Markham Vision Zero Road Safety Plan

Safer Streets
Safer Communities
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# City of Markham
# Vision Zero Road Safety Plan Development

Development Services Committee
Workshop

November 25, 2024

MARKHAM

**Engineering Department**

CIMA+

MARKHAM

# Agenda

| Item | Duration | Time |
|---|---|---|
| Introductory Remarks | 5 minutes | 9:00 am – 9:05 am |
| **1.** Overview of the City's Vision Zero Road Safety Plan Development | 20 minutes | 9:05 am – 9:25 am |
| Development Process | | |
| Collision Trends and Public/Stakeholder Feedback | | |
| Next Steps | | |
| Q & A | 15 minutes | 9:25 am – 9:40 am |
| **2.** Overview of Speed Management / Traffic Calming Strategies | | |
| Part A: Why Focusing on Speed Management/Traffic Calming | | |
| Traffic Calming Policy | 20 minutes | 9:40 am – 10:00 am |
| Breakout Session #1 | 45 minutes | 10:00 am – 10:45 am |
| Break | 5 minutes | 10:45 am – 10:50 am |
| Part B: Common Traffic Calming Treatments | 20 minutes | 10:50 am – 11:10 am |
| Breakout Session #2 | 45 minutes | 11:10 am – 11:55 am |
| Part C: Next Steps | 2 minute | 11:55 am – 11:57 am |
| Concluding Remarks | 3 minutes | 11:57 am – 12:00 pm |

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# Overview of the City's Vision Zero Road Safety Plan Development

# Study Objectives

- Identify road safety priorities
- Develop a comprehensive data-driven road safety plan (action plan, financial plan, and evaluation & monitoring plan)
- Develop supporting policies and guidelines
- Incorporate road safety into engineering standards
- Enhance community engagement strategies

# Our Current Reality

Traffic fatalities are a public health crisis affecting all road users.

**1.2M**

Lives lost globally each year from traffic collisions in 2019

Source: World Health Organization

**1,756**

Lives lost on Canadian roads in 2019

Source: Transport Canada

**320**

Pedestrians and cyclists killed in Canada in 2019

Source: Transport Canada

# Collisions in Markham

**Every year, around 870 collisions occur on Markham municipal roadways – Over 200 of which result in injury or a fatality.**

**On average, 1 person gets injured every 2 days**

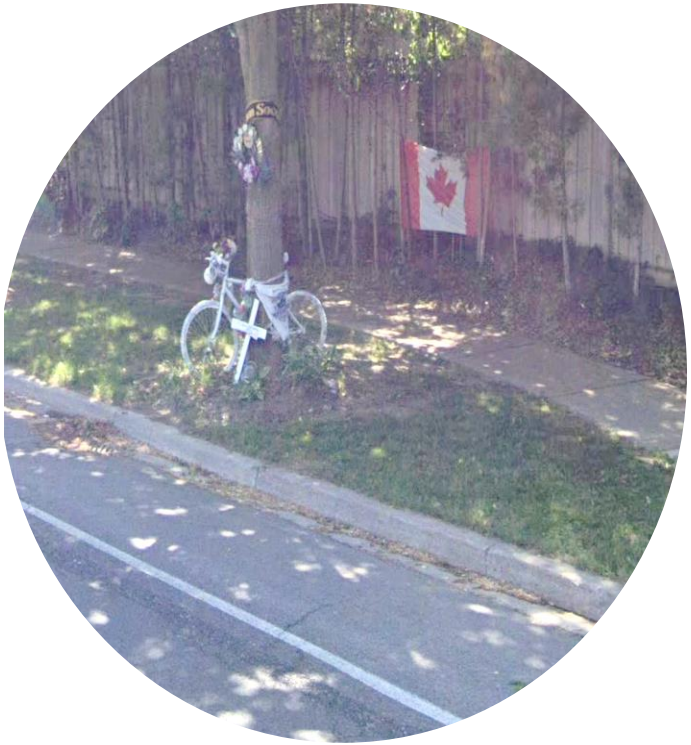
**The Road Safety Plan will set the City of Markham's:**

- ☑ **Road safety goals**
- ☑ **Road safety priorities**

# Normalizing Injuries and Fatalities is Unacceptable

Each day, people are seriously injured or even killed on our roads. Collisions can change the course of our lives, touching victims, their families and loved ones, and society as a whole. But death and serious injury do not have to be consequences that we live with, simply for using our road system.

The photo on the right displays a memorial in memory of a 50-year-old cyclist in Markham who was killed in a hit-and-run collision on Carlton Road east of Main Street Unionville, in 2020.



