

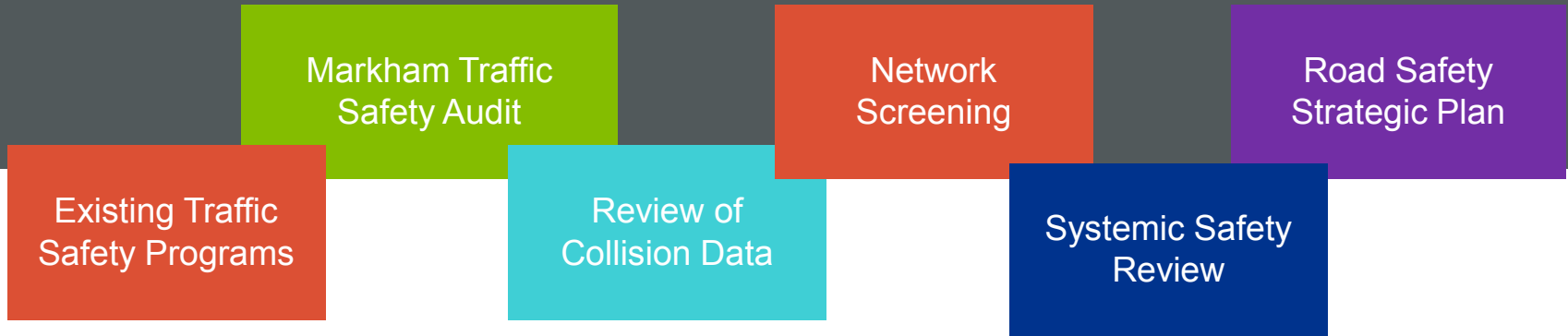


City-Wide Traffic Safety Audit (Results)

September 29, 2020

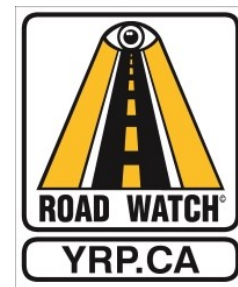
Development Services Committee

Presentation Summary



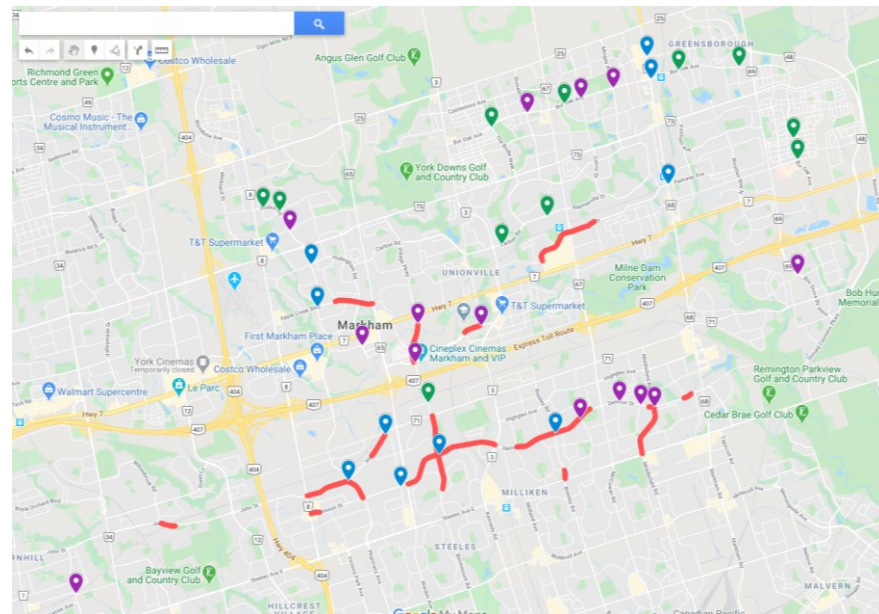
Existing Traffic Safety Programs

- Existing safety initiatives in Markham are mostly independent from each other and are facilitated wholly by the City or in collaboration with York Region:
 - Speed Management Program
(speed display boards, Road Watch)
 - School Zone Centreline Sign Program
 - Pedestrian Accessibility Improvements
 - Sidewalk Network Completion Program
 - School Crossing Guard Program
 - Safe Routes to School Program

