Cycling Advisory Committee

Report

The 8th Meeting of the Cycling Advisory Committee
August 21, 2019
Committee Room #4

Attendance

PRESENT: C. Linton (Chair), K. Brawn, B. Cowie, C. DeGroot, R. Henderson, B. Hill, J. Jordan, C. Pollett, E. Raftis and J. Roberts and J. Bunn (Acting Secretary)

ABSENT: O. Toth

ALSO PRESENT: P. Kavcic, D. MacRae and C. Saunders

The meeting was called to order at 4:00 PM.

1. Call to Order

1.1 Disclosures of Pecuniary Interest

That it BE NOTED that no pecuniary interests were disclosed.

2. Scheduled Items

None.

3. Consent

3.1 7th Report of the Cycling Advisory Committee

That it BE NOTED that the 7th Report of the Cycling Advisory Committee, from its meeting held on July 17, 2019, was received.

3.2 Notice of Planning Application - Zoning By-law Amendment - 666-670 Wonderland Road North

That it BE NOTED that the Notice of Planning Application, dated August 7, 2019, from M. Vivian, Planner I, with respect to a Zoning By-law Amendment for the properties located at 666-670 Wonderland Road North, was received.

3.3 Notice of Study Completion - Clarke Road Improvements Municipal Class Environmental Assessment

That it BE NOTED that the Notice of Study Completion from P. Kavcic, City of London and I. Bartlett, Stantec Consulting Ltd., with respect to the Clarke Road Improvements Municipal Class Environmental Assessment for the Veterans Memorial Parkway Extension to Fanshawe Park Road East, was received.

4. Sub-Committees and Working Groups

None.

5. Items for Discussion

5.1 Position Statement: Reduction in Residential Speed Limits in London, ON, to under 40km/h

That it BE NOTED that the revised attached Position Statement from R. Henderson, with respect to reducing residential speed limits in London,

ON, to under 40 km/h, was received; it being noted that R. Henderson will attend the Civic Works Committee meeting, along with the Chair of the Cycling Advisory Committee, to speak to this matter.

5.2 Status of Cycling as a Sport/Recreational Activity in London

That a Sub-Committee BE ESTABLISHED to review and discuss sport and cycling in City of London communities.

5.3 2019 Work Plan

That discussion of the 2019 Cycling Advisory Committee (CAC) Work Plan BE DEFERRED to the September 2019 meeting of the CAC.

6. Adjournment

The meeting adjourned at 5:15 PM.

Positions statement: reduction in residential speed limits in London, ON, to under 40km/h

Principal authors

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The data presented here is part of Rebecca Henderson's doctoral thesis. The full report is unpublished.

Position statement supported by:

London Cycle Link

Abstract

We studied 1,656 reported motor vehicle - bicycling collisions between 2006 and 2017 in London, ON. With speeds exceeding 40 km/h, bicyclists were always injured. A multinomial logistic regression model is further used to determine the relationship between motorist speed and bicyclist injury. Our model indicates that the probability of causing severe injury at motorist speeds of 30km/h, 40km/h and 50km/h are (respectively) 8.5%, 13% and 19%. Given the high injury rate when speeds over 40km/h, **we recommend a speed limit under 40km/h when vulnerable road users mix with motorists.**

Motor vehicle speed and pedestrian fatalities

Injuries and fatalities from road traffic crashes are a significant public health problem. Worldwide, motor vehicle traffic accidents account for the majority of deaths and disabilities of injury (World Health Organization, 2004). Hussain et al.'s meta-analysis of 20 studies on motor vehicle speed and pedestrian fatalities identified speed as the key risk factor in motor vehicle crashes due to the probability of a crash and injury severity[1]. The results of the meta-analysis support setting speed limits of 30–40 km/h. These speed limits are commonly used by best practice countries that have the lowest road fatality rates and that practice a Safe System Approach to road safety.

[1] Hussain Q, Feng H, Grzebieta R, Brijs T, Olivier J. The relationship between impact speed and the probability of pedestrian fatality during a vehicle-pedestrian crash: A systematic review and meta-analysis. Accid Anal Prev [Internet]. 2019;129(April):241–9. Available from: https://doi.org/10.1016/j.aap.2019.05.033

Background

The City of London in Southwestern Ontario is increasingly focussed on bicycle safety. Strategies to reduce injury and fatal injury are outlined in three City of London planning reports: Cycling Master Plan (2016), Road Safety Strategy 2014-2019 (2014); and Smart Moves 2030 Transportation Master Plan (2013). The plans set objectives to create actionable policies. The London Road Safety Strategy (2013) set a goal to decrease injuries and fatalities by 10% between 2014-2019. One of the recommended actions in Transportation 2030 was to identify bicycling safety hotspots and concerns to better understand the role of location, and bicyclist and motorist manoeuvres. A focus on bicycling safety and reduction of injuries will support the City's Cycling Master Plan (2016) to increase the proportion of commuting trips made by bicycling from 1.7% to 5% over the next 5-10 years (2026). The City recognizes the critical role that cycling can play in creating green and livable communities, and is committed toward making cycling safe, convenient, and comfortable for people of all ages and abilities.

