation and maintenance of the transportation network can have a significant impact on the frequency and severity of collisions. Engineering tactics contained in a Vision Zero Strategy acknowledges the role of human error and aims to account for these errors. For example, countermeasures such as traffic calming designs and dedicated infrastructure for vulnerable street users are proven to improve traffic safety for all street users.

Engineering countermeasures could vary from adding signs and pavement markings, which are cost effective and can usually be implemented within a shorter period of time, to significant capital projects that have higher costs and could take several years to design and implement. The best opportunity for major street safety redesigns is during the road reconstruction phase, which usually happen every 25 to 50 years for each street. Transportation Services, in collaboration with the Engineering division will ensure to use these opportunities to implement complete street designs that provide a safer space for all street users regardless of age, ability or mode of transportation.

Engineering countermeasures are typically targeted and site-specific. For this reason, assessment of their effectiveness is more straightforward. Experience from other municipalities on the effectiveness of engineering countermeasures will be used in selecting the most impactful countermeasures.



EXISTING ENGINEERING ACTION ITEMS

- Complete Streets Guidelines: “Designing for safety” is a primary goal of the Complete Streets Guidelines, which provides extensive technical guidance, based on industry best practices. Street design guidance includes cross sections, intersections and street design features for each of the four travel modes: pedestrian, cycling, transit and motor vehicles. These guidelines also provide related evaluation and education tactics to support the design improvements.
- Cycling and Trails Master Plan: The Cycling and Trails Master Plan guides the development of safe and convenient active transportation options for people of all ages and abilities over the next 20 years. It focuses on creating networks for people of all ages and abilities that reflects current best practices in active transportation. This guide identifies priorities of projects that will provide connected networks of on-street cycling routes and off-street trails for users of all ages and abilities.
- Downtown Cycling Grid: The Downtown Cycling Grid provides infrastructure that is safe, comfortable and convenient for all ages and abilities. Through a combination of trails, separated bike lanes on busy streets and neighbourhood bikeways on quiet streets, the grid consists of 10 km of new or upgraded infrastructure, providing residents with access to all that downtown has to offer.
- School Crossing Guards: To improve safety for students, typically kindergarten to grade 6, the City assigns crossing guards at eligible locations using a justification system. For locations which meet the criteria, staff will then recommend a crossing guard to assist students in crossing the roadway on their way to and from school.
- Construction/work site safety: Staff make sure that all the contractors follow the street safety provisions for any construction/work site through requiring the contractors to apply for a construction/work site permit. The permit requires the contractors to abide by the transportation safety rules and standards.
- Complaint Review and Mitigation: Process to investigate street safety complaints and provide solutions. Upon receiving a traffic safety related complaint/concern, details are logged, and the necessary data is gathered and evaluated to identify the underlying causes of the traffic safety problem. Based on the evaluation results and available resources, a suitable countermeasure is determined and implemented.

ENHANCED EXISTING ENGINEERING ACTION ITEMS

The following street safety improvements are to be enhanced and are described in the next section.

- 40km/h Speed Limit Review
- Formal Traffic Calming
- Seasonal Traffic Calming
- School Route Safety
- Sidewalk Infill Policy

