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**Info Item. 2**
**Transportation Standing Committee**
**December 13, 2023**

**TO:** Chair and Members of Transportation Standing Committee

**SUBMITTED BY:** [redacted]
Cathie O'Toole, Chief Administrative Officer

**DATE:** November 23, 2023

**SUBJECT:** **Review of the Strategic Road Safety Framework 2018-2023**

## INFORMATION REPORT

## ORIGIN

Information Item 2 of the August 24, 2023 session of Transportation Standing Committee:

Strategic Road Safety Plan – 2023 Annual Report

3. "Review of 2018-2023 Strategic Road Safety Framework (SRSF): Staff will conduct a review of the original SRSF, evaluating its strengths and areas for improvement. Staff will prepare a report to present to Council in the Fall of 2023."

## LEGISLATIVE AUTHORITY

Section 4(g) of the Terms of Reference for the Transportation Standing Committee provides that the duties and responsibilities of the Committee include "providing input and review of road and pedestrian safety".

## EXECUTIVE SUMMARY

The Municipality's original Strategic Road Safety Framework (Framework) concludes at the end of 2023. In preparation for the development of the successor Strategy, a review of the original Framework is presented herein. This report highlights overall data trends, key strengths, and areas for potential improvement that have been identified from 2018 through 2022. Lessons learned from the original Framework will inform the development of the new Road Safety Strategy.

## BACKGROUND

The Strategic Road Safety Framework adopted by Regional Council in July 2018, is Halifax Regional Municipality's initial framework aiming to reduce fatalities and injuries on HRM roadways. The Framework is based on a Towards Zero approach, to reduce transportation fatalities and injuries to zero by the year 2038. The Framework also sets a short-term goal of a 20% reduction in fatal and injury collisions by the end of 2023. With the five-year Framework concluding at the end of 2023, a new Road Safety Strategy will be developed for Council approval in 2024. The next iteration will seek to build and improve upon the work achieved in the previous Framework.

A review of the original Framework, including an overview of statistics and identification of strengths and areas for potential improvement is presented herein.

## DISCUSSION

### Statistics Overview

From 2018 to 2022, there were a total of 70 fatal collisions and 3715 injury collisions. When comparing the 2022 collision rates to the baseline data (average of 2018 and 2019), there has been a 12% reduction in total fatal and injury collisions per 100,000 population. **Figure 1** demonstrates the trendline to meet Council's goal of a 20% reduction in fatal and injury collisions by 2023. It is assumed that the lower number of fatal and injury collisions in 2020 was influenced by the impact of the COVID-19 pandemic on travel across all modes.

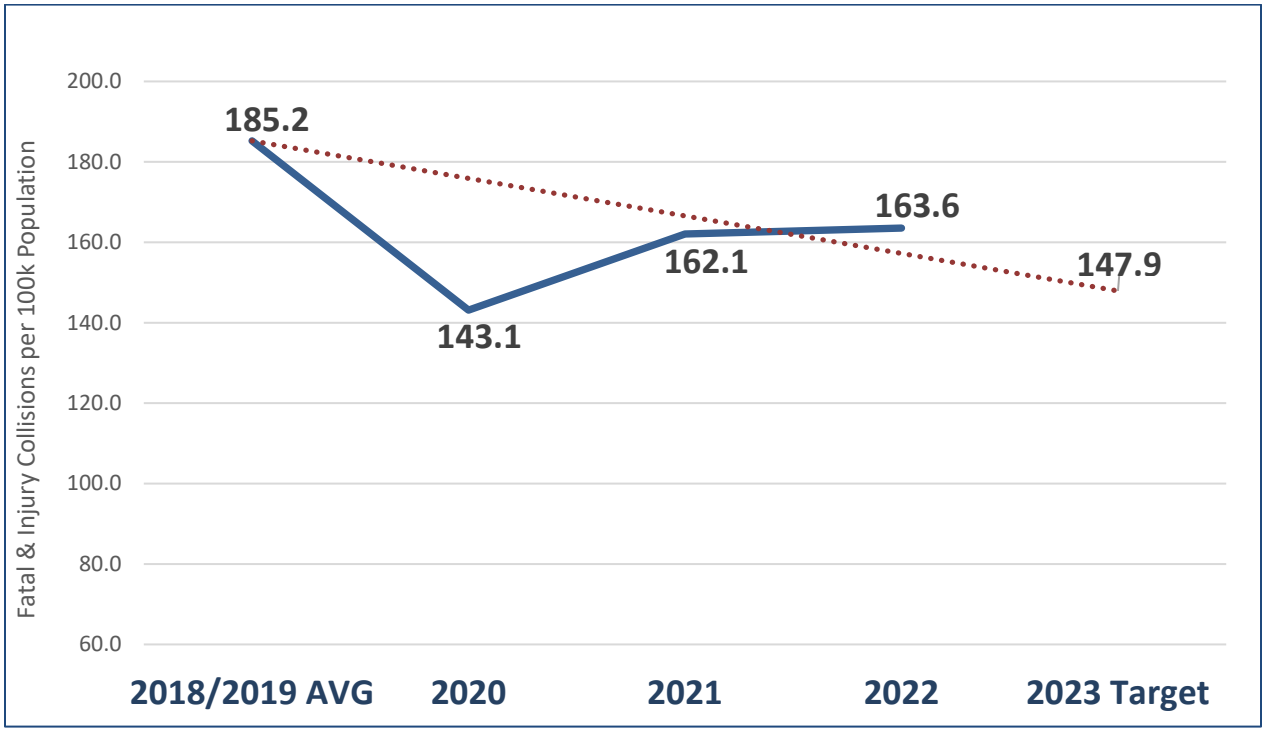


**Figure 1: Road Safety Progress, Collision Rate per 100,000 Population 2018-2022**

Jurisdictions across the globe have experienced varying trends relative to road safety over recent years. In the United States, overall traffic fatalities have remained consistent from 2021 to 2022, however, pedestrian fatalities have continuously been on the rise in the last decade. Overall fatalities in the European Union member countries have generally stayed consistent from 2021 to 2022, however, the progress has been

very uneven throughout the member countries. Locally, fatal collisions alone in HRM have experienced a decreasing trend in comparison to the baseline.

**Figure 2** presents the progress made within individual emphasis areas from the baseline average (2018/2019) to 2022 (fatal and injury collisions only). Each item presents the overall change in collision numbers and corresponding percentage.

