



INFORMATION MEMO

TO: Mayor and Members of Council

C. Arvin Prasad, Commissioner, Development Services

FROM: Brian Lee, Director, Engineering

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DATE: March 18, 2019

Re: Road Safety in Markham (City-wide)

Purpose

This information memorandum outlines existing traffic safety strategies conducted by the City of Markham and identifies the need for Markham, in coordination with York Region, to revisit the overall strategy in addressing road safety. Namely, a fundamental shift in attitude about how the City treats safety of all road users and where the most vulnerable road users (pedestrians & cyclists) are prioritized over the efficient movement of motorized vehicles.

Background

On February 26, 2018, Development Services Committee requested that staff investigate, in partnership with York Region, the adoption of “Vision Zero” principles at the City level, and report back on its findings in early 2019.

Markham’s Current Traffic Safety Strategy

Road authorities and public agencies, including Markham, manage the safety performance of the road system through five pillars: *Education, Encouragement, Enforcement, Evaluation* and *Engineering*. The City’s existing traffic safety strategy has been developed to align with this approach, comprised with multiple initiatives that focus on a combination of one or more of the five pillars:

Education:

- Deployment of radar technology-based speed display boards that display vehicle speeds and variable feedback messaging to 96 streets each year, three months at a time.
- Provision of “in-street” advisory signage and bollards within 32 school zones to increase driver awareness and reduce vehicle speeds.

- Use of social media campaigns and public outreach targeting issues such as distracted driving, back to school safety and pedestrian visibility.

Enforcement:

- Area-specific enforcement by York Regional Police at the request of City staff to target key traffic safety issues, such as speeding, stop compliance and parking.
- Online citizen reporting of aggressive driving to York Regional Police through the ROAD WATCH program.
- Impose and enforce on-street parking restrictions in high-risk pedestrian conflict zones or congested areas to improve visibility of pedestrians and cyclists and also to facilitate the safe movement of traffic and emergency vehicles.

Engineering:

- Implementation of all-way stops, traffic signals, and pedestrian cross-overs.
- Traffic calming elements in new and existing communities: roundabouts, bike lanes, narrowed travel lanes, lay-by parking bays and pavement marking enhancements.
- Pedestrian accessibility improvements at signalized intersections.
- Sidewalk Network Completion Program to target gaps in the City's sidewalk network.
- Develop/update engineering design guidelines on an ongoing basis for all road related elements, including existing and future accommodations for dedicated cyclist facilities.

Encouragement:

- Supervised school crossings at 92 locations across the City to provide elementary school students with a safer walking environment.
- Partnership with school boards and public agencies to promote active school travel initiatives that reduce traffic congestion and promote a healthier communities.
- Organize and host events to encourage safe and active travel options including Jane's Walk, Markham Cycling Day, Bike to Work Day, Winter Walk Day.

Evaluation:

- City-wide annual traffic data collection program to measure daily traffic volume, intersection volumes, vehicle speeds, vehicle classification and collisions. Data was collected from approximately 250 street segments and 80 intersections in 2018.
- Site-specific traffic investigations, including data collection and assessment to identify operational safety concerns, recommended mitigating strategies and evaluation of their effectiveness. Approximately 700 traffic investigations were conducted in 2018.

Markham's traffic safety strategy has evolved over many years and covers a broad range of issues. As such, the comprehensiveness of individual actions taken by the City is limited by technical knowledge and expertise in advanced traffic control systems (red light cameras, automated speed enforcement, "smart" traffic signals), legislation, policies and available budget. This has resulted in a general strategy that takes a "one size fits all" approach for all manner of issues with varying levels of effectiveness.

The current strategy continues to align with established road design standards and reflects traditional North American attitudes toward mobility and use of private vehicles as the primary mode of transportation. This inevitably results in a prioritization of vehicular movement and speed, with safety of pedestrians and cyclists generally being secondary, even if unintentional.

A fundamental shift in attitude toward road safety and mobility is required

Traffic safety can be considered a relative measure and is a complex subject. From a risk management perspective, a “safe” street can be defined as one that is designed to align with established industry standards and guidelines. Similarly, a street can be designed or altered to minimize collisions risk through the application of those same standards or guidelines.