ENHANCED and NEW ENGINEERING ACTION ITEMS

- **40km/h Speed Limit Review:** Staff have conducted a pilot project in three neighbourhoods to evaluate the effectiveness of reducing speed limits from 50 km/h to 40km/h. The speed limit of school zones within the pilot areas were further reduced from 40km/h to 30km/h. This study showed that by reducing speed limits, vehicle operating speeds were reduced by 7% on average. Based on the results of the pilot project Council approved a reduced speed limit in all residential neighbourhoods within the City of Kitchener, from 50km/h to 40km/h, and a reduced speed limit in school zones and along signed and identified neighbourhood bikeways, from 40km/h to 30km/h.
- **Formal Traffic Calming:** Each year staff complete three formal traffic calming projects. The three project locations are selected based on a ranking system using criteria such as speed, volume, and collision history. Formal traffic calming includes geometric changes to the roadway such as speed humps, speed cushions curb extensions, raised crosswalks, and pedestrian islands. The three locations that score the highest are recommended for the formal traffic calming process. Through this process local neighbourhoods are engaged to understand challenges, opportunities and to develop the most appropriate traffic calming approach for their roadway. This program will be reviewed as part of the Vision Zero Strategy to update the policy, find opportunities to streamline the process, and ensure that the measures implemented are consistent with best practices.
- **Seasonal Traffic Calming:** Seasonal Traffic Calming includes in-road flexible signs that are placed in the middle of the roadway to help calm traffic. These in-road signs help narrow the roadway and provide a visual cue to drivers that slower speeds are appropriate. Seasonal traffic calming also includes radar speed signs. The purpose of radar speed signs is to slow cars down by making drivers aware when they are driving at speeds above the posted limits. Transportation staff work with Ward Councillors to determine the most suitable seasonal traffic calming locations each year. Seasonal traffic calming measures are installed in the spring and removed in the fall before winter maintenance starts. This program will be reviewed as part of the Vision Zero Strategy to develop a council approved policy, streamline the process and ensure that the measures implemented are consistent with best practices.
- **School Route Safety:** School zones that require safety improvements are identified on a complaints-driven basis. Based on data gathered by the school travel planner, recommendations are made that prompt municipal transportation staff to conduct a review to determine the appropriate design improvements, which are then implemented as budget permits. Through the Vision Zero Strategy, a summary of best practices specific to school zones will be developed. This guide will include the best practices on safety design requirements in school zones based on local context.
- **Sidewalk Infill Policy:** This policy provides a priority list for new sidewalk locations based on a scoring system which aims to provide a safe and connected network of sidewalks for pedestrians. Through the Vision Zero Strategy, this policy will be reviewed to ensure that the process is streamlined and that the prioritization criteria is up to date.

- **Vulnerable Street User Areas Policy:** Develop a policy specific to locations expecting a high volume of vulnerable street users such as pedestrians, cyclists, seniors, children, etc. This policy will include enhanced traffic safety measures such as lower speed limits, improved pavement markings, enhanced signage, and traffic calming measures. The policy will determine a process for evaluating and selecting areas for implementation.
- **Pedestrian Crossover Handbook:** Develop a summary of best practices for Pedestrian Crossover (PXO) considering local context to ensure safe crossing of pedestrians regardless of age and ability. This document will be used as a guide in future projects, and retrofitting existing locations as required.
- **Accessibility Improvement Handbook:** Develop a summary of best practices for accessibility requirements for all modes of transportation. This document will be used as a guide in future projects to help ensure that accessibility requirements are implemented.
- **Hot Spot Improvements:** Based on the evaluation results, areas with a higher risk for serious or fatal collisions should be identified and prioritized. Appropriate engineering countermeasures should be implemented in priority areas. Examples of these countermeasures include enhanced pavement markings and signage, street geometry changes, and enhanced traffic calming measures.
- **Fleet Safety Improvements:** The safety features of the City's fleet vehicles will be reviewed and evaluated. These new safety measures include truck sideguards (truck lateral protective devices [LPDs]) and enhanced dash cameras. Truck sideguards identified in the industry as Lateral Protective Devices (LPDs) are devices designed to keep pedestrians and bicyclists from being run over by a large truck's rear wheels in side-impact collisions. The city will continue to explore and assess these devices under the Vision Zero initiative. The City also intends to expand and enhance the current dash camera system due to the outdated technology currently in use. With the help of dash cam footage and advanced safety features, the City can easily pinpoint which drivers need to learn and customize their driver coaching programs accordingly through the City's Fleet Safety and Compliance program.



3. ENFORCEMENT

Inappropriate driver behavior such as impaired driving, distracted driving and speeding are major contributors to severe collisions. These high-risk behaviors can be reduced through different types of police enforcement and related educational programs. Targeted enforcement of speeding, distracted driving and ride programs are common tools in this area. Enforcement measures can be continuous or temporary programs and can be targeted to specific locations or be applied on a broader scale.