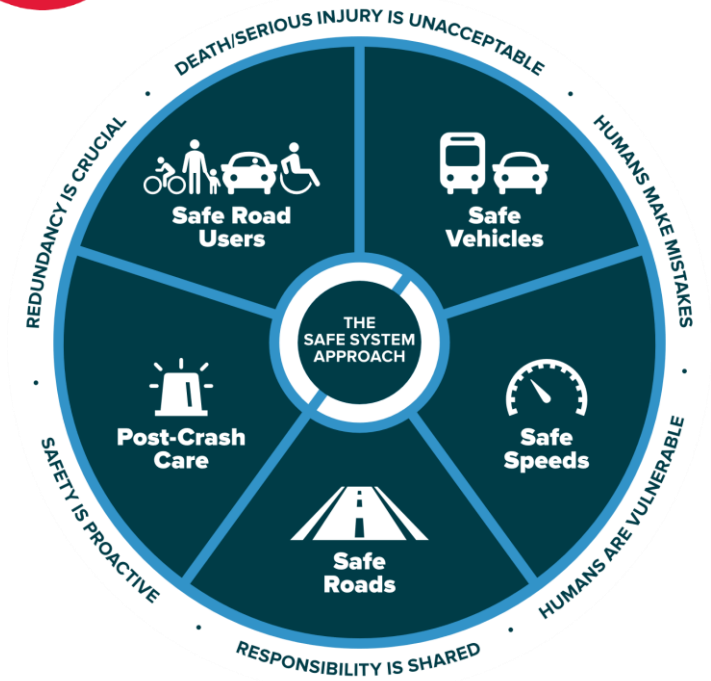
# Vision Zero

**A strategy supported by policies to eliminate collisions resulting in fatalities and serious injuries.**

- Originated in Sweden in the 1990s.
- Life and health can never be exchanged for other benefits within society.
- Human ability to tolerate external forces should govern planning and design decisions.
- A system that is equal for **all** road users is desirable.
- Safety is a shared responsibility.
- Changes to the traffic safety culture are required.

# The Safe System Approach

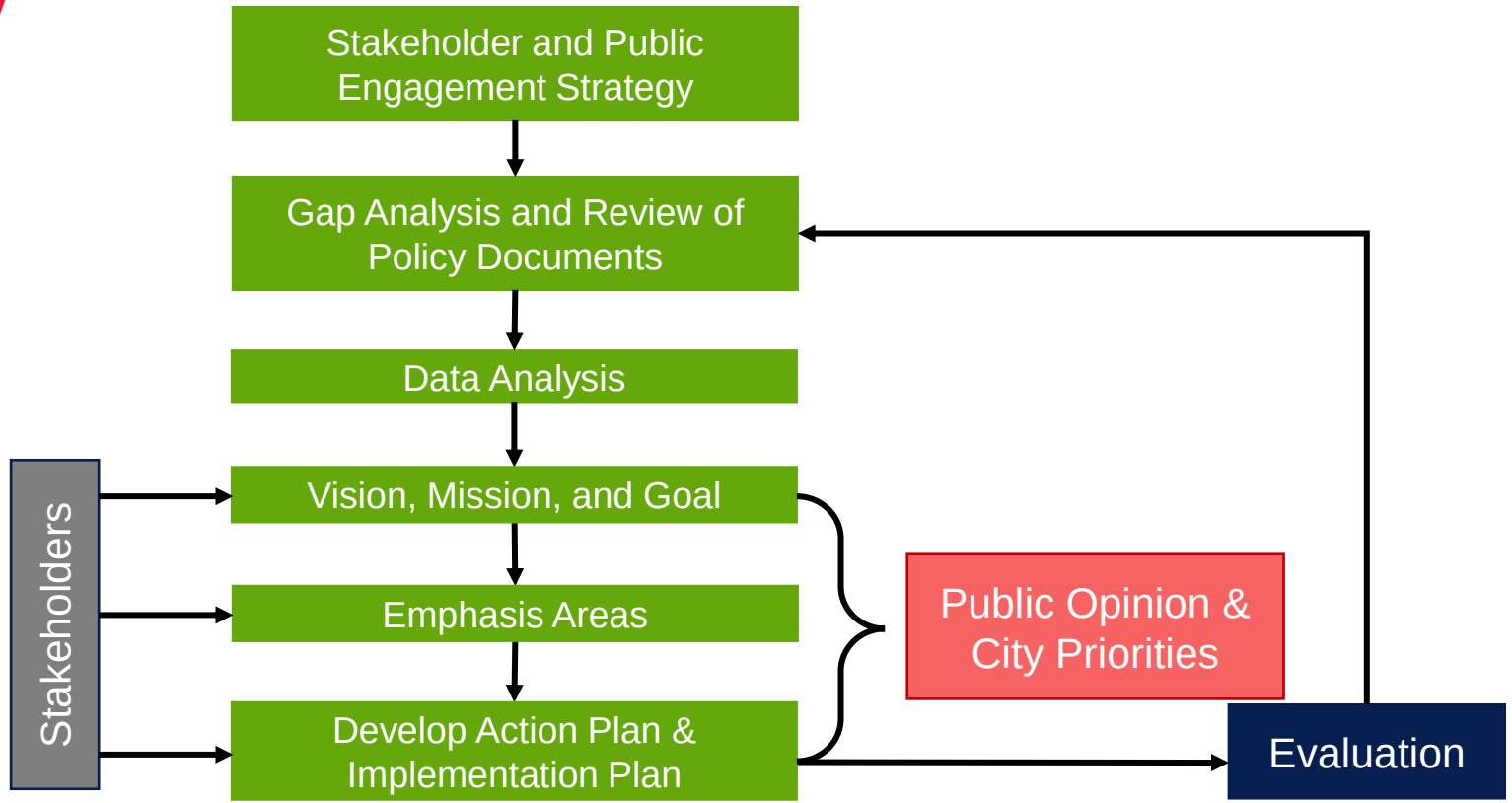
## PILLARS




## PRINCIPLES

- Fatal or Serious Injuries are Unacceptable
- Humans Make Mistakes That Can Lead to Road Collisions
- Humans are Vulnerable
- Responsibility is Shared
- Redundancy is Vital