Over the next 20 years, both Markham and York Region are accelerating efforts in transitioning from a primarily car-dependent community to one where transit, walking and cycling are becoming increasingly viable alternatives. This shift in travel behaviour from auto-oriented transportation to more active travel choices will also require a fundamental shift in attitude about how we approach decisions and actions around infrastructure design and the safe movement of people.

The “Vision Zero” Philosophy

Developing an effective road safety strategy needs to emphasize and acknowledge that human error is inevitable and focus on influencing system-wide practices and policies to lessen the severity of collisions and conflicts for all road users, particularly pedestrians and cyclists. “Vision Zero” is one philosophy that aspires to seek zero fatalities and serious injuries on our transportation system.

A common challenge many public agencies face in achieving a “Vision Zero” strategy is the lack of a unifying definition and understanding about how to achieve the ultimate goal of zero fatalities and severe injuries. While many jurisdictions claim to be Vision Zero communities, the inability to commit to a fundamental shift in attitudes toward safety can result in goals that are unrealistic and unattainable. Namely, it is not possible to achieve zero fatalities and serious injuries as long as the road network remains essentially unchanged and continues to prioritize vehicular movement and speed.

The “Vision Zero Network” – an organization whose goal is to assist communities in reducing traffic fatalities and serious injuries – has developed a set of core elements to help communities work toward tangible results in promoting safety (see Attachment “A”). Although these elements are intended for use in development of a Vision Zero strategy, they can be applied to any road safety strategy, encouraging decision makers to focus on the most impactful actions and help them be accountable to their commitments.

The City needs to prioritize safety for all road users over expeditious movement of motorized vehicles

Since all road users (drivers, pedestrians and cyclists) have a broad range of cognitive abilities due to age, physical and mental health differences, it is not possible to design a road network or develop safety strategies that can fully compensate for this. Also, growth in travel demand that is increasingly multi-modal in nature is having an impact on the safety performance of the City’s road network.

The frequency of total reported collisions on City streets from 2013 – 2017 is illustrated in Attachment “B”. Notable trends include:

- Despite continued growth, total collisions and injuries have been stable, with a minor downward trend;
- One-third of total reported collisions of all types occur at intersections;

- Two-thirds of total reported collisions occur along mid-block locations; and
- 20-25% of all reported collisions have resulted in injury.

During the same time period, the total reported collisions on City streets involving pedestrians and cyclists is illustrated in Attachment “C”. Notable trends include:

- Pedestrian & cyclist collisions comprise an increasing proportion of total collisions;
- At least two-thirds of reported pedestrian and cyclist collisions occur at intersections;
- 90-100% of reported pedestrian and cyclist collisions result in injury; and
- Two pedestrian fatalities have occurred.

The evidence is clear. Our most vulnerable road users are increasingly at risk. Therefore, a core principle of a new road safety plan needs to prioritize the safety of all road users over the expeditious movement of motorized vehicles.

A two-tier municipal governance structure requires partnership with York Region

It must be recognized that the highest frequency of collisions and injuries are on the Regional arterial road network. Higher traffic volumes, including pedestrians and cyclists, higher posted and operating speeds, heavy truck traffic and an overall more complex road system are all contributing factors. As such, partnership with York Region is critical in ensuring a common approach and consensus on priorities, roles, responsibilities, and implementation of associated road safety projects, programs and initiatives.

A traffic safety audit and road safety plan will be developed

In Q2 2019, the Engineering Department will be soliciting a request for proposals (RFP) to conduct a traffic safety audit of the City’s road network. Using the City’s aggregate traffic and collision data, an assessment of municipal corridors and intersections will be conducted with consideration given to location, frequency, type and pattern of incidents. A prioritization of locations shall be developed based on the severity and risk to vulnerable road users.

Following completion of the audit, a multi-year road safety plan will be developed in alignment with the following core elements detailed in Attachment “A”:

- Leadership and Commitment
- Safe Roadways and Safe Speeds
- Data-driven Approach, Transparency and Accountability.

The road safety plan will establish best practices in road design to keep both drivers as well as pedestrians and cyclists safe, such as:

- Road diets to create “complete streets”;
- Consider roundabouts instead of traffic signals at intersections;
- Improved cycling network that physically separates cyclists from motorized vehicles;
- Intersections that are more accessible for pedestrians and reduce crossing distances;
- Implement protected pedestrian crossings along pedestrian desire lines; and
- Slower vehicular speeds on arterial and collector roads in urban areas, with some exceptions.