The City of Kitchener continues to work with Region of Waterloo Police Services and regularly communicates the City's safety priorities that require enforcement. Considering the limited authority of The City of Kitchener has in the enforcement area, the key objective of the action items under this category is continuing and enhancing collaboration and data sharing to ensure that the available resources are utilized to full capacity and at priority locations.



EXISTING ENFORCEMENT ACTION ITEMS

- 2021 Road Safety Plan: The Waterloo Regional Police Service has launched a Road Safety Plan aimed at making our streets safe for all users. The plan outlines the Waterloo Regional Police Service's commitment to reducing major injury collisions and fatalities on our streets and will focus on enforcement and education on the Fatal Four offences: impaired driving, distracted driving, speeding/aggressive driving, and seatbelt use. As part of the plan, several initiatives will be carried out including monthly road safety plans, increased focus on rural enforcement and the formation of Traffic Services Special Enforcement Teams. A focus will be placed on increased RIDE programs, Selective Traffic Enforcement Programs (STEP), high complaint areas, educational campaigns and community partnerships.

ENHANCED EXISTING ENFORCEMENT ACTION ITEMS

The following street safety improvements are to be enhanced and are described in the next section.

- Targeted Enforcement (STEP Program)
- WRPS Traffic Management Plan
- Automated Speed Enforcement

ENHANCED and NEW ENFORCEMENT ACTION ITEMS

- Targeted Enforcement (STEP Program): Collaboration and data sharing with the Region of Waterloo Police Services to identify locations in need of targeted enforcement and educational programs. Appropriate enforcement and educational programs will be planned and implemented in the areas identified.
- WRPS Traffic Management Plan: Collaboration and data sharing with the Waterloo Region Police Services and providing feedback as a key stakeholder in the development of Traffic Management Plans. Traffic Management Plans are developed by the WRPS aimed at making our streets safer for all street users by implementing enforcement and educational programs.
- Automated Speed Enforcement (ASE): The intent of ASE is to improve street safety in school zones and community safety zones through increased compliance with posted speed limits. An ASE system automatically measures vehicle speeds at a specific point along a roadway using a camera-based radar system. Enforcement is accomplished through the issuance of an offence above the posted speed limit issued to the owners of the vehicles' license plate number. Currently, the Region of Waterloo administers this program on regional and municipal roads on behalf of area municipalities. The local Provincial Offences Court office falls under the authority of the Region of Waterloo and therefore area municipalities are currently limited in their ability to establish a standalone ASE program. Through the Vision Zero Strategy, the City will review the transition to the Administrative Monetary Penalty System (AMPS) which allows the area municipalities to administer the program through a faster and more flexible process.

4. EDUCATION

Increased awareness and education related to road safety is fundamental to a successful Vision Zero program. The main objective of the educational programs is to share information, increase public awareness, and reduce high risk behaviour. Educational programs are targeted to children, inexperienced drivers, distracted and aggressive drivers. Educational campaigns are often long-term strategies towards behavioral changes and can take more time to monitor and see meaningful change.

Currently the City of Kitchener's educational programs regarding road safety are primarily focused on active and safe routes to school and/or cycling education and information. However, there are continued education efforts that also occur through the Region of Waterloo, Region of Waterloo Public Health and Emergency Services and/or the Waterloo Regional Police Services.

The intent of the education action items in this Strategy is to inform and raise public awareness about street safety and Vision Zero, building support for street safety improvements, and establishing a cultural shift in road user behavior to reduce high risk driving.