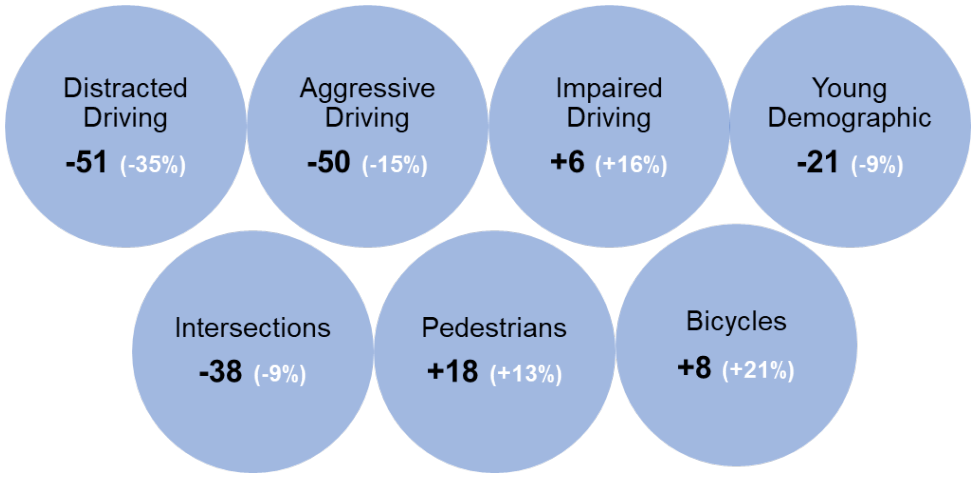


**Figure 2: Emphasis Area Progress, Fatal & Injury Collisions (Baseline Average-2022)**

**Figure 3** presents the overall emphasis area trends in fatal and injury collisions from 2018 to 2022.

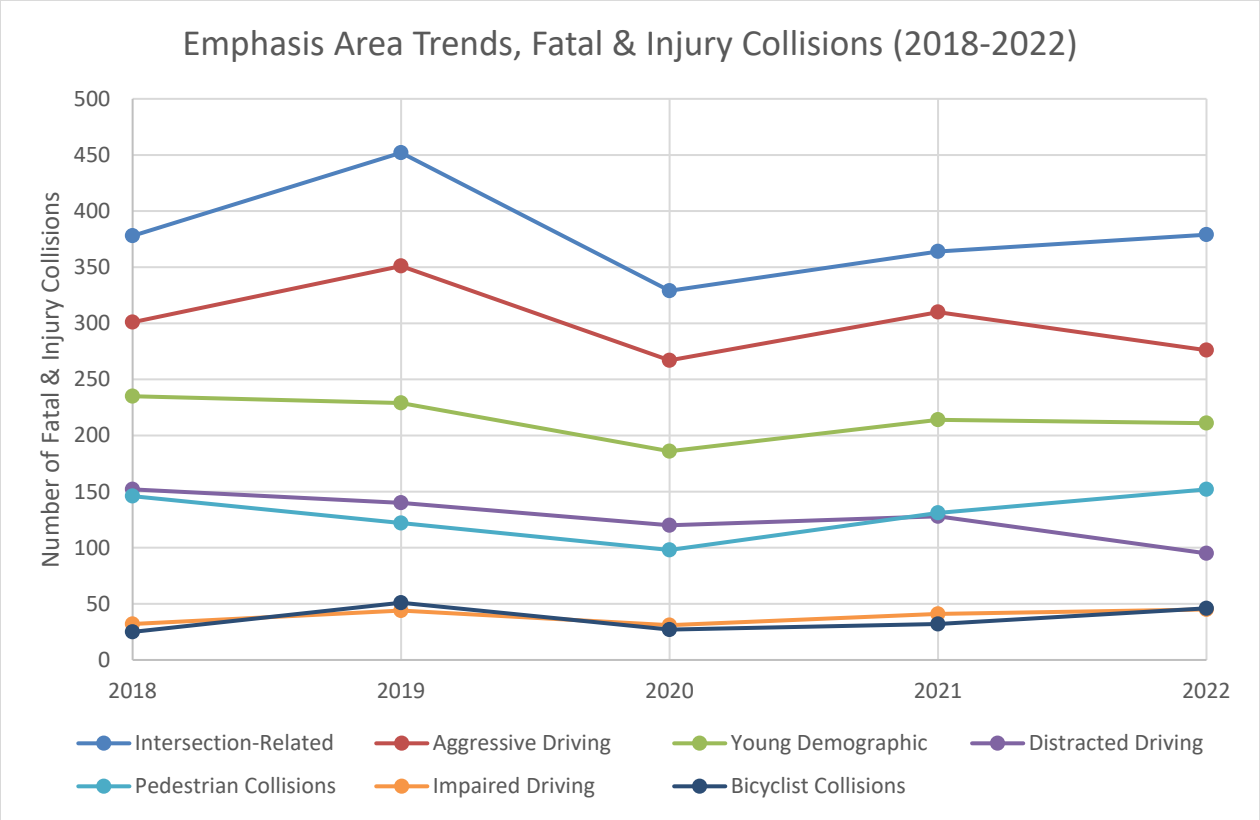


**Figure 3: Emphasis Area Trends, Fatal & Injury Collisions (2018 – 2022)**

Key findings from a review of the emphasis areas include:

- The decrease in intersection and aggressive driving collisions from the baseline is a clear positive outcome. While it takes a few years to confirm the impacts of installed countermeasures, initial results of countermeasure installations during the Framework appear to be having a positive impact on the network.
- Although the increase from the baseline in impaired driving collisions is minor (+6), the negligible change in driver behaviour is concerning. This could be attributed to behaviour changes related to the Covid-19 pandemic as seen in other countries.
- The increase in pedestrian and bicycle collisions is difficult to pinpoint to a certain attribute. There are limited "hot spots" within the region as reported collisions are spread across the network. With the addition of active transportation facilities in the region as well as the rise in seasonal temperatures, there is anecdotal evidence that pedestrian and bicycle user volumes have increased over recent years. With limited volume data available, it is difficult to draw definitive conclusions between the relation of increased collisions and user volumes.

With the increase in pedestrian and bicycle collisions, a detailed review of fatal and injury collisions from 2018-2022 was performed to gain a better understanding of causal factors. **Figures 4-9** below provide further insight into pedestrian and bicycle collisions. Note that pedestrian data was sourced from previous reviews. Discrepancies may exist between future datasets.

