Dangerous Driving Behaviours Near Schools and Child Pedestrian-Motor Vehicle Collisions

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INTRODUCTION

- Dangerous driving behaviours have not been well described
- Some observational data re: speeding, stop-sign violations near schools or parent-perceived dangerous driving using surveys
- There is little known regarding the relationship between driving behaviours and actual child pedestrian motor vehicle collisions (PMVCs)

OBJECTIVES

- **Objective 1**

To describe dangerous driving behaviours related to parking and dropping children off in the morning at schools

- **Objective 2**

To investigate the association between these behaviours and police-reported child PMVC rates near schools., controlling for the built environment and school social disadvantage

METHODS

- Cross-sectional observational study
  - 118 regular program kindergarten-grade 6 schools in Toronto, Canada

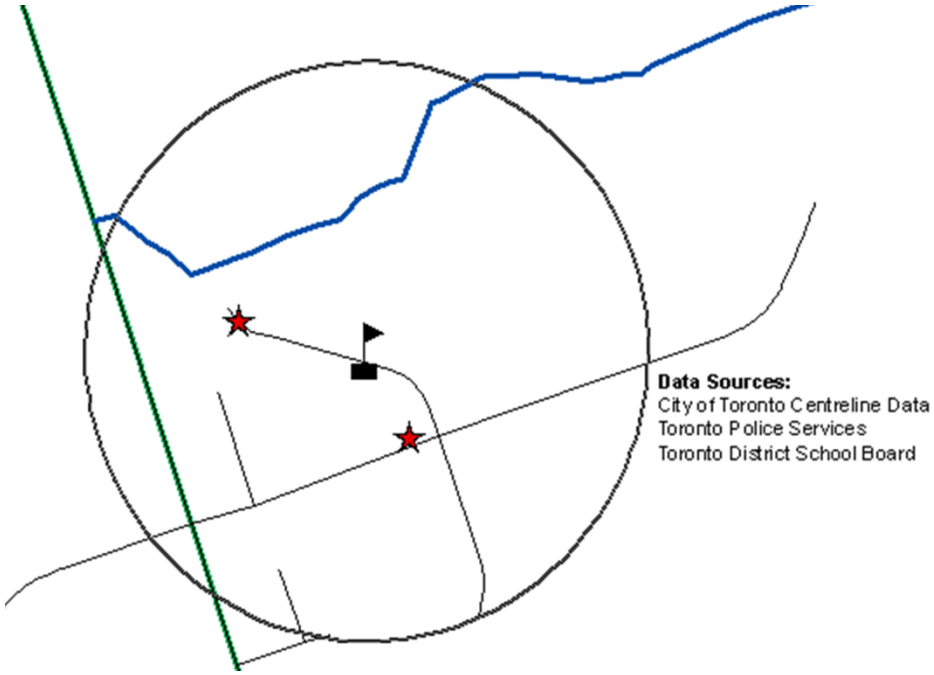
- Trained observers in 2011, morning drop off time
  - observed counts of walking to school
  - dangerous driver behaviour checklist
  - school site survey

METHODS

- **Outcome**
  - Police-reported child PMVC rates, 2001-2011, ages 4-12 during school travel hours, within 200m of the school
    - Denominator: Number of children observed walking to school
- **Exposure**
  - Number of most frequent dangerous driving behaviours observed
- **Covariates:**
  - Built environment: Site survey and City of Toronto databases
  - SES: School index of social disadvantage (Learning Opportunities Index (LOI)) from the Toronto District School Board

METHODS

- Analysis: Straight line buffer of 200m around schools
- All collisions and built environment features were mapped within buffer