# Road Safety Plan Development Process



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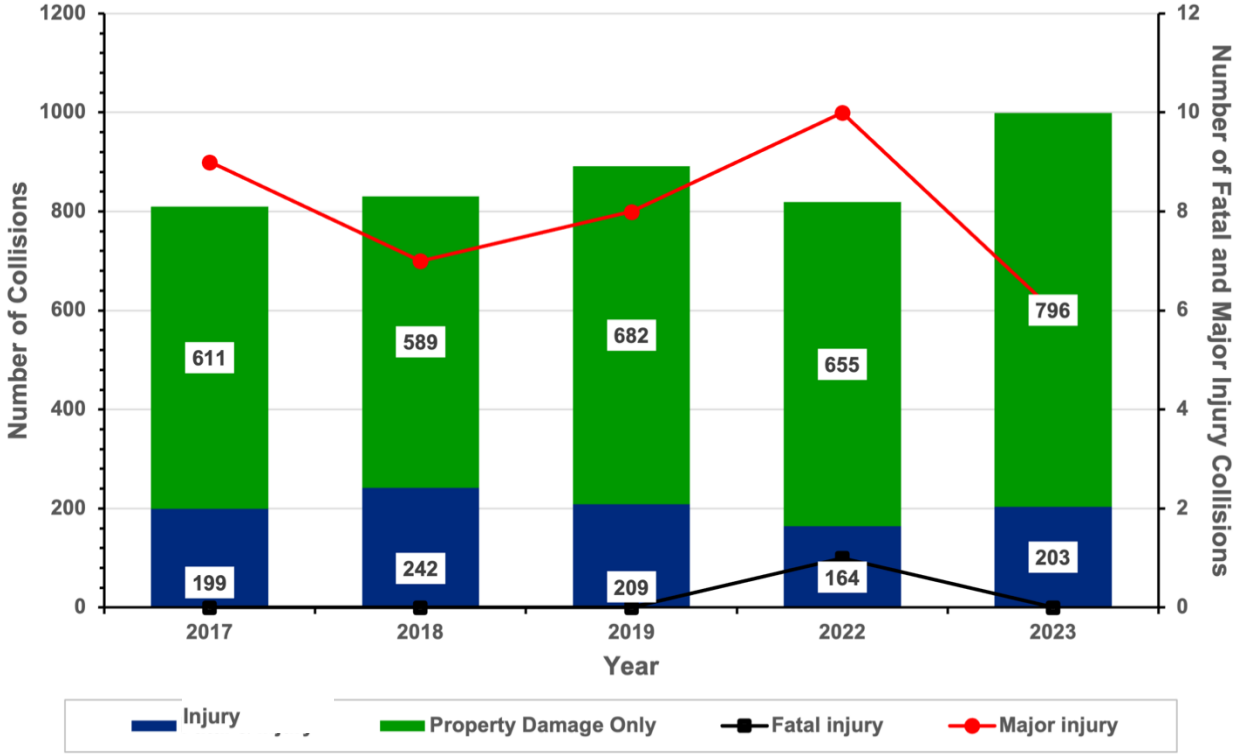
# Collision Trends

# Collision Trends



# Collision Trends

- **Age & Gender**
  - Male at-fault drivers > female at-fault drivers
  - 29% of fatal/injury collisions involved younger driver (age 16 to 29)

- **Intersections**
  - 60% of all fatal and injury collisions
  - 50% at traffic signals; 38% at stop signs

- **Aggressive Driving**
  - 53% of all fatal and injury collisions
  - Driver action: 47% failed to yield right-of-way; 27% disobeyed traffic control; 16% following too close

- **Pedestrian Collisions**
  - 18% of all fatal and injury collisions
  - 31% at traffic signals; 66% no traffic control
  - Pedestrian action: 58% had right-of- way