On May 16, 2017, London Ontario Municipal Council made an important step to improve our collective safety, and adopted the following Vision Zero Principles: (1) No loss of life is acceptable, (2) Traffic fatalities and serious injuries are preventable, (3) We all make mistakes, (4) We are all physically vulnerable when involved in motor vehicle collisions, and (5) Eliminating fatalities and serious injuries is a shared responsibility between road users and those who design and maintain our roadways.

There were 1,656 reported motor vehicle – bicycle collisions on City streets between 2006-2017. Despite the City of London planning reports and the adoption of Vision Zero principles, there continue to be bicycle fatalities in our City. In 2018 and 2019, three people were killed while riding their bikes in London. The City of London's politicians, transport engineers, police and professional advocates must move beyond commitment, and set actionable priorities to design roads and address speeds to eliminate injury and death.

Data

The collision data was provided by the City of London Police Department. Accident Support Services International Ltd (ASSI) is the official reporting center for Police Services throughout Canada. ASSI collects and maintains statistics for all reported collisions involving motor vehicles in Ontario. The Police Department provided the ASSI dataset for all reported collisions between January 1, 2006 and December 31, 2017. There were 1,656 reported motor vehicle - bicycling collisions between 2006 and 2017 in London, ON – an average of 138 reported collisions per year.

Speed: Motorist speeds are self-reported to attending police officers.

Injury: Injury determinations are made by the attending police officers (i.e. not medical professionals). See Table 1 for definitions.

Table 1 Injury definitions[2]

Injury	Definition
None	no injury
Minimal	a non-fatal injury at the time of the collision, including abrasions, bruises, and complaints of pain which does not require the injured person to go to the hospital.
Minor	a non-fatal injury requiring medical treatment at a hospital emergency room, but not requiring hospitalization of the involved person at the time of the collision.
Severe	major: a non-fatal injury that is severe enough to result in the person involved being hospitalized -and- fatal: a fatal injury where the person sustains bodily injuries resulting in death (within 366 days of the date of the motor vehicle collision