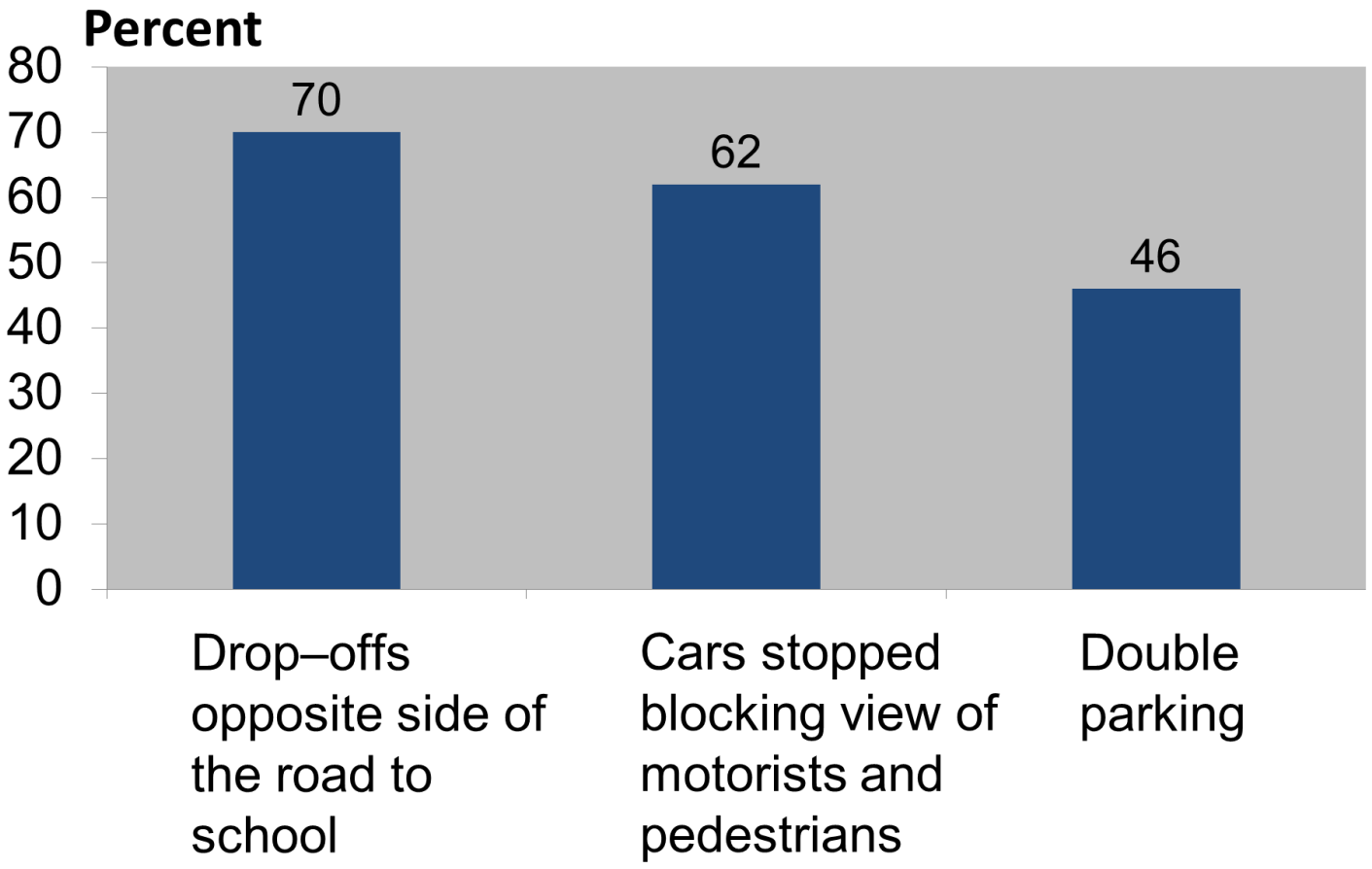


- Poisson regression used to model dangerous driving behaviours and child PMVC rates controlling for the built environment and SES

RESULTS

- 411 PMVCs near schools; 45 during school travel time

Dangerous Driving Behaviours Near Schools (n = 118)



Variables tested for inclusion in multivariate model

	N (%) Mean (SD)
Outcome	
Child school travel time collisions within 200m of school	2.5/10,000 children walking/year (SD ± 5.60)
Exposure	
Total dangerous driving behaviours	2.25 (SD ± 1.15)
Explanatory Variables	
Traffic Congestion (yes/no)	76 (64.5%)
Dangerous mid-block crossings observed (yes/no)	70 (59.3%)
Number of intersections	9.3 (SD ± 6.7)
School crossing guard observed (yes/no)	45 (38.1%)
Front of school speed limit >40 km/hr (yes/no)	9 (7.6%)
Central city status (yes/no)	39 (33.1%)
Walkway/trail (yes/no)	21 (17.8%)
Major and minor arterial road length (meters)	160 (SD ± 205)
LOI (social disadvantage)	0.50 (SD ± .28)

The relationship between dangerous driving behaviours and child pedestrian-motor vehicle collisions during school travel times (n =45)

	Unadjusted IRR (95% CI)	Adjusted IRR (95% CI)
Outcome:		
Child school travel time collisions within 200m of school		
Exposure		
Total dangerous driving behaviours	**1.36 (1.04, 1.80)**	**1.45 (1.02, 2.07)**
Explanatory Variables		
Major and minor arterial road	**1.29 (1.14, 1.46)**	**1.27 (1.13, 1.44)**
LOI (social disadvantage)	**4.19 (1.36, 12.92)**	**2.99 (1.03, 8.68)**

STRENGTHS AND LIMITATIONS

- **Strengths**
  - Multivariate analysis to examine the relationship between directly observed dangerous driving behaviours with police-reported child PMVCs
  - Generalizability
- **Limitations**
  - Small number of collision events
  - Assumption that driving behaviour consistent over the 12 year collision period
  - Dangerous driving behaviours may have been underestimated
  - Did not measure other behaviours e.g. driver distraction, failure to stop at stop signs

DISCUSSION

- More dangerous driving near schools with higher child PMVC rates and
  - Higher social disadvantage and higher speed roads
- For drivers dropping children off
  - Encourage travel mode shift
  - Built environment modifications around school (e.g. designated drop offs etc.)
- For drivers “passing through”
  - systems approach: legislation, enforcement, education and the road environment (WHO)[1]

1 World Health Organization. World report on road traffic injury prevention. Geneva, Switzerland: 2004.

DISCUSSION

- Impact on City of Toronto and school board policies
  - TDSB EcoSchools program, Ontario EcoSchools
  - School Zone Safety Group, City of Toronto
  - Metrolinx Active and Sustainable School Transportation Hub
  - Green Communities Canada, Safe Routes to School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