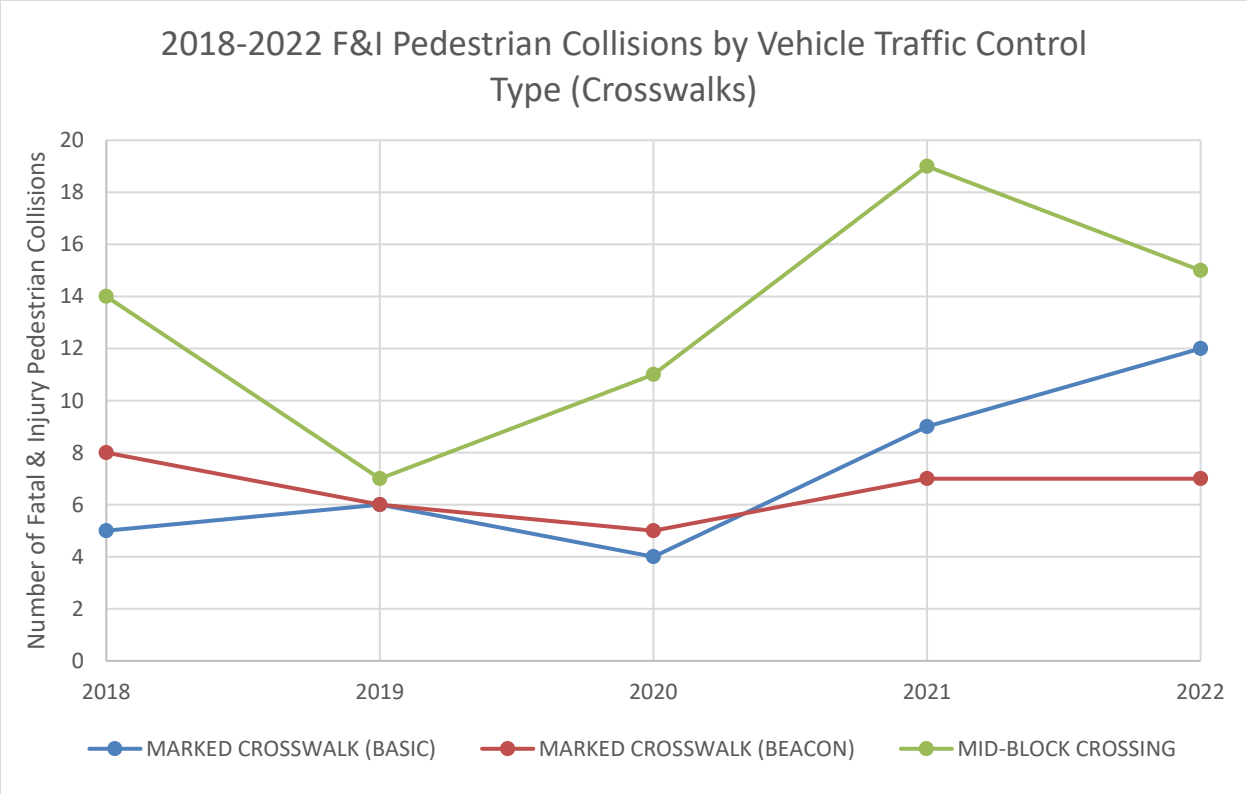


**Figure 4: 2018-2022 F&I Pedestrian Collisions by Vehicle Traffic Control Type (Crosswalks)**

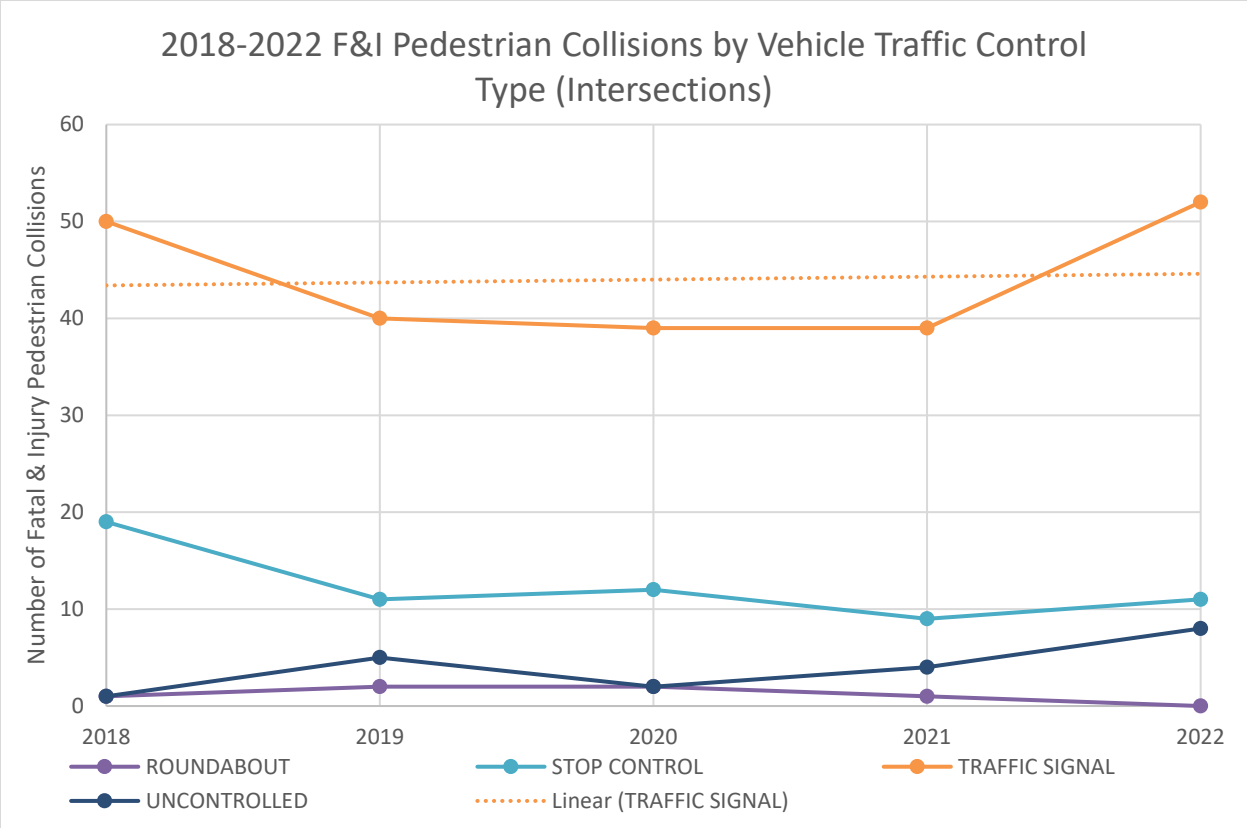


**Figure 5: 2018-2022 F&I Pedestrian Collisions by Vehicle Traffic Control Type (Intersections)**

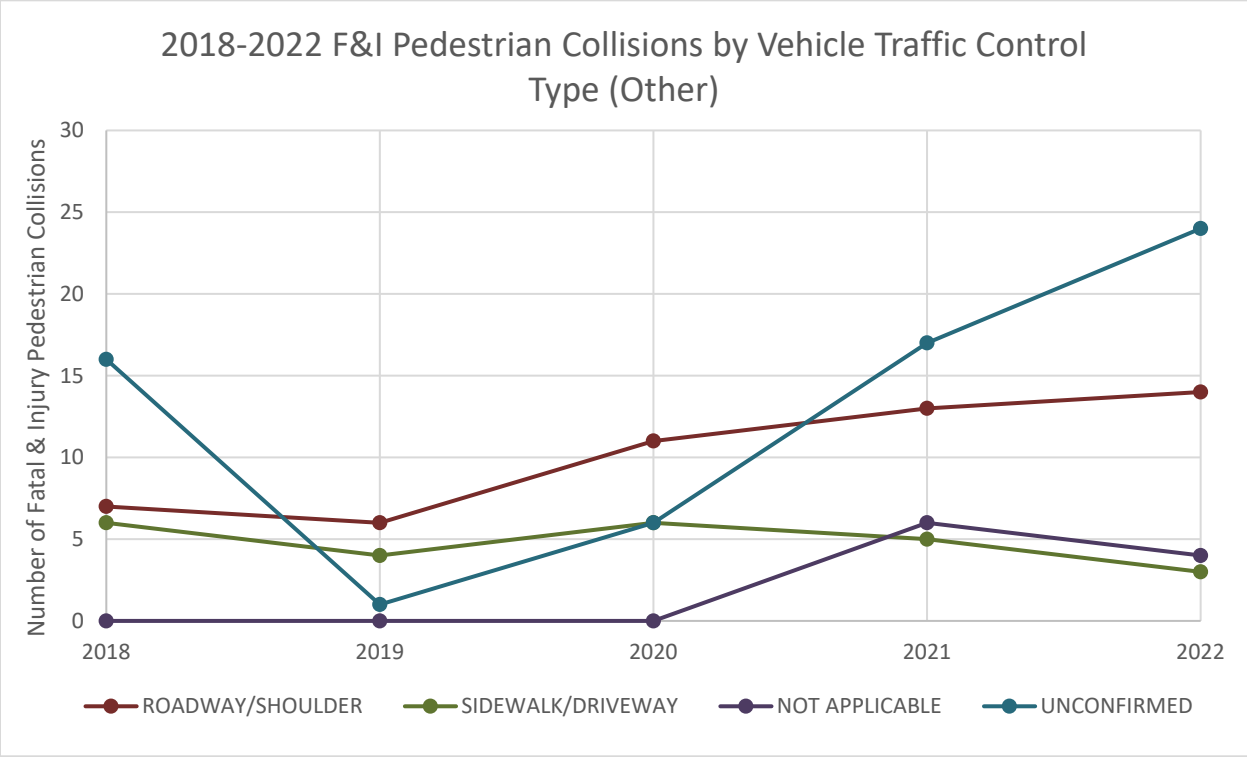


**Figure 6: 2018-2022 F&I Pedestrian Collisions by Vehicle Traffic Control Type (Other)**

Key findings from a review of fatal and injury pedestrian collisions (2018-2022) include:

- Pedestrian collisions at traffic signals remained consistent based on the trendline.
- 58% of pedestrian collisions occurring at traffic signals involved a vehicle making a left turn.
- The number of pedestrian collisions occurring at a basic, marked crosswalk or marked crosswalk with pedestrian activated beacons increased 36%. In comparison, the total number of new basic, marked crosswalks and new marked crosswalks with pedestrian activated beacons installed since 2018 has increased over 20%.