EXISTING EDUCATION ACTION ITEMS

- **Your Community, Your Choice campaign:** This campaign is run by the Waterloo Region Police Service. Through this monthly road safety campaign Waterloo Region Police Service will focus on encouraging all street users to play a part in ensuring our streets are kept safe. This campaign is run by the Waterloo Region Police Service and focuses on educating and engaging all street users to make streets safer. This campaign focuses on the four fatal offences of impaired driving, distracted driving, speeding and aggressive driving, and seatbelt use.
- **Inter-municipal Partnership for Active Transportation (IMPACT):** Regular meetings attended by representative from local municipalities, Region of Waterloo Police Services, Ministry of Transportation, public health and emergency services, school travel planning, Canadian Automobile Association, and post-secondary institutions to discuss and plan educational campaigns to promote safe walking, cycling and other forms of active transportation across Waterloo Region. The committee set annual priorities and objectives based on local needs, available resources and strategic issues.
- **Waterloo Region Road Safety Campaign for Short-Term Construction:** This road safety campaign is an ongoing public awareness initiative, that aims to change driver behavior in construction zones across Waterloo Region. This campaign raises awareness about the dangers of ignoring construction signage, educates street users on the rules of the road (specifically in construction zones), encourages compliance and works to reach varied audiences to reduce injuries and fatalities and to promote long-term behaviour change related to driving. This campaign runs during the summer/fall construction season.
- **Regional Traffic Coordinating Committee:** Area municipalities, the Region of Waterloo, Waterloo Region Police Service, and Grand River Transit meet on a quarterly basis to discuss traffic and transportation related issues across the region. This forum provides an opportunity for municipalities to update on ongoing efforts, strategize on educational initiatives that have regional impact, and review policy direction from transportation institutions and other levels of government.

ENHANCED EXISTING EDUCATION ACTION ITEMS

The following street safety improvements are to be enhanced and are described in the next section.

- Active Transportation Educational Campaigns and Events
- Active School Travel Educational Programs
- Educational Programs for Fleet Drivers

ENHANCED and NEW EDUCATION ACTION ITEMS

- **Active Transportation Educational Campaigns and Events:** Currently the City provides educational campaigns, events and materials regarding different active transportation facilities and ongoing cycling projects. It also provides bike maps and bike parking locations to help navigate cyclists through the safest and most convenient route. A monthly e-newsletter provides regular information and updates on on-going cycling projects and new cycling facilities to promote cycling

and educate all street users on best practices. Through the Vision Zero Strategy, the active transportation educational programs will be further enhanced and will include the Cycling and Trails Master Plan updates, the Downtown Cycling Grid updates, educational materials and campaigns for both cyclists and drivers on how to use/drive along separated bike lanes, painted bike lanes, bike boxes, pedestrian crossovers, etc.

- Active School Travel educational programs: Dedicated programs managed by Student Transportation Services of Waterloo Region that elevate students' pedestrian skills and family traffic awareness. This educational programming covers basic, to more complex environments, such as crossing roundabouts and LRT tracks, and understanding the implications of traffic at the school site; and it is delivered through various models including Trailblazers, Sidewalk Smarts, Drive to Five, etc. Student Transportation Services of Waterloo Region also supports the implementation of safety programs managed and promoted by third-party entities to enhance students' knowledge regarding safe behaviours as a street user. These include Walking School Bus, Cycling into the Future, CAA School Safety Patrol program, and Children's Safety Village. Through the Vision Zero Strategy the Active School Travel educational programs will be continued and enhanced through collaboration with Teens Learn to Drive to amplify messaging. Vision Zero Day at schools will be planned and implemented on an annual basis to raise awareness about Vision Zero and street safety for school children.
- Educational Programs for Fleet Drivers: City of Kitchener prioritizes its responsibility to protect the safety of its employees in the workplace and to members of the public. Part of that responsibility requires that the City of Kitchener provide adequate knowledge and skill development to our Professional Drivers to ensure that any City of Kitchener vehicle or equipment is operated in a safe, competent and courteous manner. The City is planning to expand the City's fleet drivers training on how to drive safely around vulnerable street users of pedestrians and cyclists and related transportation facilities. The current driver education and training relies heavily on third party training. This expense risen substantially since 2018. Staff will continue to refine the permitting process; however, budgetary constraints may increase the risk of accidents if driver training and re-training programs are not supported.
- Aggressive Driving and Speeding Educational Campaign: Joint street safety educational campaign with the Region of Waterloo Public Health and Emergency Services and community stakeholders. This will include educational videos illustrating the consequences of aggressive driving and speeding, radio ads, prints ads, messaging on City social media platforms, messaging on City owned properties and parking garages, marketing at GRT and LRT shelters and ads on the buses in Kitchener.