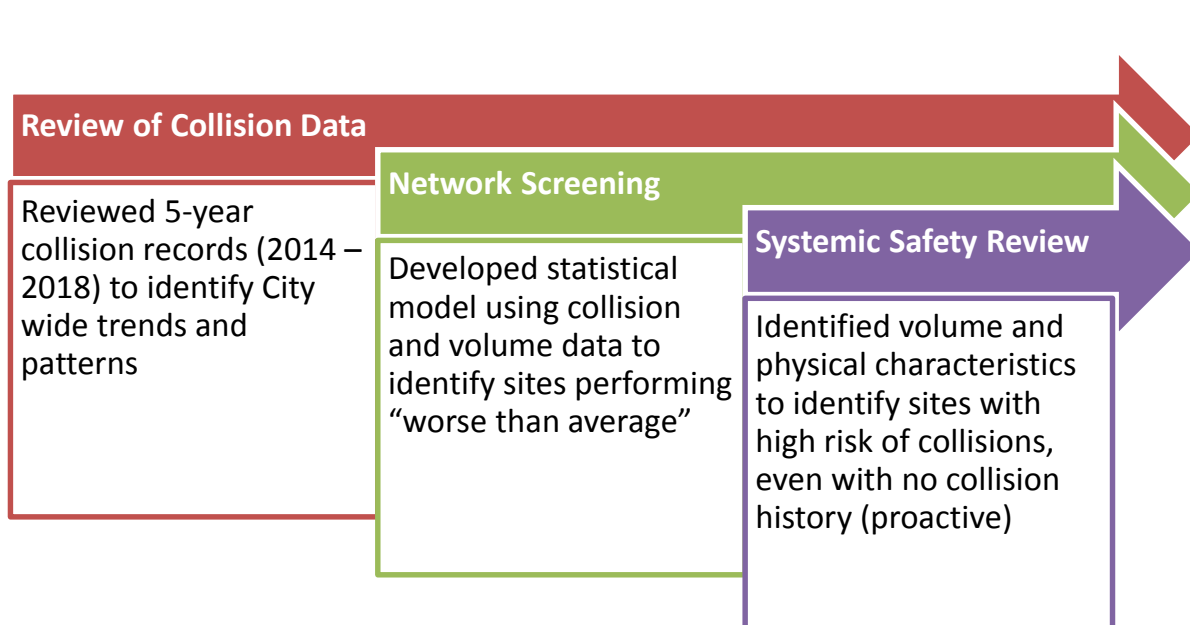


Markham Traffic Safety Audit

- Objectives:
 - Assess collision trends on City streets and intersections
 - Identify and prioritize locations based on severity and risk to road users
 - Identify a short list of traffic safety measures for high-risk collision prone locations
 - Develop terms of reference for development of comprehensive road safety plan



Markham Traffic Safety Audit



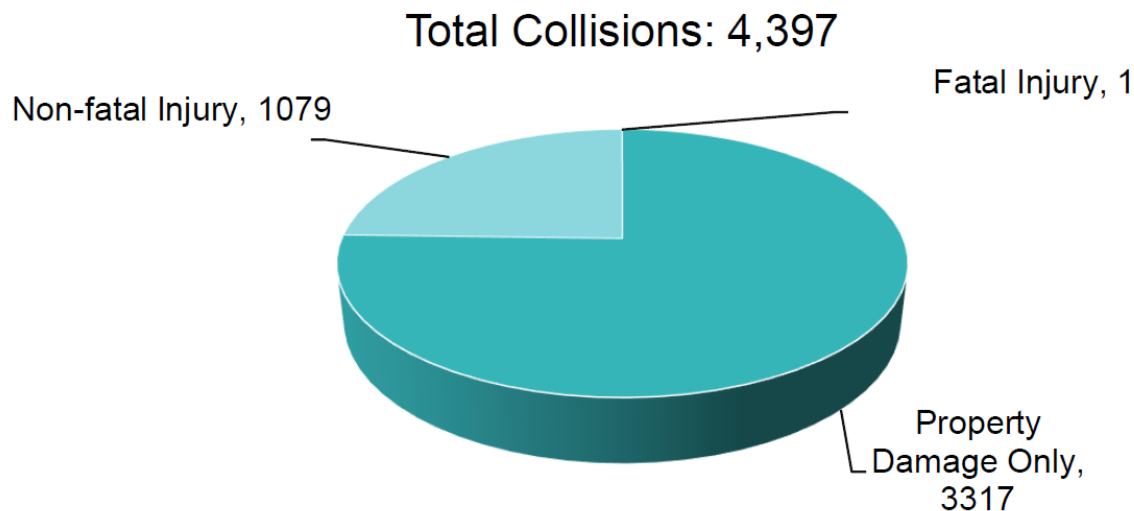
- Priority Locations
- Potential Safety Measures