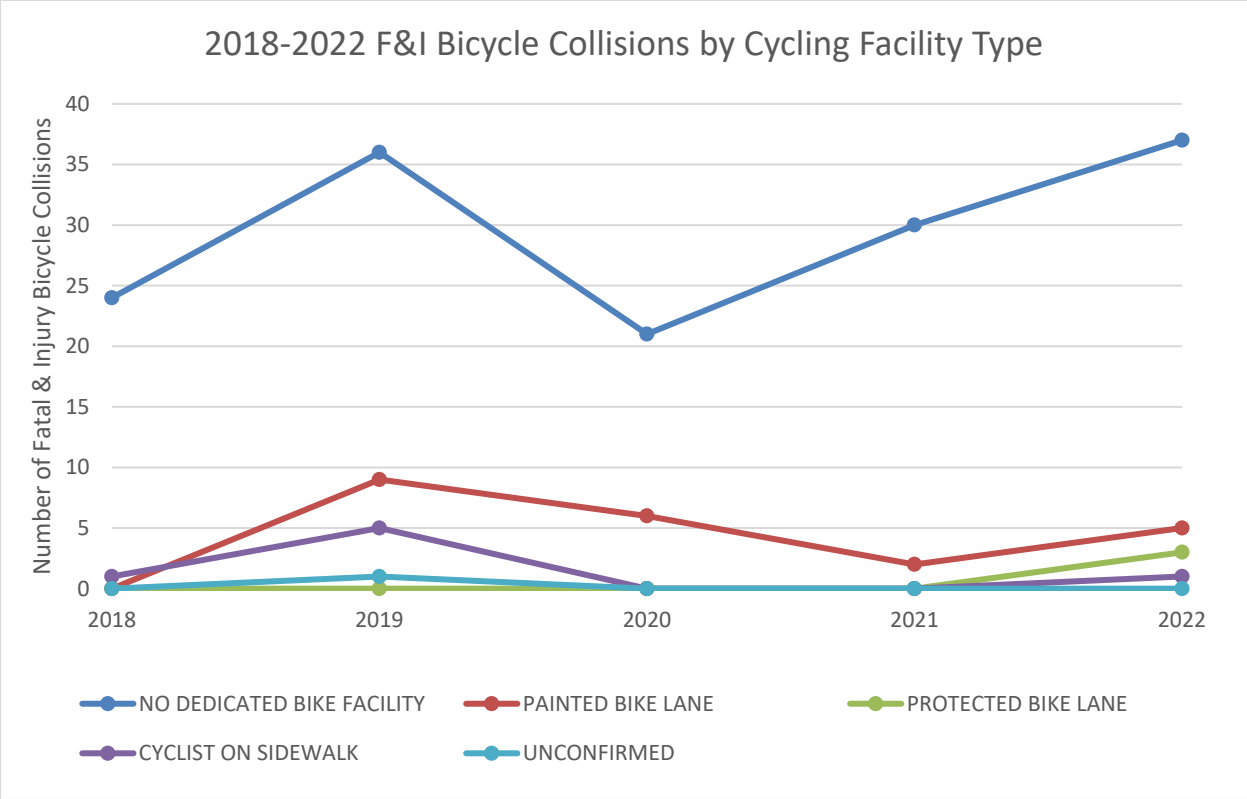


**Figure 7: 2018-2022 F&I Bicycle Collisions by Cycling Facility Type**

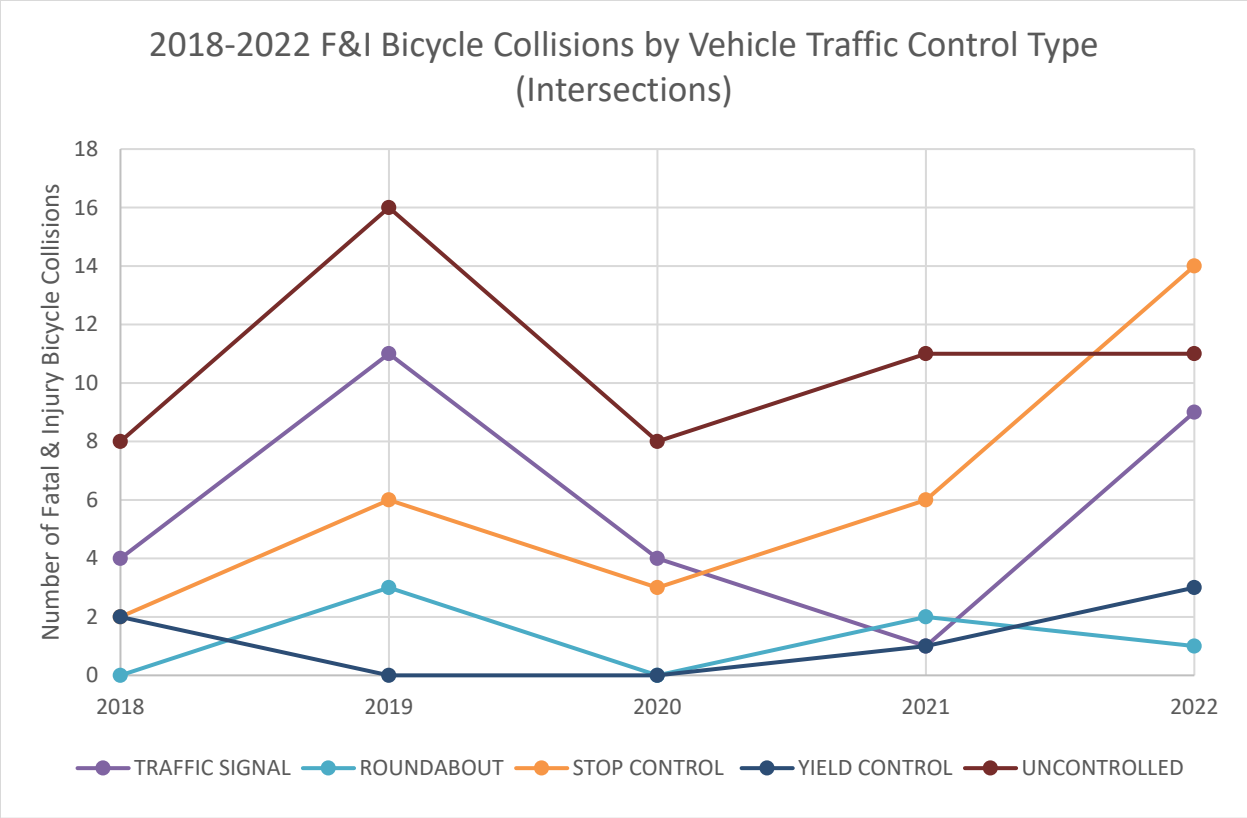


**Figure 8: 2018-2022 F&I Bicycle Collisions by Vehicle Traffic Control Type (Intersections)**

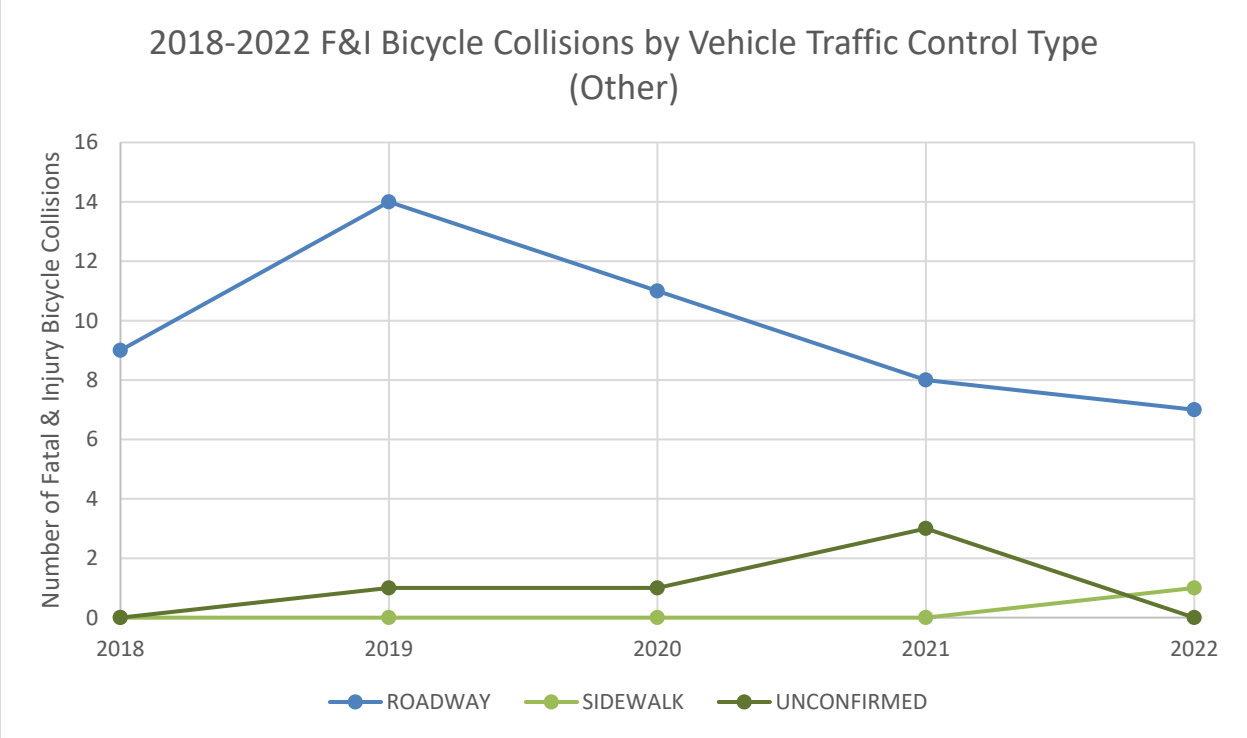


**Figure 9: 2018-2022 F&I Bicycle Collisions by Vehicle Traffic Control Type (Other)**

Key findings from a review of fatal and injury bicycle collisions (2018-2022) include:

- The number of bicycle collisions occurring on a roadway with no dedicated cycling facility has increased 54% when comparing 2018 to 2022.
- 82% of bicycle collisions occurred on a roadway with no existing cycling facility.
- The majority (57%) of bicycle collisions occur either within the roadway or where the involved vehicle is at an uncontrolled intersection.

To mitigate collision risk and severity, various engineering countermeasures have been introduced to the transportation network over the course of the Framework. Examples of new measures include leading pedestrian intervals (LPI), rectangular rapid flashing beacon (RRFB) crosswalks, neighbourhood speed limit reductions, advanced yield lines at multi-lane crosswalks, traffic calming measures, etc. **Table 1** provides an overview of observed countermeasure impacts and recommendations for use moving forward.