Next Steps

The safety audit is anticipated to be completed in 2020, with staff reporting to Development Services Committee upon its completion. Development of the road safety plan will follow in

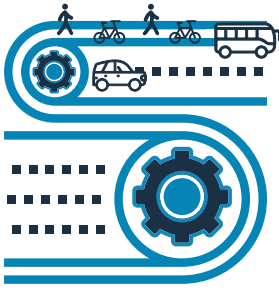
2021 and take approximately two years to complete. Budget for the development of the road safety plan development will be requested for the 2021 & 2022 budget years.

Attachments:

Attachment "A" – Core Elements for Vision Zero Communities

Attachment "B" – City of Markham Total Collisions – All Types (2013 – 2017)

Attachment "C" – City of Markham Pedestrian & Cyclist Collisions (2013 – 2017)



CORE ELEMENTS

FOR VISION ZERO COMMUNITIES

INTRODUCTION

Vision Zero – the strategy to eliminate traffic fatalities and severe injuries – is being adopted by a growing number of communities across North America and beyond. While safe mobility is not a new concept, Vision Zero requires a shift in how communities approach decisions, actions, and attitudes around safe mobility.

A fundamental part of this shift is moving from a traditional approach to a Safe Systems approach toward traffic safety. A traditional approach accepts that a certain number of traffic deaths and severe injuries will occur as unavoidable consequences of mobility and focuses on changing individual behavior to reduce the frequency of these incidents. In contrast, Vision Zero is built on the basis that traffic deaths and severe injuries are preventable. Vision Zero emphasizes a Safe Systems approach, which acknowledges that people make mistakes and focuses on influencing system-wide practices, policies, and designs to lessen the severity of crashes.

Approaching the issue of safe mobility in a new way can be challenging, even when everyone agrees on the ultimate goal – in this case, safety for all road users. One limitation to the success and proliferation of Vision Zero in this moment is the lack of a unifying definition and “best practice benchmark.” While an increasing number of jurisdictions may call themselves Vision Zero communities, the authentic and ongoing commitment to the fundamental shift in safety perspective can be uneven.

The Vision Zero Network and Institute of Transportation Engineers have partnered to develop a set of Vision Zero Core Elements to help communities set priorities, work toward tangible results in promoting safety, and benchmark their progress relative to best practices. This resource encourages leaders to focus on the most impactful actions and helps hold them accountable to their Vision Zero commitments.

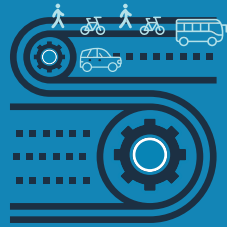
TRADITIONAL APPROACH

Traffic deaths are **INEVITABLE**
PERFECT human behavior
 Prevent **COLLISIONS**
INDIVIDUAL responsibility
 Saving lives is **EXPENSIVE**

VS

VISION ZERO

Traffic deaths are **PREVENTABLE**
 Integrate **HUMAN FAILING** in approach
 Prevent **FATAL AND SEVERE CRASHES**
SYSTEMS approach
 Saving lives is **NOT EXPENSIVE**



CORE ELEMENTS FOR VISION ZERO COMMUNITIES

Leadership and Commitment

1. Public, High-Level, and Ongoing Commitment.

The Mayor and key elected officials and leaders within public agencies, including transportation, public health, and police, commit to a goal of eliminating traffic fatalities and serious injuries within a specific timeframe. Leadership across these agencies consistently engages in prioritizing safety via a collaborative working group and other resource-sharing efforts.

2. Authentic Engagement. Meaningful and accessible community engagement toward Vision Zero strategy and implementation is employed, with a focus on equity.

3. Strategic Planning. A Vision Zero Action Plan is developed, approved, and used to guide work. The Plan includes explicit goals and measurable strategies with clear timelines, and it identifies responsible stakeholders.

4. Project Delivery. Decision-makers and system designers advance projects and policies for safe, equitable multi-modal travel by securing funding and implementing projects, prioritizing roadways with the most pressing safety issues.