Review of Collision Data

Review of Collision Data

- Goal: Identify collision patterns, including:
 - Severity distribution (e.g., fatal and injury vs. PDO)
 - Road user trends (e.g. pedestrians and cyclists)
 - Environmental factors (e.g. road surface conditions)
 - Spatial correlations (e.g. school zones)
- Process: Assessment of most recent 5-year collision history at City's intersections and road segments

Review of Collision Data (2014 - 2018)



Review of Collision Data (2014 - 2018)

Metric ¹	Markham	York Region ²	Municipalities with Lower Population ³	Municipalities with Higher Population ⁴
% Injury Collisions	24.6%	26.4%	11.5% – 13.8%	14.1% – 21.0%
Total Collision Rate	267	717	608 – 717	659 – 2,033
Injury Collision Rate	66	190	70 – 99	97 – 325
Pedestrian Collision Rate	11.7	9.2	11.4 – 12.9	22.9 – 47.8
Cyclist Collision Rate	6.7	14.7	13.9 – 14.4	10.6 – 33.0

Notes:

¹ Collision rates = collisions per year per 100,000 population

² Includes Region-wide collisions on Regional Roads only

³ Burlington and Oakville

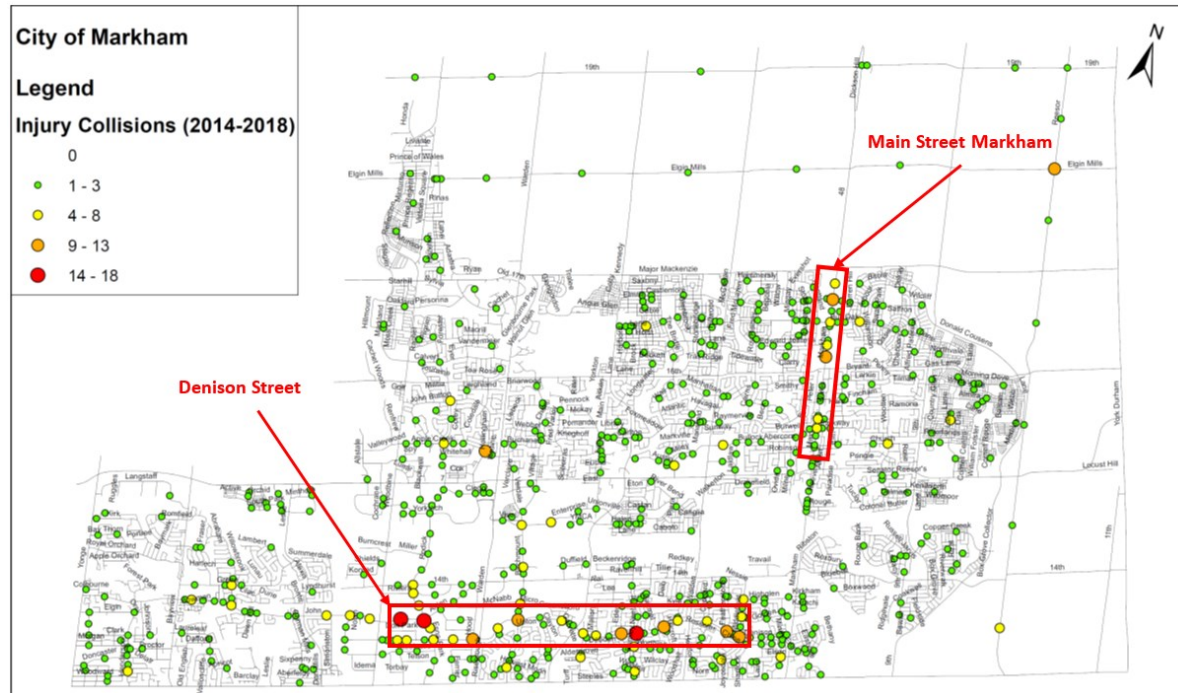
⁴ London, Hamilton, Brampton and Ottawa

City-wide Review of Collisions (2014 - 2018)

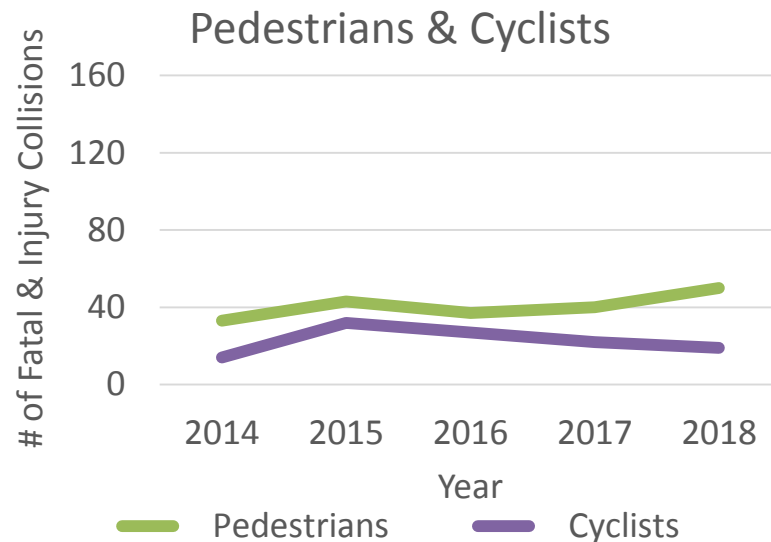
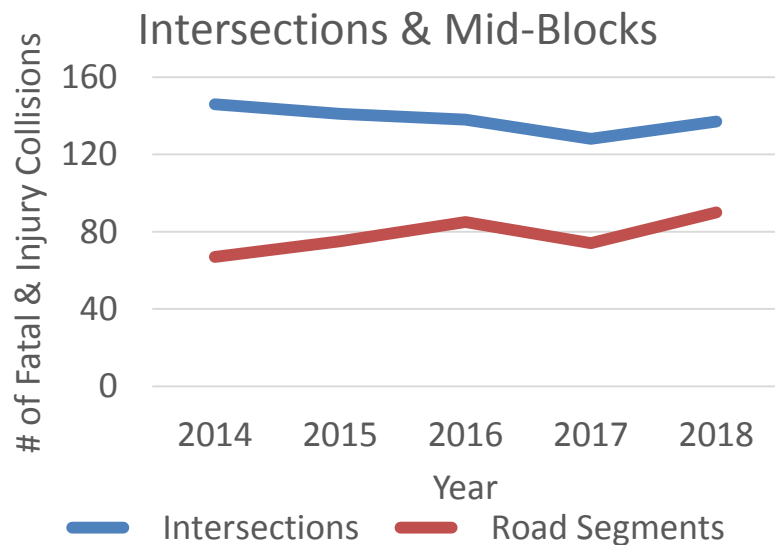
- 3% of intersections (4-leg signalized) experience 42% of intersection injury collisions
- 3% of road segments (urban 4-lane with 50 km/h speed limit) experience 32% of road segment injury collisions

Review of Collision Data

- Collision Clusters



Review of Collision Data (2014 - 2018)



Annual Injury Collision Trends

Network Screening



Network Screening

- Goals:
 - Identify intersections and road segments with 'worse than average' safety performance, by taking traffic volumes into consideration
 - e.g. 10 collisions on 20,000 car road is safer than 10 collisions on 10,000 car road
 - Identify statistically over-represented collision impact types and/or environmental factors on an individual site basis
- Process: Statistical model as a function of collision history, traffic volumes and physical characteristics

