

The Regional Municipality of York

Committee of the Whole
Transportation Services
October 14, 2021

Report of the Commissioner of Transportation Services

Results of Pedestrian and Cyclist Pilot Measures

1. Recommendation

The Regional Clerk circulate this report to the Clerks of the local municipalities and York Regional Police.

2. Summary

This report provides Council with results of the pedestrian and cyclist pilot measures implemented at four Regional intersections starting in 2019.

Key Points:

- Operational measures were implemented and evaluated at four Regional intersections to improve pedestrian and cycling safety
- Collisions at the pilot intersections have reduced by more than 60% and angle collisions, which typically result in serious injury, by 75%
- Based on positive results in reducing conflicts and collisions for all road users, these measures will remain in place at the initial four intersections
- These same measures are planned to be installed in 2022, in the Cities of Markham and Vaughan, at six additional intersections with the best opportunity to improve pedestrian and cyclist safety, selected using a data-driven approach

3. Background

Operational measures were implemented to help improve pedestrian and cyclist safety at four intersections across the Region

Pedestrian and cyclist trips are growing 4% annually, increasing the possibility of conflicts at intersections between pedestrians/cyclists and vehicles. The Annual Traveller Safety Report identified pedestrians and cyclists as a priority for improving safety as more than 84% of pedestrian and cyclist collisions result in injuries.

As a result of findings outlined in the [2017 Traveller Safety Report](#), in [June 2019](#), Council was presented with the Pedestrian and Cyclist Safety Improvements report and accompanying [Pedestrian and Cyclist Safety Study Summary Report](#). The report included a comprehensive data review, indicating the probability of injury to pedestrians and cyclists in motor vehicle collisions is significantly higher compared to other modes of travel.

Pedestrians and cyclists are at high risk with vehicles turning at signalized intersections on Regional roads. Numerous operational measures to create a safer environment at signalized intersections were evaluated. Four measures (Table 1) were selected for use, based on effectiveness, applicability to Regional roads and feasibility of implementation.

Table 1
Pedestrian and Cyclist Operational Measures

Operational Measures		Description	Potential Safety Benefits*
Prohibit right turn on red		Reduces conflicts with pedestrians who are crossing perpendicular to the vehicle direction	Up to 8% reduction in overall collisions
Protected left turn movement		Left turning vehicles are given exclusive right-of-way independent of pedestrian crossing time	68% reduction in all collisions involving left-turning vehicles
Leading Pedestrian Traffic Signal Intervals (pedestrian head start)		Pedestrians can better establish their presence in the crossing by entering an intersection approximately seven seconds before vehicles	59% reduction in pedestrian-vehicle collisions
Additional Warning Signage		Signs informing motorists that pedestrians and cyclists have the right-of-way within the intersection	40% reduction in overall collisions

* Safety benefits reported through industry analysis and experience (Crash Modification Factors)

Starting in late 2019, measures to help protect pedestrians and cyclists were implemented based on risk assessments, which includes a comprehensive data review indicating the probability of injury in collisions factoring risk characteristics, road user volume, crossing distance, speed limit and roadway environment, among others, at four signalized intersections:

- Major Mackenzie Drive (Y.R. 25) and Bayview Avenue (Y.R. 34), in the City of Richmond Hill
- Yonge Street (Y.R. 1) and Clark Avenue, in the City of Markham/City of Vaughan
- Bathurst Street (Y.R. 38) and Carrville Road/Rutherford Road (Y.R. 73), in the City of Vaughan
- Bathurst Street (Y.R. 38) and Clark Avenue, in the City of Vaughan

Preliminary findings on the effectiveness of the measures were presented to Council in 2020 with a commitment to report results in 2021

In [June 2020](#), Council received the Pedestrian and Cyclist Pilot Measures Update memo. A preliminary review, using video conflict analytics, was conducted before and shortly after implementation to compare conflict rates at each location. Initial results from the pilot, though limited, appeared promising. Recognizing the preliminary assessment was based on limited data collected since January 2020 during the winter and irregular travel patterns due to public health restrictions related to the COVID-19 pandemic, staff committed to report the results back to Council in 2021.

4. Analysis

Intersection operational measures implemented have been successful in reducing conflicts and collisions for all road users

Video data was collected multiple times before and after implementation of the measures to compare conflict rates at each location. Table 2 provides the results of the before and after studies. Overall, total collisions have reduced by more than 60%, and angle collisions which typically result in serious injury, by 75%. This is comparable to industry experience that reports prohibiting right turns at signalized intersections and implementing protected left turn movements may reduce pedestrian and cyclist collisions by more than 80%. Municipalities across the province, including the Cities of Toronto, Ottawa and Thunder Bay, and Durham Region and the Town of Halton Hills, have implemented all or some of these measures, recognizing the safety benefits.