**Table 1: Countermeasure Impact Assessment**

| Countermeasure | Level of Investment | Risk Reduction Impact | Assessment & Recommendation |
|---|---|---|---|
| Leading Pedestrian Interval (LPI) | Very Low - Low | Med | Included as a standard operational consideration as candidate locations are identified and reviewed for potential road user/network impacts. |
| Protected Signal Phasing | Very Low – Very High | High | Included as a standard operational consideration as candidate locations are identified and reviewed for potential road user/network impacts. |
| Left-Turn Traffic Calming | Low | Low | Observed reductions in turning speed, leading to risk reduction observed. Consider future tactical installs to inform permanent infrastructure changes. |
| Speed Cushions | Med - High | Low | Speed reductions observed. Outstanding constructability issues need to be resolved. Install as traffic calming measure where primary access for emergency services is required. |
| Raised Crosswalks | Med - High | Med | Provide speed reduction and increased visibility of the crossing and pedestrians. Consider for use on local and minor collector streets, with locations near schools considered as a priority. |
| Advanced Yield Lines at Multi-lane Crosswalks | Very Low | Low | Observed improvements to yielding rate and yielding position of vehicle. Continue with annual installations. |
| RRFB Crosswalk Upgrade | Low | Med | Literature shows safety benefits. Enhances crosswalk visibility and increases driver awareness. Continue standardized use. |
| Speed Display Signs (SDS) | Low | Low | Evidence collected by HRM shows little-to-no impact on driver behaviour (see Attachment 1). Program to continue with Council direction. |
| School Zone Traffic Calming Pilot (SDS, Beacons, Pavement Markings) | Very Low - Low | Low | Evidence collected by HRM shows little-to-no impact on driver behaviour (see Attachment 2). Program to continue with Council direction. |

| Countermeasure | Level of Investment | Risk Reduction Impact | Assessment & Recommendation |
|---|---|---|---|
| Speed humps/tables | Med | Low | Installed on low-frequency collision roadways (locals and minor collectors). Speed reductions observed, negligible impact to collision numbers. Program to continue with Council direction. |
| Reflective Backboards on Traffic Signal Heads | Very Low | Low | Literature shows improvement of signal head visibility. Install on primary signal heads with new/upgraded traffic signals. |
| 40 km/h Neighbourhoods | Very Low | Low | Literature shows reduced vehicle speed reduces severity and frequency of injuries. Continue with program as per Council direction in an effort to encourage reduced speeds. |
| High Visibility Crosswalk Markings at Signalized Intersections | Very Low | TBD | Evaluation ongoing. Data incomplete at this time. Limited literature available however this measure is commonly used in peer cities. |

**Key Strengths of the Framework**

Key strengths were identified through consultation with internal staff and the Road Safety External Stakeholder Committee as follows:

1. Declining trend in road fatalities

    - The most significant improvement since the beginning of the Framework is the declining trend in road fatalities. Continued efforts are required to bring the rates down further as every collision leading to the loss of life on our roads is one too many.
    - Overall fatal collisions have been reduced by nearly 40% when comparing 2022 to the baseline. It is important to note that this data includes all provincial roadways within HRM. On HRM owned roadways alone, there has been a 53% reduction in fatal collisions when comparing 2022 to the baseline. See **Figure 10** for the five-year trend.

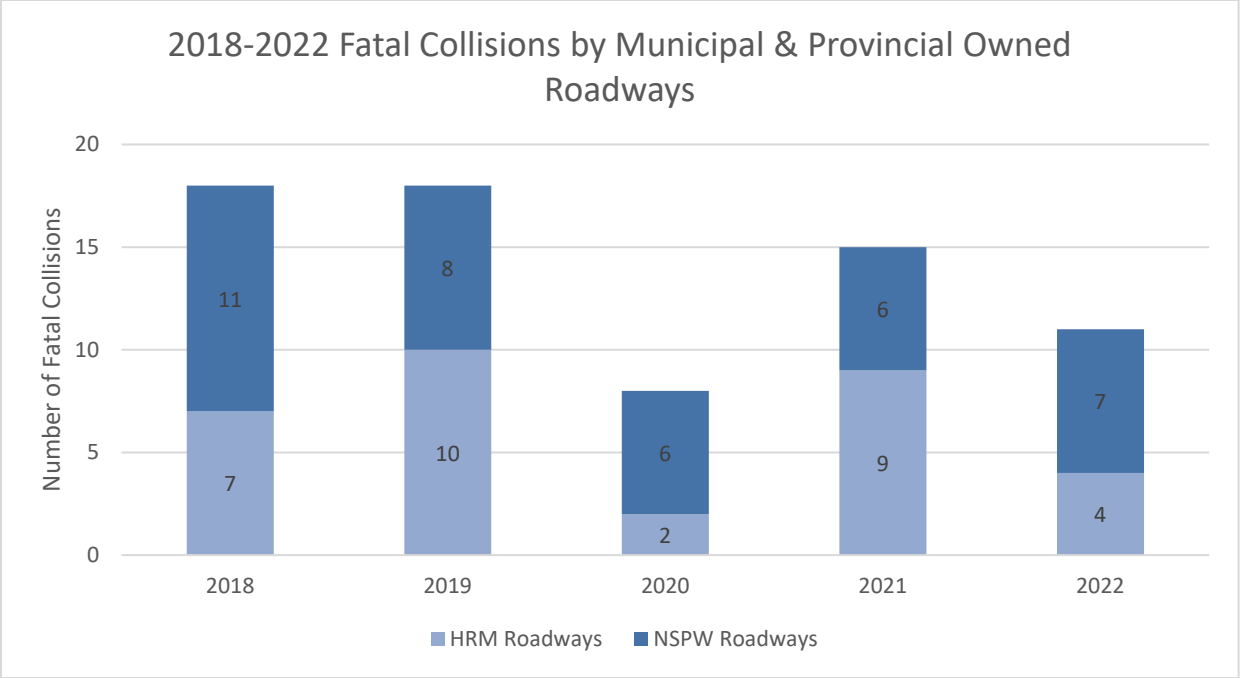


**Figure 10: 2018-2022 Fatal Collisions by Municipal & Provincial Owned Roadways**

2. Collision database
    - A major milestone in the implementation of the Framework was the creation of a new internal collision database**.** Significant resources and collaboration efforts between multiple stakeholders delivered a system that enables basic data reporting and analysis, which are key components of any road safety program.
3. Increased Capital Investment
    - Increased investment to the Capital Budget for Road Safety Improvements, from $1.165 million to $5.5 million over the lifespan of the Framework. Budgets associated with Active Transportation, Road Recapitalization and Major Roadway Functional Plans have also increased, adding road safety benefits throughout various municipal projects.
4. Staffing
    - The Road Safety group within Traffic Management has grown from one to four full-time staff positions since the inception of the Framework. Engineering staff have also attained Road Safety Professional certification, demonstrating commitment to ongoing learning.
5. Continuous Improvement and Best Management Practices
    - Road safety techniques are constantly evolving. In recent years the Municipality has been working to evolve with the industry, implementing several new pilot projects with a willingness to test new measures.
6. Tactical Projects
    - Tactical projects have become standardized tools that have accelerated the implementation of enhanced pedestrian and bicycle facilities and enabled testing of new countermeasures.
7. Evolution of the Traffic Calming program
    - The Traffic Calming Administrative Order has undergone several revisions in an effort to make it more effective in addressing areas where there is a benefit to having measures installed.
8. Update to the Municipal Design Guidelines
    - An update to the Municipal Design Guidelines, also known as the “Red Book”, was adopted by Regional Council in November 2021. The guide specifies how streets and related public

infrastructure must be built. The changes include a focus on Complete Streets, and consideration of road safety and traffic calming in the design of new streets.

9. Access to Data
    - Multiple open data sources have been released including collision and traffic count data, asset information, traffic calming requests, etc. This increase in information made available to the public supports transparency and accountability.