5. ENGAGEMENT



The continuous involvement of communities and other stakeholders is key to a successful and effective Vision Zero program. Engagement provides the opportunity for the community stakeholders to contribute to ideas and become part of the solution in the journey towards zero traffic related serious injuries and fatalities. An effective engagement plan should include all street users regardless of age, ability and mode of transportation. Supporting advocacy groups that both promote and help to improve street safety programs and plans is an example of a Vision Zero engagement strategy.

EXISTING ENGAGEMENT ACTION ITEMS

- **Active Transportation and Trails Advisory Committee:** This is an advisory committee to Council consisting of residents with an interest in walking, cycling and trails. Monthly meetings take place with City staff to engage and receive feedback regarding the design, development and delivery of active transportation and trail policies, programs and facilities in order to promote and enhance safe walking, rolling and cycling in the City of Kitchener. The aim of this committee is to serve as a forum for the public and/or agencies to raise their viewpoints on particular active transportation, street safety and trail use issues.
- **Resident-led Traffic Calming:** Resident-led traffic calming is a grassroots approach where local residents can lead traffic-calming initiatives in their neighbourhoods with the City's guidance and support. There is also grant money available to fund resident-led initiatives. Resident-led traffic calming helps build community awareness around the issue of traffic safety.

ENHANCED AND NEW ENGAGEMENT ACTION ITEMS

- Vision Zero Sub-Committee (Kitchener's Active Transportation and Trails Advisory Committee): A sub-committee of the Active Transportation and Trail Advisory Committee, including members of the public to provide a community perspective on street safety issues and Vision Zero action items, to promote public awareness and education for street safety initiatives and programs with the aim to encourage community participation and cooperation.
- Public Awareness and Engagement: Vision Zero main webpage with information and updates about Vision Zero, Vision Zero Engage page to share information and data with the public and receive ongoing feedback and encourage resident-initiated participation.
- Vision Zero Day: An annual open house to inform the public and raise awareness about Vision Zero with the objective of community participation and cooperation. Updates on the Vision Zero action items will be provided to residents, successes and progress highlighted, and opportunity for community feedback.
- Community Partnerships: Establish community advocates for street safety. One example is the Road Model Program which establishes community advocates for street safety. In this program the participants pledge to become a driver who is committed to creating a safer and connected community by driving with the safety of all street users in mind. The drivers receive a badge that can be attached to their windshield showing that they have participated in this program. Drivers who participated in this program commit to reduce personal vehicle use, be a courteous driver who respects all street users and obeys all traffic rules and drives without distraction.
- Advocacy and Engagement with Provincial and Federal Agencies:
 - Advocacy for Fine Increase: fine increase can be a tool used in enforcing the rules of the road, especially for high-risk driving, and in areas with higher volumes of vulnerable street users. Considering the limited authority of The City in this area, staff will work with the Council and the Mayor's office to advocate for fine increase for high-risk driving at the provincial level.
 - Advocacy for Advanced Safety Features on Passenger Vehicles: Advanced safety features on vehicles can have a significant role in preventing a serious injury or fatality collision. Considering the limited authority of The City in this area, staff will work with the Council and the Mayor's office to advocate for mandated advanced safety features on passenger vehicles.
 - Engagement and Consultation with Provincial and Federal Agencies: Staff and Council to adopt a broader stakeholder approach engaging and consulting with stakeholders such as the insurance industry, community groups, health care providers, and road safety related agencies at the provincial and federal level.