Table 2
Conflict Rate Before and After Implementation of Measures

Intersection	Vehicle-Pedestrian/Cyclist Conflict		Vehicle-Vehicle Conflict	
	Before	After	Before	After
Bathurst Street (Y.R. 38) and Carrville Road/Rutherford Road (Y.R. 73)	12	1	14	0
Bathurst Street (Y.R. 38) and Clark Avenue	35	3	78	0
Major Mackenzie Drive (Y.R. 25) and Bayview Avenue (Y.R. 34)	222	18	32	0
Yonge Street (Y.R. 1) and Clark Avenue	27	2	4	0

* Conflict rate calculated based on volumes and conflicts observed at the time of studies

Feedback from pedestrians and cyclists has been positive

Staff received feedback from citizens through on-street outreach events, social media and public meetings. Pedestrians and cyclists noticed a positive difference in driver behaviour and indicated they feel safer crossing the road. Motorists have raised concerns about being delayed, primarily due to the all-day, no right turn on red operation when pedestrians are not present. While motorists acknowledge the safety benefits of the measures implemented, they are requesting the Region further explore opportunities to reduce driver delay.

Operational measures implemented at the four pilot intersections will be maintained and expanded to six additional intersections, based on data-driven approach

While turning movement controls may have a potential safety benefits at some intersections, they are not required at all intersections primarily due to pedestrian and cyclist volume, road geometry, sightlines and environment. A data-driven approach is necessary to identify intersections where benefits can be achieved in helping to protect pedestrians and cyclists.

In selecting future intersections with the best opportunity to improve pedestrian and cyclist safety, a quantitative and predictive approach is applied. The approach was developed by The National Cooperative Highway Research Program and administered by the Transportation Research Board. The approach not only addresses locations with prior collision occurrence by critical direction, but also determines high impact locations based on risk characteristics, road user volume, crossing distance, speed limit and roadway environment.

Given the success in reducing collisions at the four pilot intersections, the same measures will be expanded in 2022 to the additional intersections identified in Table 3.

Table 3
Additional Intersections for Pedestrian and Cycling Measures

Intersection	Municipality	Directions
16th Avenue (Y.R. 73) and Woodbine Avenue (Y.R. 8)	City of Markham	Northbound and Southbound
16th Avenue (Y.R. 73) and Main Street Markham/Highway 48	City of Markham	Eastbound and Westbound
Highway 7 (Y.R. 7) and Martin Grove Road	City of Vaughan	Northbound and Southbound
Highway 7 (Y.R. 7) and McCowan Road (Y.R. 67)	City of Markham	Northbound and southbound
Highway 7 (Y.R. 7) and Kennedy Road (Y.R. 3)	City of Markham	Eastbound and Westbound
McCowan Road (Y.R. 67) and Carlton Road/Raymerville Drive	City of Markham	Eastbound and Westbound

Staff are exploring new technologies that may reduce delay for right-turning vehicles when pedestrians and cyclists are not present

Motorists have raised concerns about the increase in delay with the no right turn on red prohibition. During critical hours, motorists are experiencing an average of 30 to 75 additional seconds of delay. Staff are exploring adaptive signal technology that would indicate no right turn on red only when pedestrians are present to optimize intersection operation. This innovative technology requires proof of testing and is not currently an industry standard.

Another example of effective controlled intersection movement is the Viva rapidway network

The Region has 160 signalized intersections with turning movement controls, representing 20% of all Regional signalized intersections. Many of these intersections are within the bus rapidways, such as on Highway 7, Yonge Street, Davis Drive and Centre Street. Collisions at these intersections have been reduced by approximately 50% since completion.

5. Financial

The cost to implement the pedestrian and cycling measures in this report ranges between \$20,000 and \$60,000 per intersection, depending on the type of improvements required. Costs are included in the approved 2021 Transportation Services Operating Budget and outlook.

6. Local Impact

Walking and cycling are two important types of active transportation that have many health benefits. These two modes also indirectly improve the health of the population by reducing motor vehicle trips. Less vehicle trips lowers levels of air pollution, greenhouse gases, noise and traffic congestion.

Improving road safety for pedestrians and cyclists at Regional intersections creates a safer environment to support the growing trend of these two types of active transportation.

The key points contained in this report have been shared with the local municipalities, York Regional Police, Public Health and school boards, and no concerns were raised.

7. Conclusion

Operational measures were implemented on a pilot basis at four Regional intersections to help improve safety for pedestrians and cyclists. These measures have been deemed successful in reducing potential conflicts and collisions for all road users by more than 60%, and angle collisions by 75%, which typically result in serious injury. Measures at these locations will remain.

Staff plan to implement the same safety measures at six additional intersections located in the Cities of Markham and Vaughan. These intersections were selected based on pedestrian, cyclist and vehicle conflict and collision data.

Staff will continue to work with the local municipalities, York Regional Police, Public Health and school boards, to identify strategies and measures to address traveller safety for all road users.

For more information on this report, please contact Joseph Petrunaro, Director Roads and Traffic Operations, at 1-877-464-9675 ext. 75220. Accessible formats or communication supports are available upon request.



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