**Potential Areas for Improvement**

Potential areas for improvement were identified through consultation with internal staff and the Road Safety External Stakeholder Committee as follows:

1. Evaluation
    - Evaluation to support data driven decision making is difficult due to limited staff resources.
    - It is important to note that three to five years of collision data post-installation of any countermeasure is required for proper evaluation. Benefits associated with road safety upgrades may take time to be reflected in the collision data due to the random nature of collision events.
    - With low collision numbers experienced in the region, the expansion of conflict data has the potential to leverage evaluation exercises. Future safety reviews will incorporate this piece into the analysis.
2. Revised Goal
    - As statistics are generally expected to fluctuate over time, it is not representative to use a year-to-year comparison for overall evaluation. To accommodate this expected fluctuation, the Strategy will be identifying a goal of a declining trend in fatal and serious injury collisions over a three-year period.
3. Emphasis Areas
    - The Framework originally identified seven emphasis areas to focus resources where the greatest opportunity existed to improve safety. These included intersections, the young demographic, pedestrians, aggressive driving behaviours, distracted driving behaviours, impaired driving, and bicyclist collisions. Although there is significance to each area, there are limited tools to address specific issues. Given the young demographic as an example, it is challenging to target young drivers specifically through education and enforcement.
    - Moving forward, the Strategy will be shifting to the Safe System Approach, focusing resources on overall elements such as Safe Speeds, Safe Road Users, Safe Vehicles, Safe Road Design, Post-Crash Care, and Safe Land Use Planning. This approach is supported by the Transportation Association of Canada (TAC) and adopted by many jurisdictions across the globe. Within these six elements, there is more opportunity for focused resources and resulting impact.
4. Key Performance Indicators
    - To improve consistency in reporting and accountability, a set of key performance indicators (KPIs) will be identified in the next Strategy. KPIs will be reported within the Annual Reports moving forward.
5. Reporting of Fatal Collisions
    - To date, all fatal collisions occurring on public roads within HRM have been included in reporting. Moving forward, reporting standards used by Transport Canada will be used to define a fatal motor vehicle collision. Therefore, fatal collisions resulting from suicide, homicide or medical conditions will be excluded from reporting.
6. Quality of data
    - In order to support evidence-based decision making, the quality of data must be accurate and complete. The availability of quality collision data continues to be a challenge.
7. Data analytics capabilities
    - The current internal collision database has limited data analytics capabilities. Its primary function is to provide access to collision data. Much of the analysis that staff perform is still a manual process.

- Staff will be exploring external software to facilitate efficient collision data analysis. An additional staff member will be required to manage this project delivery as well as continued quality control and assurance of all data. Road safety software is typical within jurisdictions across Canada and the USA and will improve the efficiency of analyzing road safety data.

8. Investment towards low impact countermeasures
    - A significant portion (over half) of the Road Safety Improvements Capital Budget has typically been allocated towards low impact countermeasures. These include the traffic calming program, speed display signs, and a piecemeal approach to reduced neighbourhood speed limits.
    - Moving forward, the municipality needs to carefully consider the balance of vulnerable road users on streets with low collision numbers vs. high collision focus areas.
9. Major Collector & Arterial Roadways
    - The majority of fatal and injury collisions occur within major collector and arterial roadways yet there are limited tools to identify and address these systemic issues. Automated speed enforcement is seen as having potential for significant impact on these roadways, however legislation is impeding program implementation.
10. Education
    - Awareness campaigns have been the focus of communications efforts when it comes to road safety. An annual budget of $100,000 supported the Heads Up Halifax campaign until 2021/22. Heads Up Halifax aimed to increase residents' awareness and understanding of road safety, safe commuting behaviours and to highlight the Municipality's ongoing efforts to improve road safety. Investments went into a mix of digital, social media, print, radio, out-of-home advertising, and community events to reach our target audience and achieve our objectives.
    - Since 2022, communications efforts have focused on profiling the work of the Municipality to improve road safety through our social media channels. Examples include the Neighbourhood Speed Limit Reduction Program, Left-turn Traffic Calming, Leading Pedestrian Intervals, School Zone Safety, Accessible Pedestrian Signals and Traffic Control Improvements. All posts have been organic which limits the reach to residents.
    - In order to increase the level of road safety awareness among residents through advertising and promotion, establishing an education budget is recommended.
11. Enforcement
    - Enforcement plays a key role as one the "3 E's" in road safety (engineering, enforcement and education). Police continue to enforce traffic laws by issuing summary offence tickets (see Attachment 4 of the Strategic Road Safety Plan – 2023 Annual Report). The decrease in the number of tickets issued over the last few years was impacted by the pandemic, staffing shortages and other social factors. As Police work through staffing challenges, which affected police agencies here and beyond, the focus is to move towards ticketing in support of public traffic safety initiatives and directed enforcement locations that are identified by the public, city councillors, officer observations and other traffic safety stakeholders.
12. Engagement
    - There have been limited community engagement opportunities since the creation of the Framework. The Road Safety External Stakeholder Committee (RSESC) was recently formed to enable direct communication with community advocates and organizations. This group is expected to continue to engage throughout the new Strategy. Staff will also be exploring opportunities to receive direct feedback from the broader public community on road safety perceptions through survey methods.
13. Legislation
    - Provincial legislation currently prevents the Municipality from implementing an automated speed enforcement program and a default speed limit below 50 km/h. Changes are dependent on the future release of the Provincial Road Safety Act.

14. Safety culture
    - A safety culture not only within the community, but internal to the organization is critical to the success of road safety goals. Increased emphasis on road safety throughout the organization should continue to be prioritized.
15. Road Safety Steering Committee (RSSC) Commitment
    - Given the varying priorities internal departments and external organizations are experiencing, it is difficult to maintain momentum with the RSSC.

16. Road Safety External Stakeholder Committee (RSESC) Feedback
    - Key items for improvement that have been noted by the RSESC are as follows:
        - Increased evaluation.
        - Better data quality & quantity.
        - An increase in level of enforcement.
        - An increase in public education.
        - Legislation updates to enable automated speed enforcement and reduced speed limits.
        - Allocation of funding towards higher-impact programs. The majority of road safety funding is allocated towards the traffic calming program which addresses a very small minority of injury collisions.
        - Leverage resources in Public Health to share data and educational information.
        - Engagement with the community. The RSESC has opened avenues for communication however members of the Committee would like more formal opportunities to influence road safety plans.
        - Timeliness of countermeasure implementation could be increased.

Lessons learned from the original Framework will form the basis of the new Road Safety Strategy and future Annual Plans. Staff are currently in the process of developing the new Road Safety Strategy 2024. The Strategy will be designed to include guiding principles for the Road Safety Program in HRM. The Strategy is anticipated to be presented to Regional Council in the Spring of 2024.

## FINANCIAL IMPLICATIONS

There are no immediate financial implications associated with this report. Additional resources may be identified in future capital and operating budgets to achieve road safety goals and support the evolution of the Strategy.

## COMMUNITY ENGAGEMENT

Widespread community engagement was not conducted as part of this report however feedback received from the Road Safety External Stakeholder Committee has been included.

## ATTACHMENTS

Attachment 1: Speed Display Sign Impact Assessment
Attachment 2: School Zone Traffic Calming Pilot Impact Assessment

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A copy of this report can be obtained online at halifax.ca or by contacting the Office of the Municipal Clerk at 902.490.4210.