Equity and Engagement

Elevating equity and meaningful community engagement, particularly in low-income communities and communities of color, should be a priority in all stages of Vision Zero work.

Safe Roadways and Safe Speeds

5. Complete Streets for All. Complete Streets concepts are integrated into communitywide plans and implemented through projects to encourage a safe, well-connected transportation network for people using all modes of transportation. This prioritizes safe travel of people over expeditious travel of motor vehicles.

6. Context-Appropriate Speeds. Travel speeds are set and managed to achieve safe conditions for the specific roadway context and to protect all roadway users, particularly those most at risk in crashes. Proven speed management policies and practices are prioritized to reach this goal.

Data-driven Approach, Transparency, and Accountability

7. Equity-Focused Analysis and Programs. Commitment is made to an equitable approach and outcomes, including prioritizing engagement and investments in traditionally under-served communities and adopting equitable traffic enforcement practices.

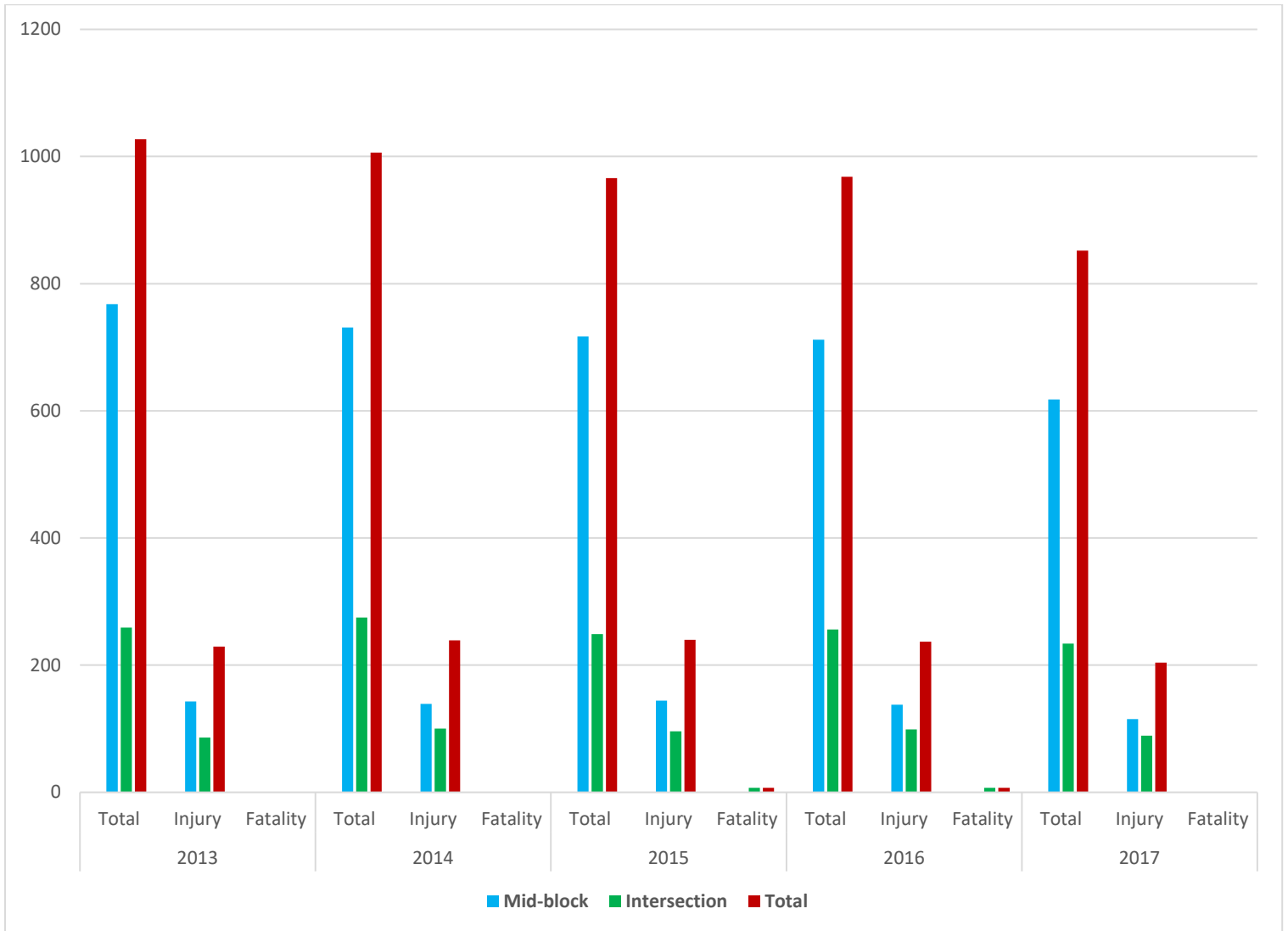
8. Proactive, Systemic Planning. A proactive, systems-based approach to safety is used to identify and address top risk factors and mitigate potential crashes and crash severity.