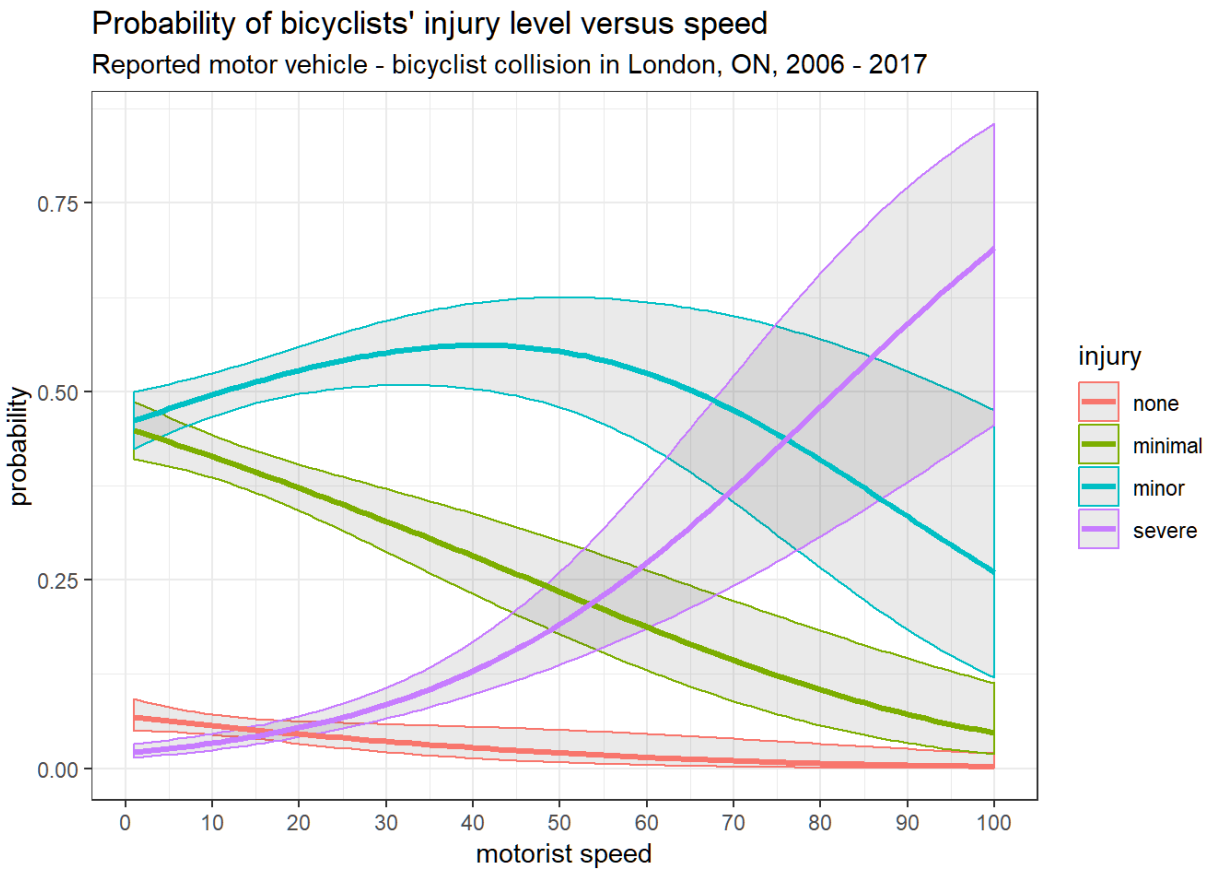
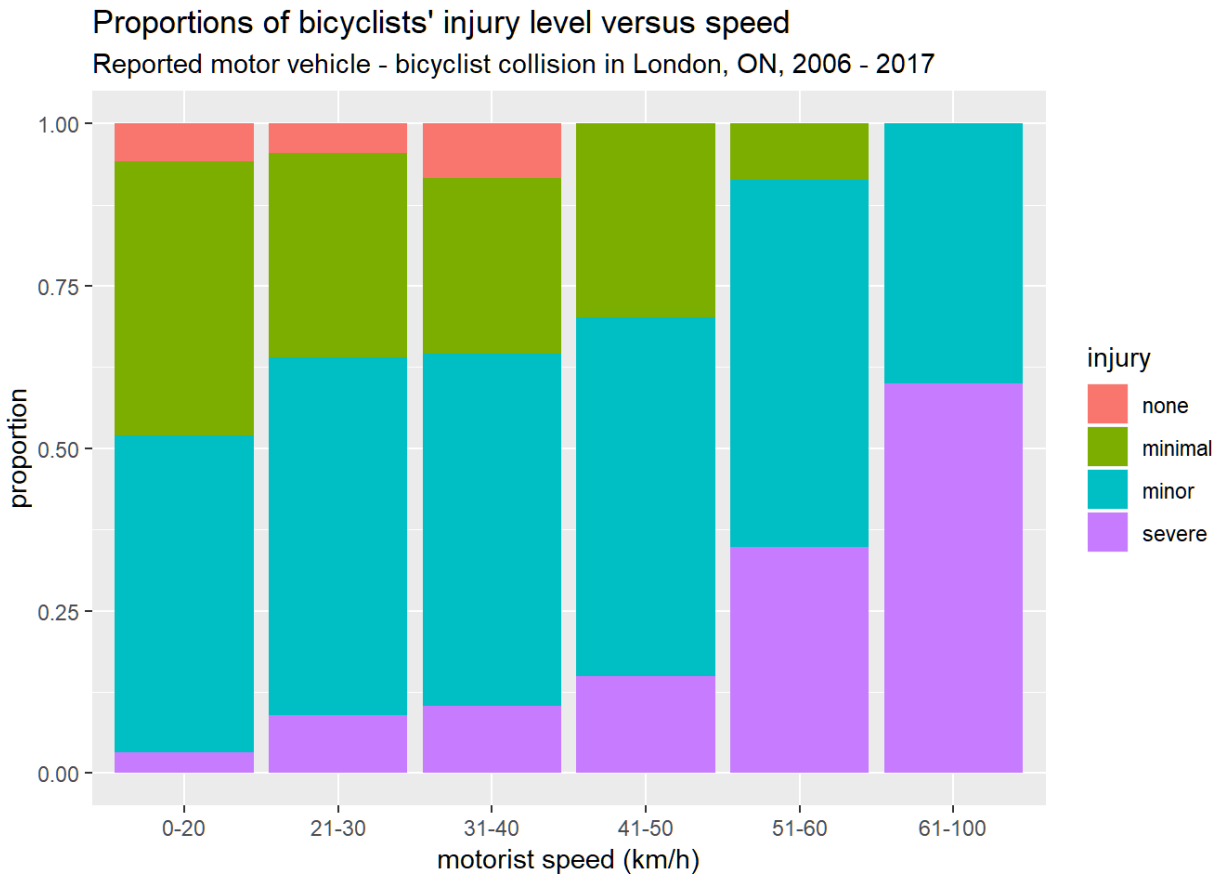


Figure 1 Estimated probability of injury level with the shading area indicating 95% confidence intervals

[2] Ontario Ministry of Transportation, 2019

Table 2 Proportion of bicyclist injury within each speed interval in London, ON, 2006 - 2017

	0-20km/h	21-30km/h	31-40km/h	41-50km/h	51-60km/h	61km/h or more
None	6%	4%	8%	0%	0%	0%
Minimal	42%	32%	27%	29%	9%	0%
Minor	49%	55%	54%	55%	56%	40%
Severe	3%	9%	11%	15%	35%	60%



Main results

Table 2 summarizes the proportion for each bicyclist injury within each speed interval of the data. We conducted a multinomial logistic regression to estimate the probability of each injury level using the motorist speed (km/h) as the input factor. The estimated probabilities are visualized in Figure 1.