Network Screening

- 29 intersections and 8 road segments identified as high priority sites for safety improvements
- Top 10 intersections are 4-Leg signalized
- 9 out of 10 top mid-blocks are Urban 4-Lane, 7 of which with 50 km/h posted speed

Systemic Safety review

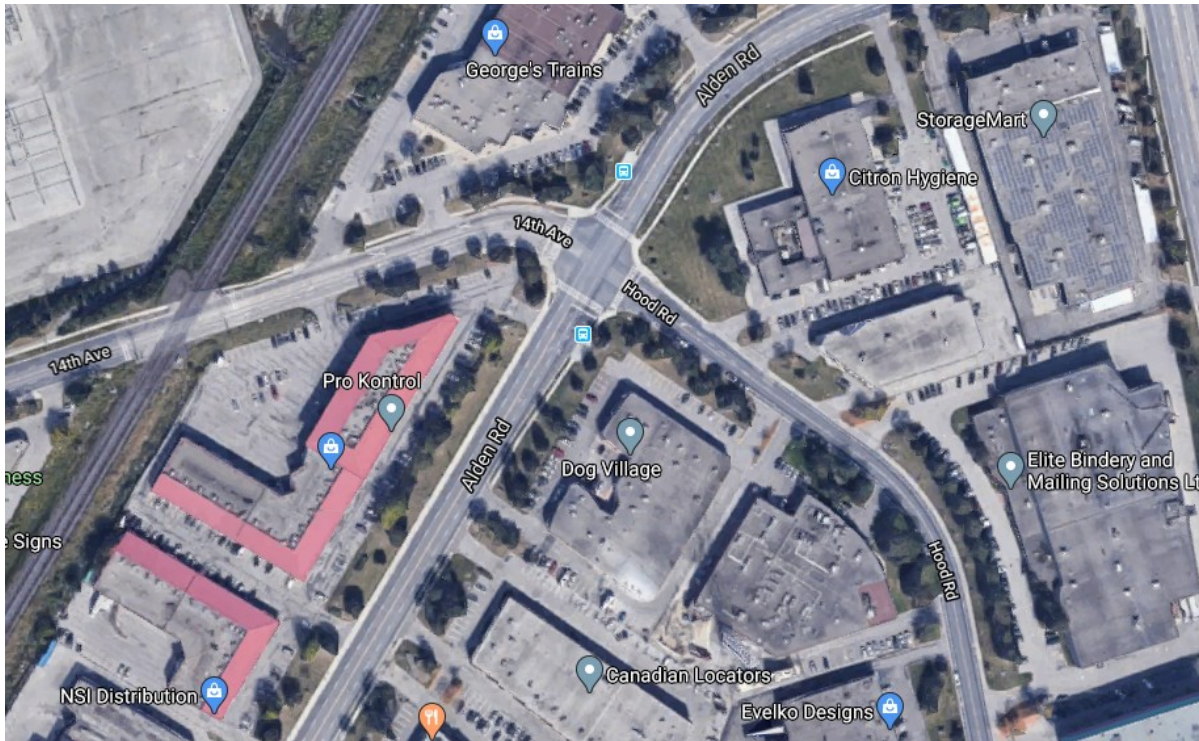


Systemic Safety Review

- Goals:
 - Identify intersections and road segments with higher risk of collisions even before they occur (proactive)
 - Identify potential safety measures for individual intersections and road segments to reduce risk of collision
- Process: Identification of risk factors
 - High daily traffic volumes
 - Transit stops
 - Number of intersection legs
 - Number of lanes
 - Nearby intersections
 - Presence of medians
 - No right-turn lane
 - Horizontal curve
 - No sidewalk
 - Intersection Skew
 - Railway crossing