Report Prepared by: Sam Trask, P.Eng., Supervisor, Road Safety & Transportation

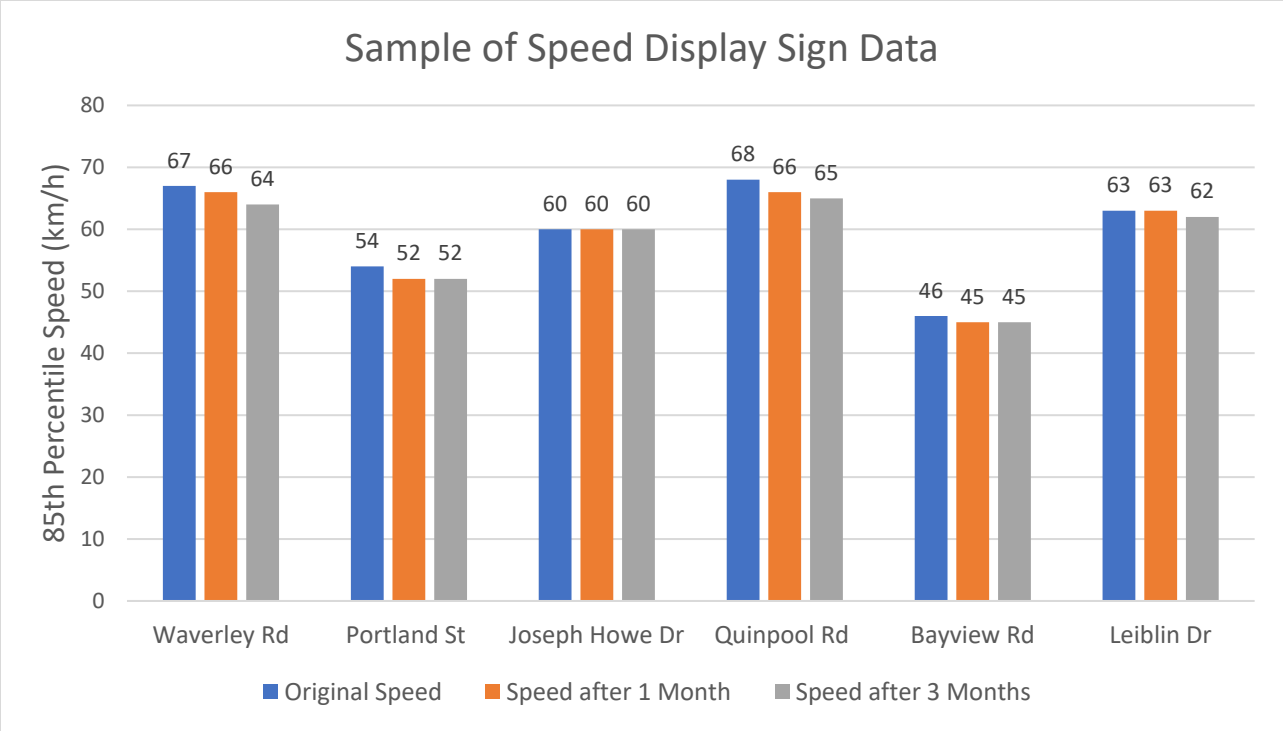


**Figure 1: Sample of Speed Display Sign Data**

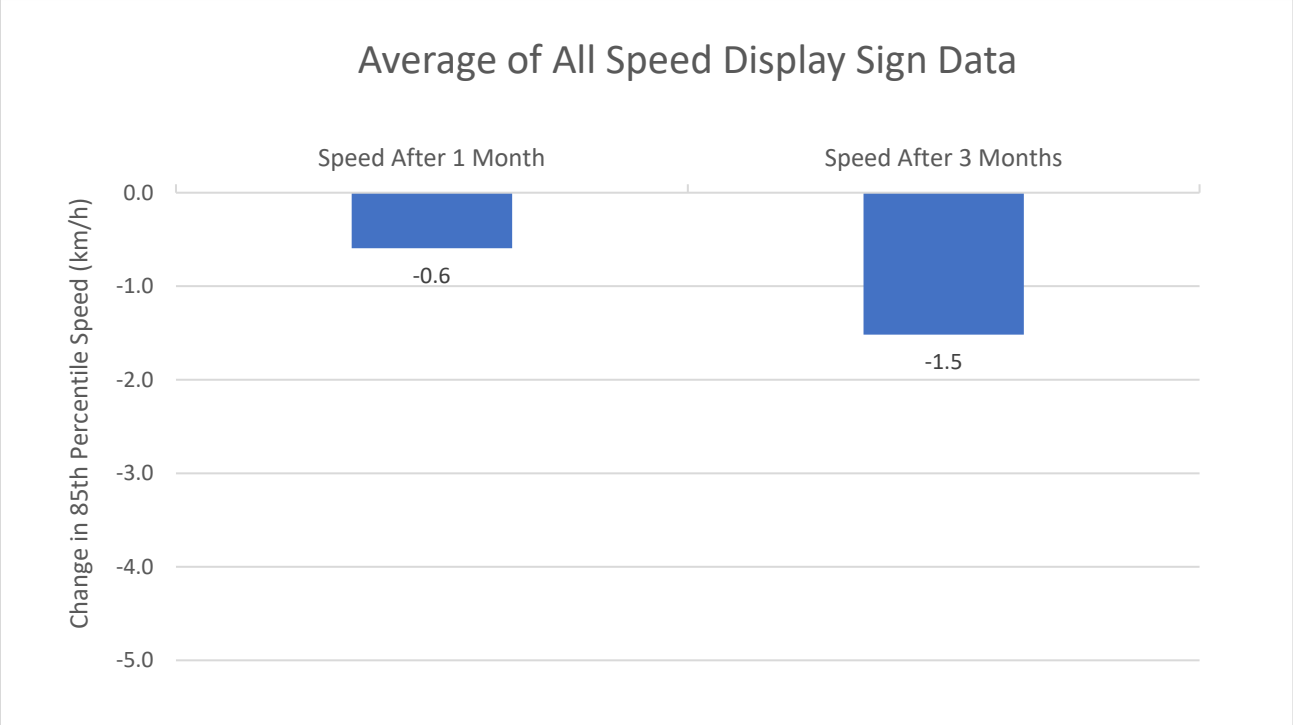


**Figure 2: Average of All Speed Display Sign Data**

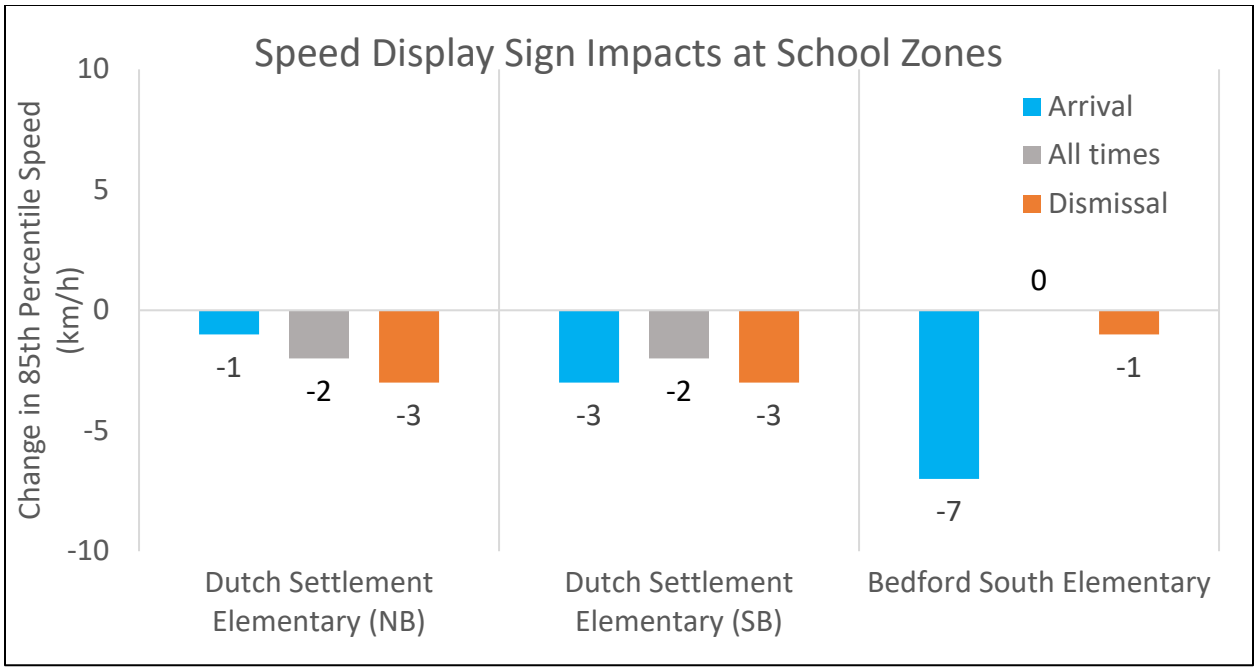


**Figure 1: Speed Display Sign Impacts at School Zones**

Note: Baseline data for Bedford South Elementary School was only available from the summer months. The above average reduction in speeds during arrival times is anticipated as a result of vehicle congestion when school is in operation.