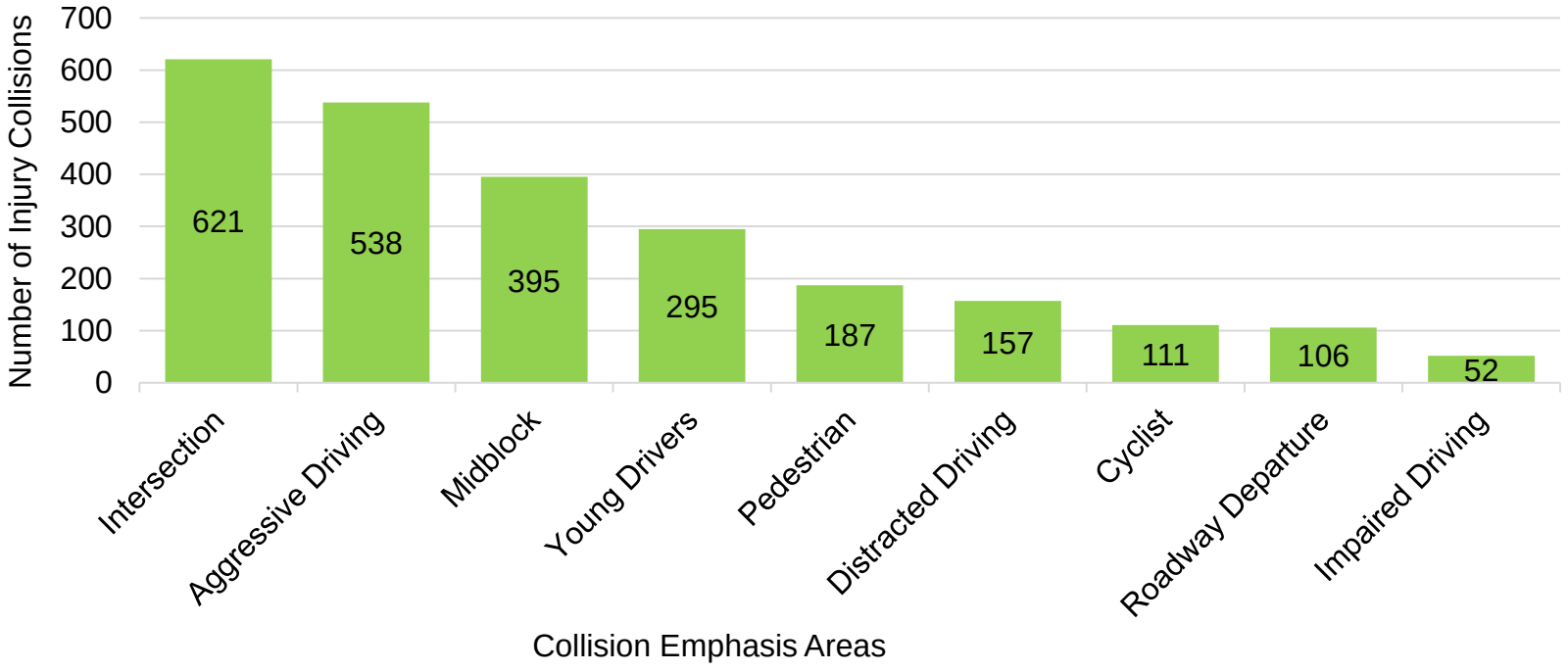
# Collision Trends

- **Distracted Driving**
  - 15% of all fatal and injury collisions
  - Driver action: 32% failed to yield ROW; 22% disobeyed traffic control; 13% improper turn; 13% following too close

- **Cyclist Collisions**
  - 11% of all fatal and injury collisions
  - 75% at intersections
  - Cyclist action: 62% cycling properly

- **Impaired Driving**
  - 5% of all fatal and injury collisions
  - Driver condition: 51% alcohol/drugs; 29% medical or physical disability; 21% fell asleep

# Frequent Collision Types – Overview



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# What We Heard:
# Public Engagement Results

# Public Survey

An online survey was developed and advertised through various communication channels to gather further information on the public's travel behaviours and road safety priorities. Questions included:

- Preferred modes of travel (e.g., driving, walking, public transit)
- Road safety concerns in Markham
- Ranking of 16 different collision groups (i.e., areas of concern)
- Demographics of respondents (e.g., age, gender)