Systemic Safety Review

- Example: Alden Rd & 14th Ave / Hood Rd



Systemic Safety Review

- Examples: Alden Rd & 14th Ave / Hood Rd

Risk Factors	Potential Countermeasure(s)
High volumes	Fully protected left-turn phase, right-turn on red prohibition
Presence of Bus Stops	Leading Pedestrian Interval, Longer Pedestrian Phase
Cross Intersection	Signal visibility improvements
Horizontal Curve	
4+ Lanes on Major Road	Advance Street Name signs
Absence of Median	Medians
Absence of Right Turn Lane	Dedicated right-turn lanes

Road Safety Strategic Plan



Safe Systems Approach

- Looks at the road as a holistic unit and as a system (the system imposes demands on users and vice-versa)
- Accepts the fact that road users are human and make mistakes or wrong decisions (especially as system demands increase)
- Road safety experts should then develop ways of reducing the risk of the traffic system in a way that accounts for these mistakes

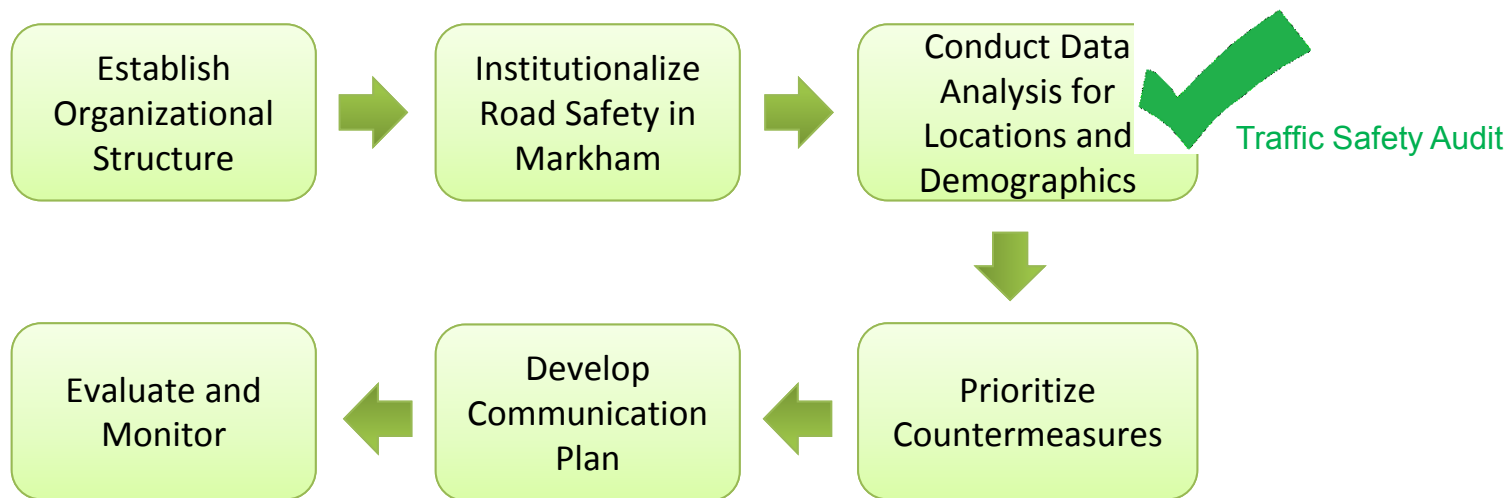
Elements of a Road Safety Strategic Plan

- Mission and Vision statements
- SMART goals
- Collaborative, multi-disciplinary effort
- Drives culture change
- Targets emphasis areas:
 - Intersections
 - Pedestrians
 - Cyclists
 - aggressive & distracted driving
 - Senior citizens
 - School children, etc.



Elements of a Road Safety Strategic Plan

- Establishes a Task Force
- Develops Data-driven Safety Initiatives + Action & Monitoring Plan:



Scope of Road Safety Plan Development

- Main components
 - Coalition Building Plan
 - Data Collection and Analysis (update)
 - Environmental Scan
 - Needs assessment
 - Develop goal and vision/mission statements
 - Identification of Emphasis Areas
 - Public Engagement
 - Develop Road Safety Action, Evaluation and Monitoring Plans
 - Develop specific traffic operations policies & procedures
 - Identify City resource requirements to facilitate and sustain Plan

Thank You



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