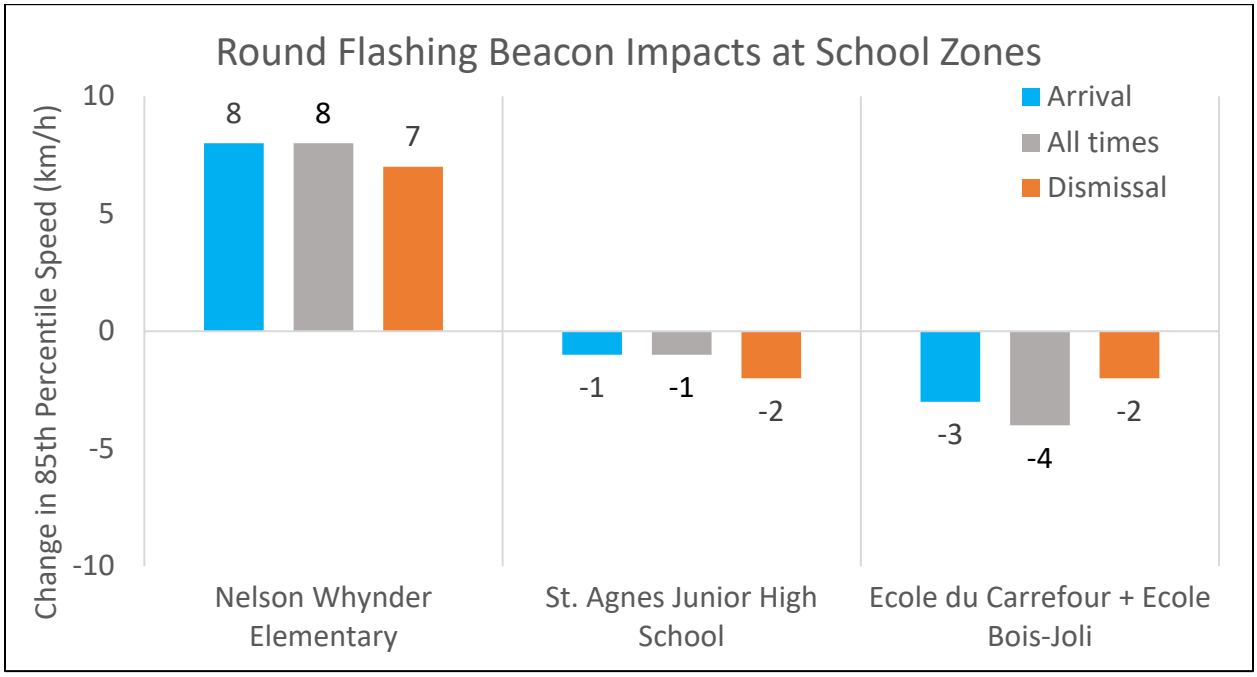


**Figure 2: Round Flashing Beacon Impacts at School Zones**

Note: Data collected at Nelson Whynder Elementary School was collected in June 2022 and September 2023, both during school operating times. The cause of the increase in speeds after the installation of the round flashing beacons is inconclusive. Additional data will be collected for further analysis.

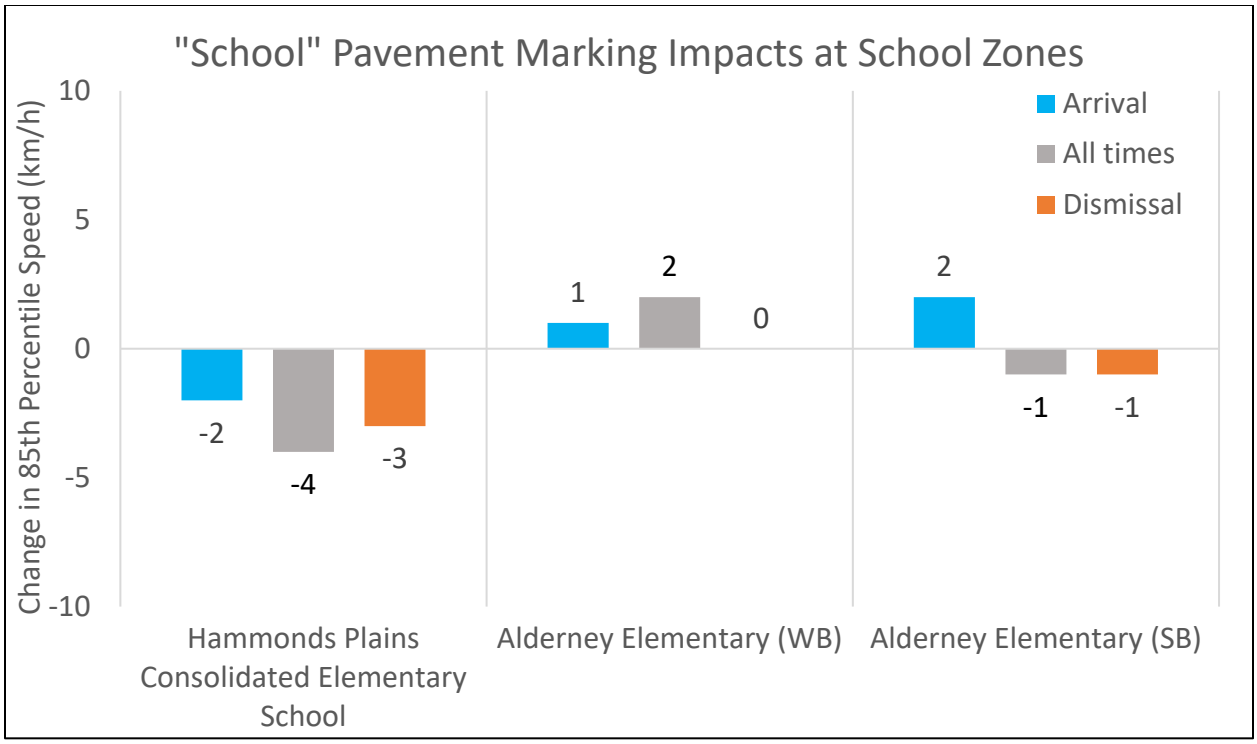


**Figure 3: "School" Pavement Marking Impacts at School Zones**

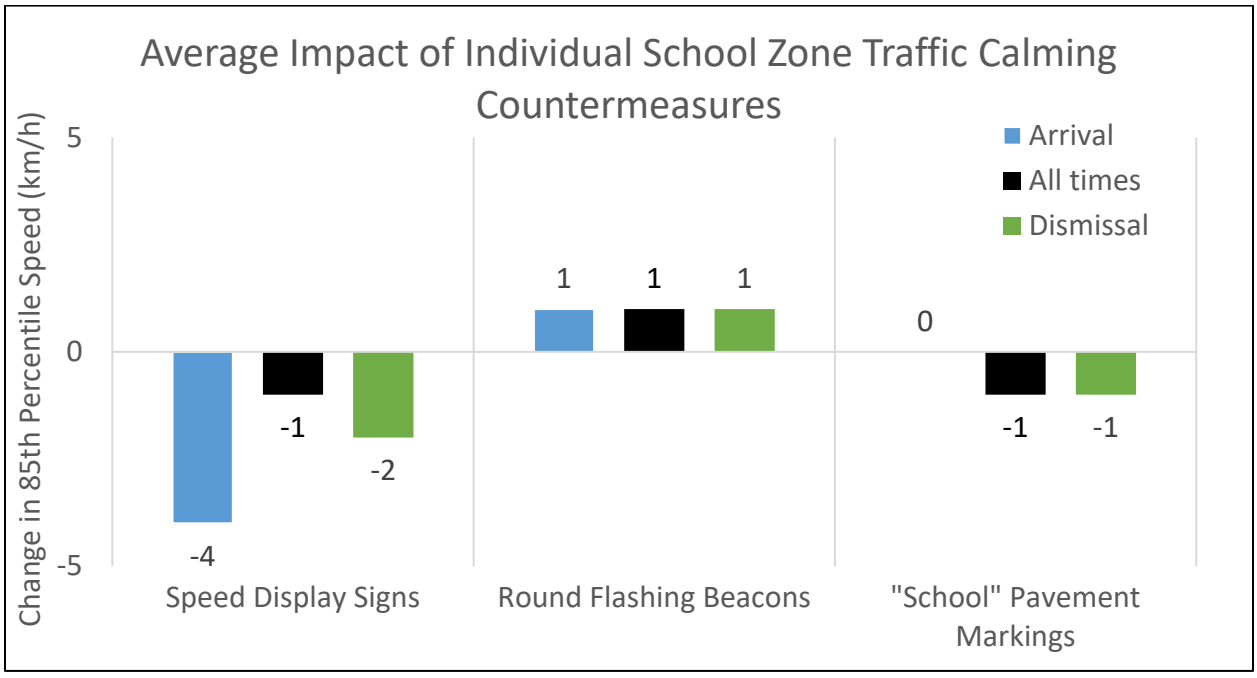


**Figure 4: Average Impact of Individual School Zone Traffic Calming Countermeasures**

Notes:

- Removing the irregular arrival data from Bedford South Elementary School results in an average speed reduction of 2 km/h during arrival times for speed display signs.
- Removing the irregular data from Nelson Whynder Elementary School results in an average speed reduction of 2 km/h for flashing round beacons overall.