**332**

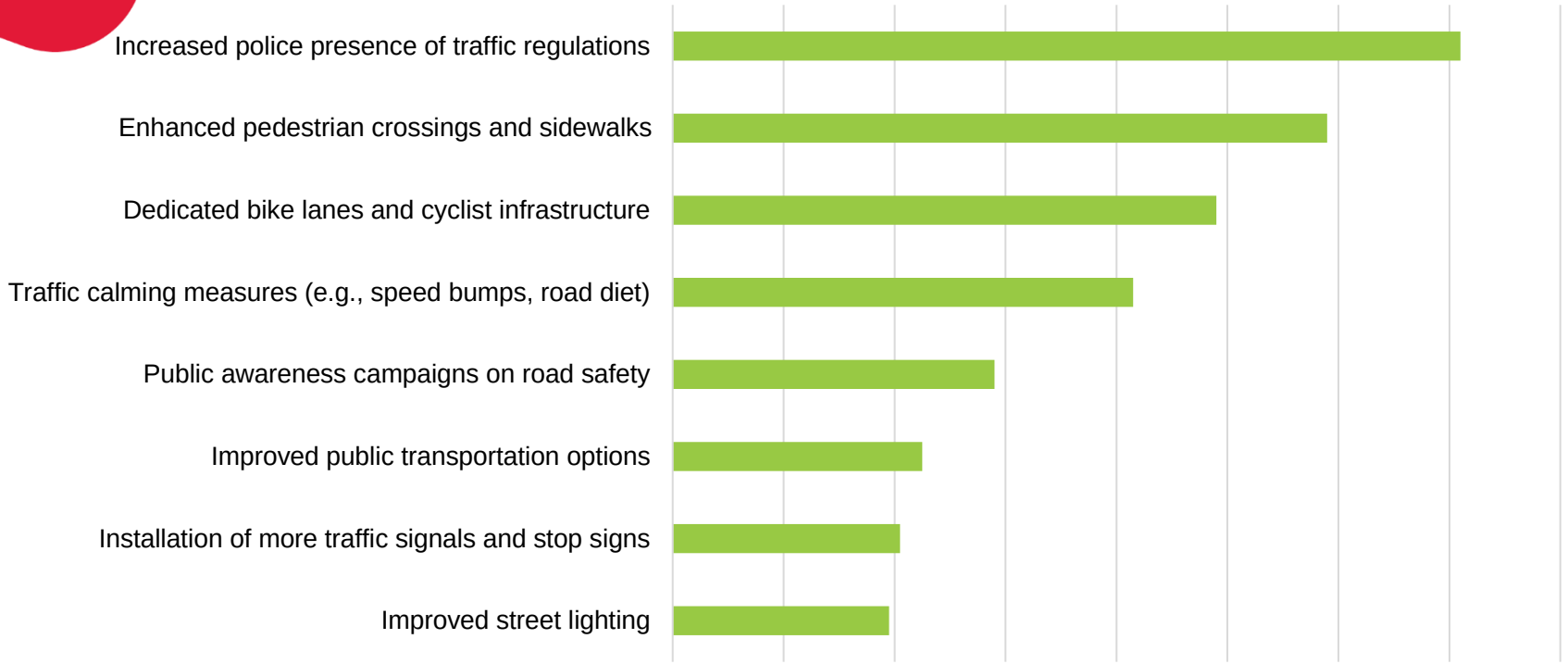
Total Respondents

# Safety Priority Ranking

***What we heard ...***

# Road Safety Measures

***What we heard ...***



# Public Information Session #1

**Date/Time:** September 18, 2024, 6pm - 8pm

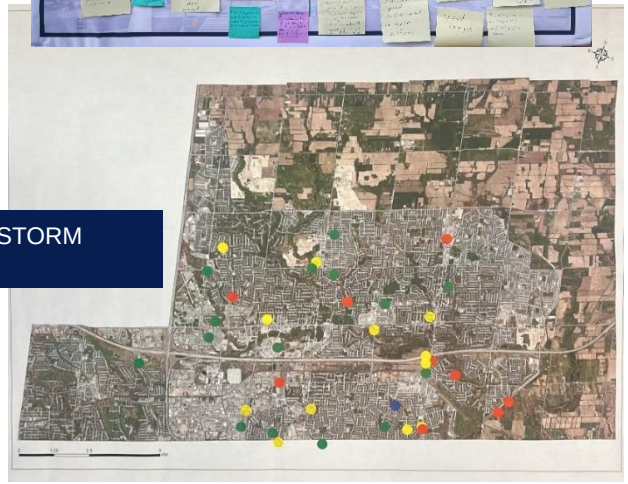
**Location**: Milliken Mills Community Centre

***What We Heard ...***

- Combine safety plans; explore Vision Zero.
- Improve pedestrian/cyclist safety at intersections.
- Address car dependency and land use issues.
- Enhance transit frequency and proactive planning.
- Implement protected bike lanes and speed enforcement.
- Complete sidewalks and improve accessibility.
- Collaborate with Toronto; explore bike-sharing.

INTERACTIVE MAP


BRAINSTORM WALL



# Public Areas of Concern

***What we heard during the Public Information Meeting ...***

1. Aggressive Driving
2. Impaired Driving
3. Intersections
4. Pedestrian Safety
5. School Zone Safety
6. Cycling Safety

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# Technical Stakeholder Consultation

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# Stakeholder Consultation

A stakeholder consultation meeting was held on October 2, 2024, to present the project progress and obtain feedback from various City's road safety partners:

- Vision, mission, and goal statements
- Collision emphasis areas

# Vision, Mission, and Goal (draft)

| | |
|---|---|
| VISION | A safer transportation system that enables all road users, regardless of age or ability, to travel safely without experiencing serious injury or fatality |
| MISSION | A leading community partnership committed to fostering a safe, inclusive, and sustainable transportation system to eliminate fatalities and injuries for all road users through collaboration, innovation, culture change, and proactive policy and engineering measures |
| GOAL | Reduce fatal and serious injury collisions by at least 10% within five years, with a parallel commitment to achieving a 10% reduction in collisions involving vulnerable road users |

# Emphasis Areas (draft)

Intersections

Aggressive Driving

Distracted Driving

Pedestrians

Cyclists

School Zones

# Next Steps

- Identify applicable countermeasures for each of the emphasis areas
- Develop a detailed action plan in consultation with the project stakeholders
- Develop a capital and financial plan
- Develop a monitoring & evaluation plan
- Develop policies and guidelines
- Establish procedures to improve City's road safety program, engineering standards, and community engagement strategies ensuring alignment with the new Road Safety Plan

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# Q & A

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# Overview of Speed Management / Traffic Calming Strategies

# Speed Management

## What is the goal?

- Providing a safe level of mobility for all affected road users through:
  - Appropriate speed limits
  - Speed management strategies
- Reducing and/or mitigating the impact of speeding-related crashes