9. Responsive, Hot Spot Planning. A map of the community's fatal and serious injury crash locations is developed, regularly updated, and used to guide priority actions and funding.

10. Comprehensive Evaluation and Adjustments. Routine evaluation of the performance of all safety interventions is made public and shared with decision makers to inform priorities, budgets, and updates to the Vision Zero Action Plan.

To learn more about the Vision Zero Core Elements, see the Vision Zero Network's full [Vision Zero Core Elements](#) document, which includes further details and links to examples and related resources. In addition, the [Vision Zero Network website](#) and [ITE Safety Resources Toolbox](#) offer useful information on Vision Zero principles, recommended practices, and analysis strategies.

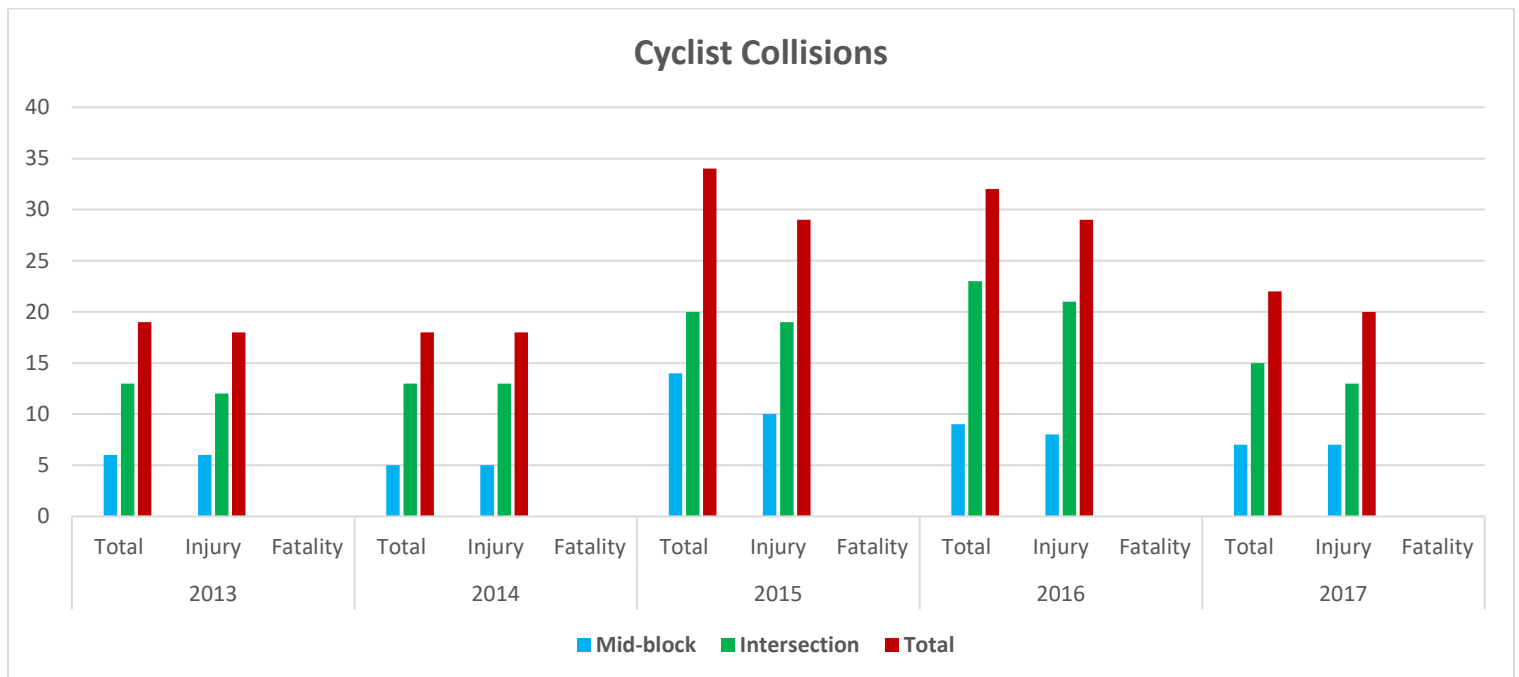
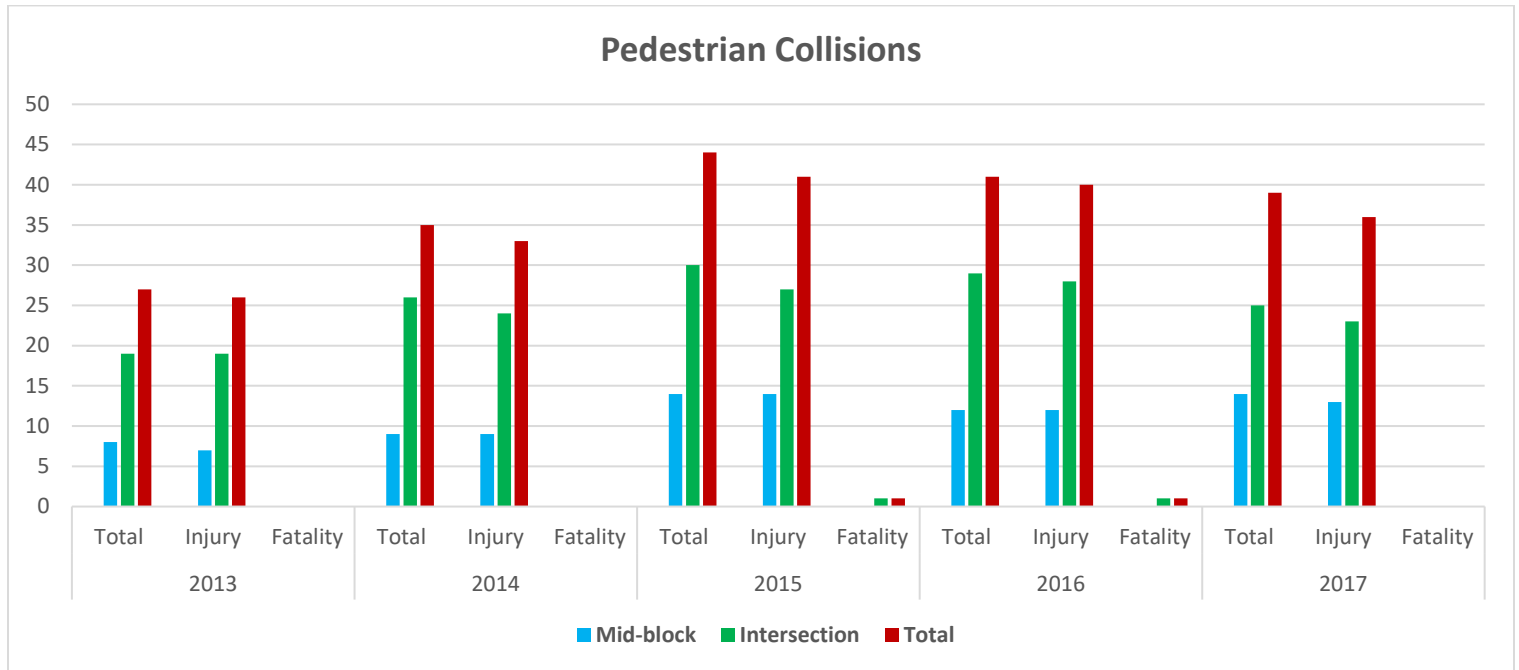
City of Markham Total Collisions - All Types (2013-2017)



NOTE: excludes the Regional road network

ATTACHMENT "B"

City of Markham Pedestrian & Cyclist Collisions (2013-2017)



NOTE: Excludes the Regional road network