When describing the data and the model, with a focus on the "none" category of injury (i.e., "no injury") with motorist speeds of less than 40 km/h, the proportion of cyclists that do not have an injury is low (4%-8%). Meanwhile, bicyclists are always injured when motorists exceed speeds of 40 km/h.

From Figure 1, there are downward trends in both the probability of no injury (red) and the probability of minimal injuries (green). As motorist speed increases, the probability of zero or minimal injury decreases, but the probability of minor and severe injuries increase. Minor injuries (blue in Figure 1) require medical attention at a hospital. They may include sprains, breaks, and mild traumatic brain injuries. Around 50% of bicyclists have a minor injury with any speed less than 60 km/h (Table 2). When motorist speeds increase to 60 km/h or more, minor injuries decrease to 40% and are replaced by severe, including fatal, injuries. Figure 1 also shows that the probability of severe injuries has an upward trend and the probability of minor injuries has a peak at around 40km/h.

At more than 50km/h, we see severe (i.e. major and fatal) injuries (purple in Figure 1) start increasing sharply. With a severe injury, bicyclists are admitted to hospital for catastrophic injuries. From table 2, we find that the proportion of serious or fatal injuries is less than 1 in 10 when speed is below 30km/h. However, when above 40 km/h, we see this climb to 15%. Between 50-59 km/h, the proportion of severe injuries climb to 35%, and at more than 60km/h, the proportion of severe injuries is 60%.

The multinomial model gives smooth estimates for the probabilities of causing severe injury at motorists' speeds of 30 km/h , 40 km/h, 50 km/h and 60 km/h, which are respectively 8.5% (6.6% – 10.7%), 13% (10-%17%), 19% (14%-26%) and 27% (19%-38%), where the range within the parenthesis indicates the 95% confidence interval of the estimates.

Current residential speeds limits in London requires motorists to stay within our speed range of 40 – 50 km/h. According to Table 2, when a motor vehicle travels at 51 - 60 km/h (as compared to 41 - 50km/h), the odds of having a severe injury compared to non-severe (none, minimal or minor) injury is $\frac{35/65}{15/85} \approx 3{:}1$. When a motor vehicle travels at 41 - 50 km/h (as compared to 31 - 40km/h), the odds of having a severe injury compared to non-severe (none, minimal or minor) injury is $\frac{15/85}{11/89} \approx 1.5{:}1$. Meanwhile, at 50 - 60 km/h, 35% of injuries require hospitalization, and 90% require medical attention at a hospital. Therefore, it is necessary to keep the motorist speed under 50km/h to avoid severe injury level. However, keeping motor vehicle speeds under 40km/h can reduce the odds of having severe injuries from 19% to 13%. Another important fact is that bicyclists are <u>always</u> injured when motorists exceed speeds of 40 km/h (None=0% in Table 2).

Therefore, we suggest that the motorist speed should be kept under 40km/h for its low risk/probability of severe injuries and the relatively high proportion of causing "none" injuries.

Do other factors matter?

This collision data also provides other factors such as the age, gender of a bicyclist or a motorist, weather conditions (i.e. clear, rain, wind), time of day, bicyclist or motorist condition (e.g. normal, substance use, distracted), riding a bike on the sidewalk or the road, collision location (e.g. at intersection, driveway, non-intersection). Interestingly, the influence of the other factors becomes trivial compared to speed when we tried to include these factors in the multinomial model. No other factors are statistically significant at an alpha (error rate) of less than 5%.

Conclusion:

Factors that have a direct impact on injury may include the motorist's speed, bicyclist's speed, impact speed, the change in direction during impact, and the speed limit. *However, the speed limit is the dominant factor*. When there are municipal efforts to increase the number of people on bikes and kilometres travelled, we want to prioritize safety. When it comes to speed and collisions, there's only one variable that we can address and directly modify by policy-makers: the speed limit. The speed limit influences compliance with the speed limit, and motorists reduce travel speeds. We have the data on travel speeds and injury. Prioritizing vulnerable road users and amending the by-law to reduce residential speed limits under 40 km/h - such as 30 km/h - is the only option to achieve goals set by London's multiple strategic planning documents on road safety.