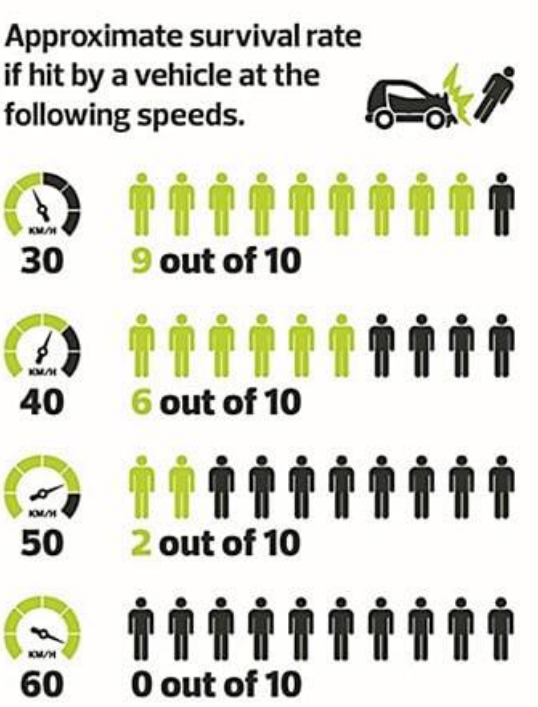
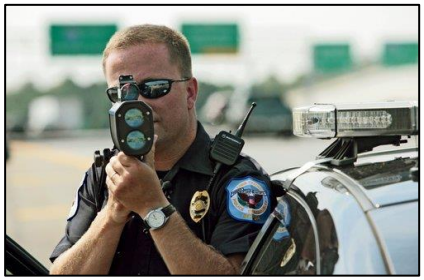



Image Credit – Safe Speeds, Canadian Association of Road Safety Professionals

# Speed Management – Principles & Practices


- Collision severity increases with higher travel speeds
- Drivers operate at the highest speed comfortable
- Setting posted speed limit to the 85th percentile speed results in lowest amount of speed dispersion
- Posted speed should consider pedestrians and cyclists
- Road design and physical appearance has strongest influence
- Absent geometric design changes, significant increases in police enforcement levels are required to influence driver behavior
- Research shows that changing speed limits without physical road changes has minimal effect on speeds and collisions



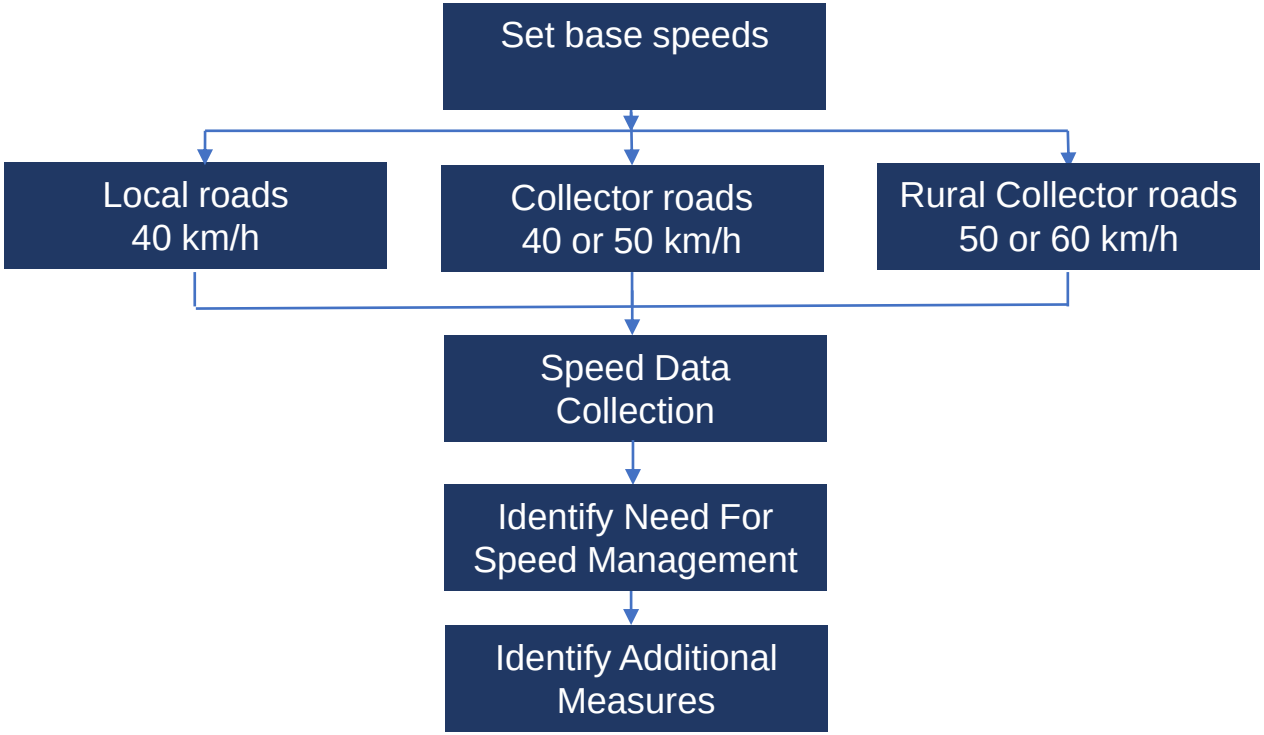
# What is Traffic Calming?