IMPLEMENTATION

If approved by Council, the Vision Zero Strategy action items identified in this strategy will be implemented over four years from 2022 to 2025. A number of action items are an enhanced/expanded version of an existing program. As a result, they will have minimal cost impact and will be supported using existing budget. Some of the action items can be funded through reallocating existing budget from other projects. This will help ensure that the existing budget would be utilized in the areas most needed through a holistic data driven approach. Some action items require a more in-depth review prior to determining the required budget and resources. These reviews will be completed as part of the Vision Zero Strategy during the next four years and the recommendations, and the associated budget ask will be presented to Council separately at a later date.

The action items are prioritized based on the City's strategic priorities, available resources, and the required timelines. Some of the action items such as network screening, countermeasure evaluation and educational campaigns will occur on an annual basis while others, such as developing new policies and guidelines, will be one-time projects. Considering that this Vision Zero Strategy is an evolving document, the prioritization of the action items is subject to change depending on a number of factors such as evolving street safety priorities, resident engagement, success of the proposed countermeasures, available resources, etc.

PROGRAM EVALUATION

One of the focuses of this Vision Zero Strategy is evaluation. Staff will be monitoring and evaluating the effectiveness of the proposed action items and will be reporting back on the progress and success of the programs on an annual basis.

To evaluate the proposed physical engineering countermeasures, before after traffic and collision data will be collected. Several years of collision data is usually required to evaluate the impact of a countermeasure and determine trends. For this reason, through collaboration with the University of Waterloo, staff is planning to conduct a proactive conflict-based safety analysis using surrogate measures of safety such as post-encroachment time (PET) and time to collisions (TTC) to supplement the traditional crash-based street safety analysis.

In addition to the historical collision data that will be used for the observational before/after study, the proposed evaluation method will also require data on the trajectories of all street users at the sites being evaluated, including vehicles, pedestrians, and cyclists. Two types of technologies could be applied to collect the trajectory data, namely, video cameras and Lidar systems. It is recommended that both technologies be explored for the proposed evaluation effort. The location of the before after studies and the timelines will be determined once the hot spots and the appropriate countermeasures are identified.

Measuring the effectiveness of the action items under the categories of education, engagement and enforcement will be complex since these action items are usually applied on a city-wide scale, are not limited to a specific location, and are often affected by other road safety initiatives. These action items will be evaluated based on the implementation success and feedback received.



CONCLUSION

The City of Kitchener's Vision Zero Strategy provides specific action items to improve street safety for all street users regardless of their age, ability or mode of transportation. This strategy was developed through collaboration and engagement with the key stakeholders such as Waterloo Region Police Services, City of Waterloo, Region of Waterloo, City of Cambridge, Grand River Transit, Region of Waterloo Public Health and Emergency Services, School Travel Planning, Kitchener's Advisory Committees and Kitchener residents. The intent of this strategy is to reduce collisions that result in severe injury or fatality within 2022-2025 with an ultimate goal of reaching zero in future years. This vision is a long-term goal requiring significant support, collaboration and resources from different key stakeholders. The City is taking a multi-step approach towards this goal. At the end of each step, the outcomes and actions will be evaluated and revised to ensure continuous progress towards the vision.

This Vision Zero Strategy is planned to be implemented over four years from 2022-2025. Staff will be monitoring and evaluating the effectiveness of the proposed action items and will be reporting back on the progress and success of the programs on an annual basis. This Strategy is an evolving document and the action items included are subject to change depending on the success of the program and the evolving strategic goals and priorities of The City.

To help prioritize street safety improvements and to better utilize the available resources and funding in the most efficient way, The City has developed a number of Emphasis Areas. The City has identified the Emphasis Areas based on data analysis, background research and public and stakeholder engagement, and The City's goals and priorities regarding active transportation. The emphasis areas identified include vulnerable street users (pedestrians, cyclists, seniors, school children and people using mobility devices), location (school zones, residential areas and hot spots) and high-risk driving (aggressive driving, distracted driving and speeding). The action items included in this Strategy are determined based on the identified emphasis areas, best practices and available resources. These action items are categorized into five categories of Evaluation, Engineering, Enforcement, Education and Engagement. In order for the Strategy to be successful, it is important that the action items in all the five elements be successfully implemented.





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