

# Collisions in Relation to School Safety Zones in Toronto \*

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This paper reports our analysis of motor vehicle collisions in Toronto, Canada, and its relationship with the presence of school safety zones. Data were obtained from the City of Toronto open data website, as well as the City of Toronto Transportation Services department, and 311 Toronto.

*Keywords:* crash, motor vehicle collisions, schools, spatial analysis

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## Introduction

## Background

## Predictions

The research question asks if there is a direct relationship between collisions involving pedestrians and the presence of school safety zones. Due to the proven efficacy of safety zones, it is predicted that these areas will experience fewer collisions than areas without safety zones. Conversely, it is probable that areas that experience more collisions than others will be found to lack adequate safety features.

Several factors may affect the reliability and accuracy of the data analysis conducted. If a safety zone was recently established in an area, it is possible that a significant number of collisions occurred there to necessitate its creation, skewing the number of events in this zone. This is solved by comparing the zone implementation date to the collision event date, both of which are fields present in the collisions shapefile. As well, areas with a higher population density and greater traffic flow are more likely to have collisions. The active hours of a safety zone are also of relevance. Some safety signs are turned off after school hours, raising the speed limit to facilitate greater traffic flow. If collisions occurred at this time, this would give the appearance of greater collisions in a safety zone, when in fact the zone was not active. Fortunately, collision time and zone active hours are recorded in the collision and safety zone shapefiles, respectively, solving this issue. Finally, other roadway conditions play a role in collision frequency, such as lighting, road state (icy, dry, etc.), and visibility. If little correlation is found between safety zones and collisions, perhaps one of these fields will prove more significant.

## Study area

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Figure 1: Counties in Kentucky, USA

**Data**

**Methods**

**Results**

## Analysis

## Conclusion

## References

311 Toronto (2019). Toronto District School Board Locations. Retrieved from <https://open.toronto.ca/dataset/toronto-district-school-board-locations/>

CAA polling (2019). School Zone Safety Statistics. CAA. <https://www.caa.ca/schoolzonesafety/statistics/>

City Planning, City of Toronto (2021). Ward Profiles, 2014-2018 Wards. Retrieved from <https://open.toronto.ca/dataset/ward-profiles-2014-2018-wards/>

Information & Technology, City of Toronto (2021). Address Points (Municipal) - Toronto One Address Repository. Retrieved from <https://open.toronto.ca/dataset/address-points-municipal-toronto-one-address-repository/>

Parachute (2016, June). Unintentional Injury Trends for Canadian Children. Retrieved from <https://parachute.ca/wp-content/uploads/2019/06/SKW-Trend-Report.pdf>

Rocha, R., & Pelley, L. (2020, October 6). Toronto drivers speeding near schools 21% of the time, city data reveals. CBC. <https://www.cbc.ca/news/canada/toronto/toronto-drivers-speeding-near-schools-21-of-the-time-city-data-reveals-1.5751299>

Sun, D., El-Basyouny, K., Ibrahim, S., & Kim, A. M. (2018). Are school zones effective in reducing speeds and improving safety? Canadian Journal of Civil Engineering, 45(12), 1084–1092. <https://doi.org/10.1139/cjce-2018-0060>

Toronto Police Services (2020). Motor Vehicle Collisions involving Killed or Seriously Injured Persons. Retrieved from <https://open.toronto.ca/dataset/motor-vehicle-collisions-involving-killed-or-seriously-injured-persons/>

Transportation Services, City of Toronto (2020). School Safety Zone Watch Your Speed Program – Detailed Speed Counts. Retrieved from <https://open.toronto.ca/dataset/school-safety-zone-watch-your-speed-program-detailed-speed-counts/>

Transportation Services, City of Toronto(2021). School Safety Zone Watch Your Speed Program – Locations. Retrieved from <https://open.toronto.ca/dataset/school-safety-zone-watch-your-speed-program-locations/>

Transport Canada (2020, December 1). Canadian Motor Vehicle Traffic Collision Statistics: 2018. Government of Canada. <https://tc.canada.ca/en/road-transportation/motor-vehicle-safety/canadian-motor-vehicle-traffic-collision-statistics-2018>