- Speed management strategy to reduce negative impacts of vehicle travel
- Applied with education and enforcement
- Changes to the road environment
- Alters driver behaviour
- Improves conditions for non-motorized road users
- Typically, at nominal or minimal cost

# Recommended Approach to Traffic Calming

- **Quantify** the problem through data collection and review
- **Establish** whether the problem is real or only perceived
- **Minimize** impacts to EMS, transit, and public services
- **Use** cost effective measures
- **Minimize** impacts on adjacent streets
- **Target** vehicular traffic while accommodating non-motorized traffic

# City's Current Approach to Speed Management

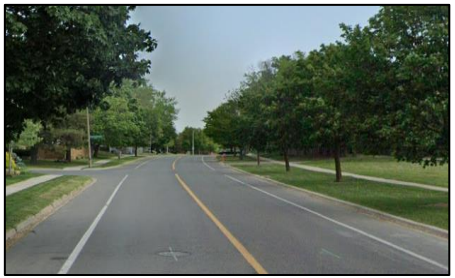


# City's Current Approach to Traffic Calming

- Traffic calming implemented on roads with an identified speeding or safety concern.

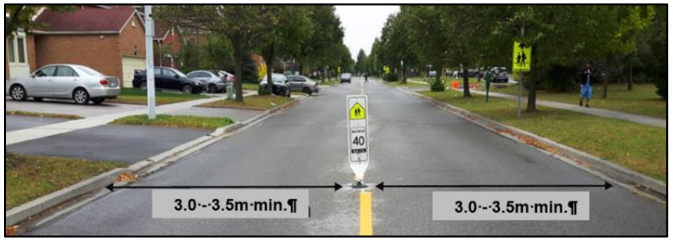
**Speed display signs**


**Edge line and centre lines**



**Pavement stencils**


**In-road flexible posts**




**Curb extensions**

**Centre median**

# Proactive & Optimal Process for Traffic Calming

**Step 1: Screen locations**

- Screen out locations that would not be amenable to traffic calming

**Step 2: Identify risk factors**

- For remaining locations, identify factors that are contributing to higher risk of severe collisions or pedestrian/cyclist collisions

**Step 3: Develop risk index**

- Determine the contribution of each risk factor to overall risk to create a risk index

**Step 4: Prioritize locations**

- Using the risk index, create a prioritized list of locations in the City.

**Step 5: Implement traffic calming**

- Implement traffic calming based on the prioritized list and in consideration of operating speeds

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# Breakout Session #1

# Questions

- **TABLE 1:** What locations (apart from school zones) do you believe should be prioritized for traffic calming?
- **TABLE 2:** How do you feel about increasing the necessary resources to move to a more proactive approach to addressing traffic calming concerns through an annual program?
- **TABLE 3:** What role should residents and the community have in approving and implementing traffic calming measures?  How should they be informed and consulted?

# Break

# Common Traffic Calming Treatments

# Approaches to Speed Management


## Education

Slow Down campaign

Road Watch campaign

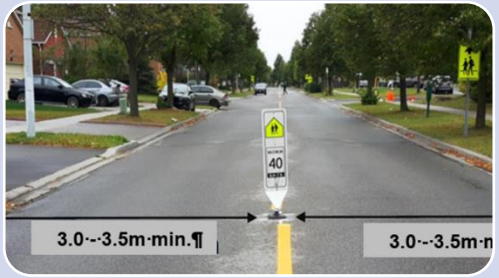
Speed display boards


## Enforcement

Police enforcement

Community Safety Zones

Automated speed enforcement




## Engineering

Pavement markings

Roadway narrowing

Horizontal deflection

Vertical deflection

# Education Measures

- **Slow Down Campaign -** Current York Region campaign, identifies strategies and measures to change driver behaviour and stop speeding to keep pedestrians and cyclists safe, especially when travelling through school areas, residential areas, and near playgrounds.
- **Road Watch Campaign -** Administered by York Regional Police, a community-driven program created to allow individuals to report aggressive driving in their community.
- **Speed Display Boards –** Administered by the City, the purpose of this program is to encourage motorists to reduce speeding in high-risk areas by displaying their operating speed on the board and prompting them to comply with the posted speed limit.  City currently has 24 boards (3 per ward) that are deployed to candidate locations on a quarterly basis.


ROAD WATCH

# Enforcement Measures

- **Police Enforcement -** Traditional police enforcement includes police targeting speeding drivers in problematic areas using speed radar guns.
- **Community Safety Zones -** A designated stretch of roadway, recognized under provincial legislation, marked with community safety zone signs allowing the doubling of fines associated with speeding.
- **Automated Speed Enforcement -** An automated system that uses a camera and a speed measurement device to help enforce posted speed limits in community safety zones only.


# Common Physical Traffic Calming Treatments


## Pavement Marking

Pavement stencils

Flush medians

Peripheral transverse bars

## Roadway Narrowing

Flex bollards

Curb radius reduction

Road diet

Edge line and centrelines

## Horizontal Deflection

Curb extension

Traffic Circle/Mini Roundabout

## Vertical Deflection

Speed cushions

Raised crosswalk

# Pavement Marking Treatments

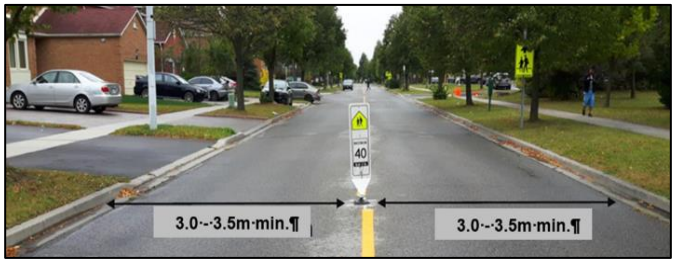
- **Flush Medians** - An area in the centre of the roadway marked to restrict through traffic movements to adjacent lanes at grade with the road surface.

- **Pavement Stencils** - pavement markings on the roadway directly in the driver's line of sight to convey a message. Some examples could be 'MAX 40 KM/H', 'SLOW', etc.


- **Peripheral Transverse Bars** - Parallel pavement markings along the edges of the travel lane to alert the driver's awareness of the need to reduce speed.

# Roadway Narrowing Treatments

- **In-road Flexible Bollards/Signs** - Treatment placed in centre median used to give drivers a perception of lane narrowing and create a sense of constriction. Can be supplemented by posts at road-side for further effect.

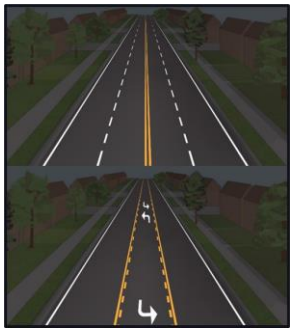



- **Curb Radius Reduction** - Reconstruction or modification of an intersection corner with a smaller radius, usually between the 3.0 m to 5.0 m range to slow down right-turning vehicles, reduce crossing distances for pedestrians, and to improve visibility of pedestrians.

# Roadway Narrowing Treatments

- **Edge Line and Centre Line Treatment** - Lane narrowing is the process of reducing lane widths using pavement markings (for example, centreline, urban shoulders, bicycle lanes). It increases driver discomfort due to narrowing of the lanes and ultimately reduces operating speeds.

- **Road Diet** - Reconfiguration of roadway that reduces number of travelled lanes/effective road width to allocate space for other uses such as wider sidewalks, turning lanes, bus lanes, pedestrian refuge islands, bike lanes, parking, etc.



# Horizontal Deflection Treatments

- **Curb Extensions -** A horizontal intrusion of the curb into the roadway resulting in a narrow section of roadway. The curb is extended on one or both sides of the roadway to reduce its width to as a little as 6.0 m for two-lane, two-way traffic.

- **Traffic Circle / Mini Roundabout** - Located at the centre of an intersection which requires vehicles to travel through the intersection in a counter-clockwise direction around the island. Traffic circle is typically smaller than a mini-roundabout and does not have splitter islands on the approaches.

# Vertical Deflection Treatments

- **Speed Cushion** - A raised area on a road intended to limit passenger vehicle speeds that does not cover the entire road width. The speed cushion width is designed to allow larger vehicles such as buses and emergency vehicles to pass without difficulty.

- **Raised Crosswalk** - A marked pedestrian crosswalk at an intersection or mid-block location constructed at a higher elevation than the roadway.

# Considerations When Selecting Treatments

- **Priority**
  - How does this location rank in terms of its need for traffic calming?
- **Anticipated effectiveness of treatment**
  - Will this treatment result in the desired reduction in speeds?
- **Past experience**
  - What has been the City's (and the public's) past experience with this treatment?
- **Feasibility**
  - Will there be any adverse impacts to adjacent driveways, on street parking, cyclists, emergency vehicles or City operations?
  - Can it be accommodated in the cross section of the roadway?
- **Cost of treatment**
  - What is the anticipated cost of this treatment and can it be accommodated within the City's capital budget?

# Speed Management / Traffic Calming Measures - Effectiveness vs. Cost

| Approximate Cost | Effectiveness (At Reducing Speeds) | | |
|---|---|---|---|
| | **Low** | **Medium** | **High** |
| **Low** | • Community Safety Zones<br>• Slow Down Campaign<br>• Road Watch Program<br>• Curb radius reduction (using flex posts) | • Flush median<br>• Speed pavement stencils<br>• Peripheral transverse bars<br>• Edge line and centre line markings<br>• Curb extensions (using flex posts) | • **Centreline flexible signs/bollards**<br>• **Speed display boards** |
| **Medium** | • Flush median<br>• Curb radius reduction (permanent) | • Peripheral transverse bars<br>• Speed cushions<br>• Sustained police enforcement<br>• Curb extensions (permanent) | • **Raised crosswalk**<br>• **Road diet**<br>• **Traffic circle/mini roundabout** |
| **High** | | • **Automated speed enforcement** | |

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# Breakout Session #2

# Questions

In view of the costs and associated impacts with the speed management treatments presented,

- **TABLE 1:** Which types of treatments do you think require specific Council approval to implement? What treatments could staff implement without specific Council approval?

- **TABLE 2:** Identify which **Engineering** treatments should be prioritized in the City's list of possible treatment types and why?

- **TABLE 3:** Identify which **Education & Enforcement** treatments should be prioritized to improve safety and why?

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# Speed Management / Traffic Calming Strategies - Next Steps

# Traffic Calming Policy: Next Steps

- Prepare the workshop summary memo
- Finalize treatment list, locations and recommended treatments
- Draft policy with process, selection criteria and approval requirements for Council endorsement
- Develop an annual capital and financial plan
- Develop a monitoring, evaluation and reporting plan

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# Thank You!

www.markham.ca/VisionZero