RISKY DRIVER BEHAVIOURS AT SCHOOL DROP-OFF TIME AND ACTIVE SCHOOL TRANSPORTATION IN CHILDREN ACROSS CANADIAN URBAN/SUBURBAN AREAS

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INTRODUCTION

- Active school transportation (AST i.e. walking, cycling, scootering etc) has decreased in Canada over the past 20 years
- AST is an important source of physical activity
- It is important to examine the factors contributing to this decrease in AST
- Our previous work looked at the relationship between the built environment (BE) and AST


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Influence of social and built environment features on children walking to school: An observational study☆

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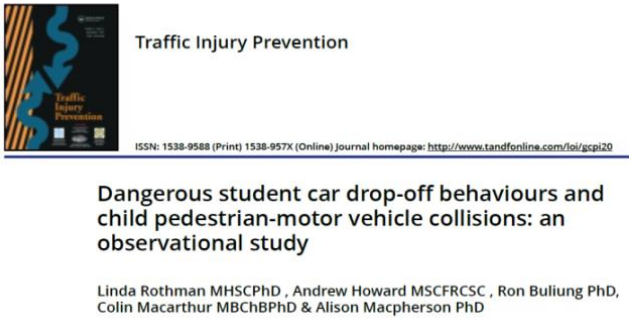
INTRODUCTION

- Risky driving behaviours around schools during drop off times could also potentially affect AST
- Our work has included 2 cross-sectional studies
  - Risky driving behaviours were associated with a 45% increase in child pedestrian collision rates during school travel times (2011)
  - Several BE features around schools were identified as risk and protective factors related to risky driving (2015)



Traffic Injury Prevention

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Dangerous student car drop-off behaviours and child pedestrian-motor vehicle collisions: an observational study

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Travel Behaviour and Society

journal homepage: www.elsevier.com/locate/tbs

The school environment and student car drop-off at elementary schools

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GRANT OBJECTIVES

1. To examine within and across large Canadian centres (Calgary, Vancouver, Montreal, Toronto, Peel, Surrey and Laval) the built environment and
    a) Child and adolescent active transportation
    b) Pedestrian and cycling injuries
2. To identify implementation strategies for BE change at the municipal level to encourage active transportation

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OBJECTIVE

- To examine the association between AST and risky driver behaviours controlling for the built environment in Canadian urban and suburban centres

METHODS: Sample

- JK-8, regular program schools from each of the centres, data collected spring 2018, 2019
- Quadrants created for stratified selection by:
  - Socioeconomic status (i.e. Census ATLICO)
  - Walk Score (proximity to amenities)

- Vancouver (100% schools)
- Calgary (93% of schools)
- Toronto and Montreal randomly sampled within quadrants
- Laval (n = 12, more schools to be added in 2019)
- Surrey (all schools to be added in 2019)

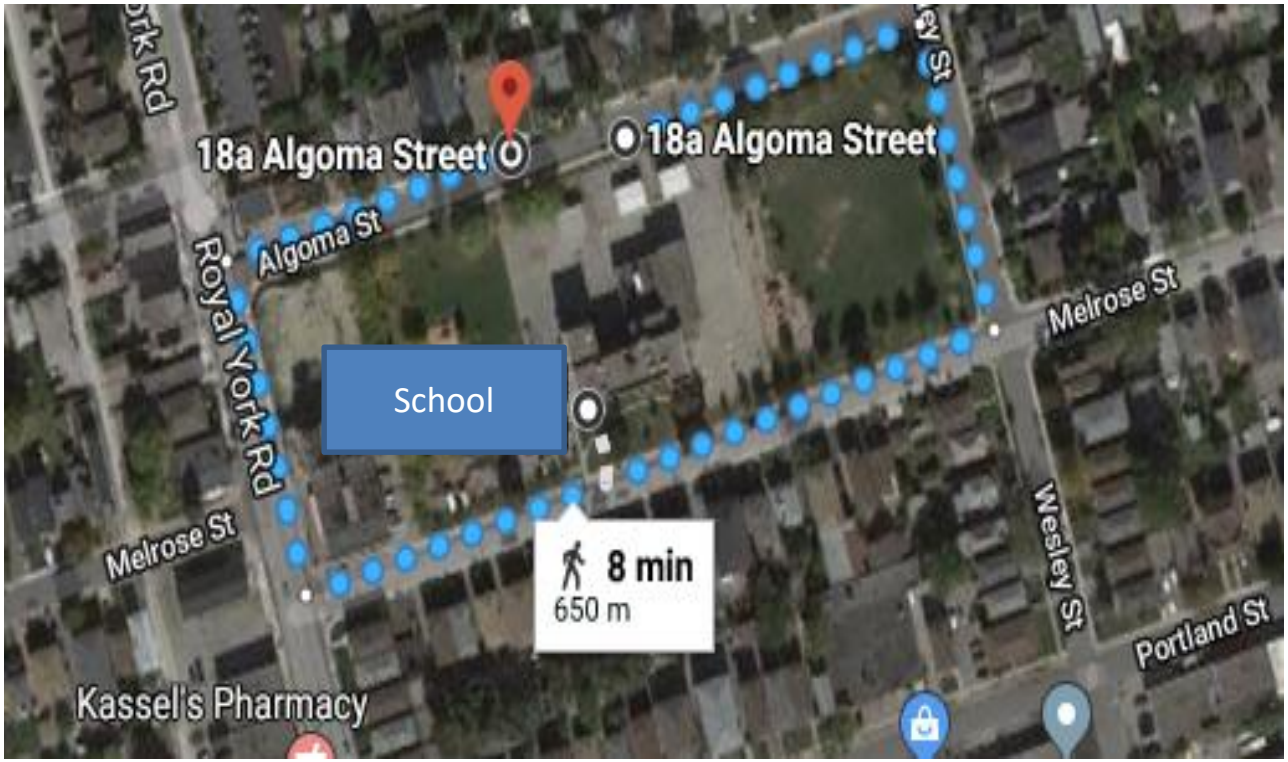
METHODS: Data Collection

- Conducted by trained observers
- Single day of data collection at each school in May, June, 2018, 2019
- During the morning drop-off period
- Travel mode counts
    - 2 observers counted children walking, biking, scootering/rollerblading and being driven to school
- Driver behaviour checklist
- Site Survey

METHODS: Data Collection

- BE Characteristics
  - Site survey around school perimeter

School Site Audit



METHODS: Statistical Analysis

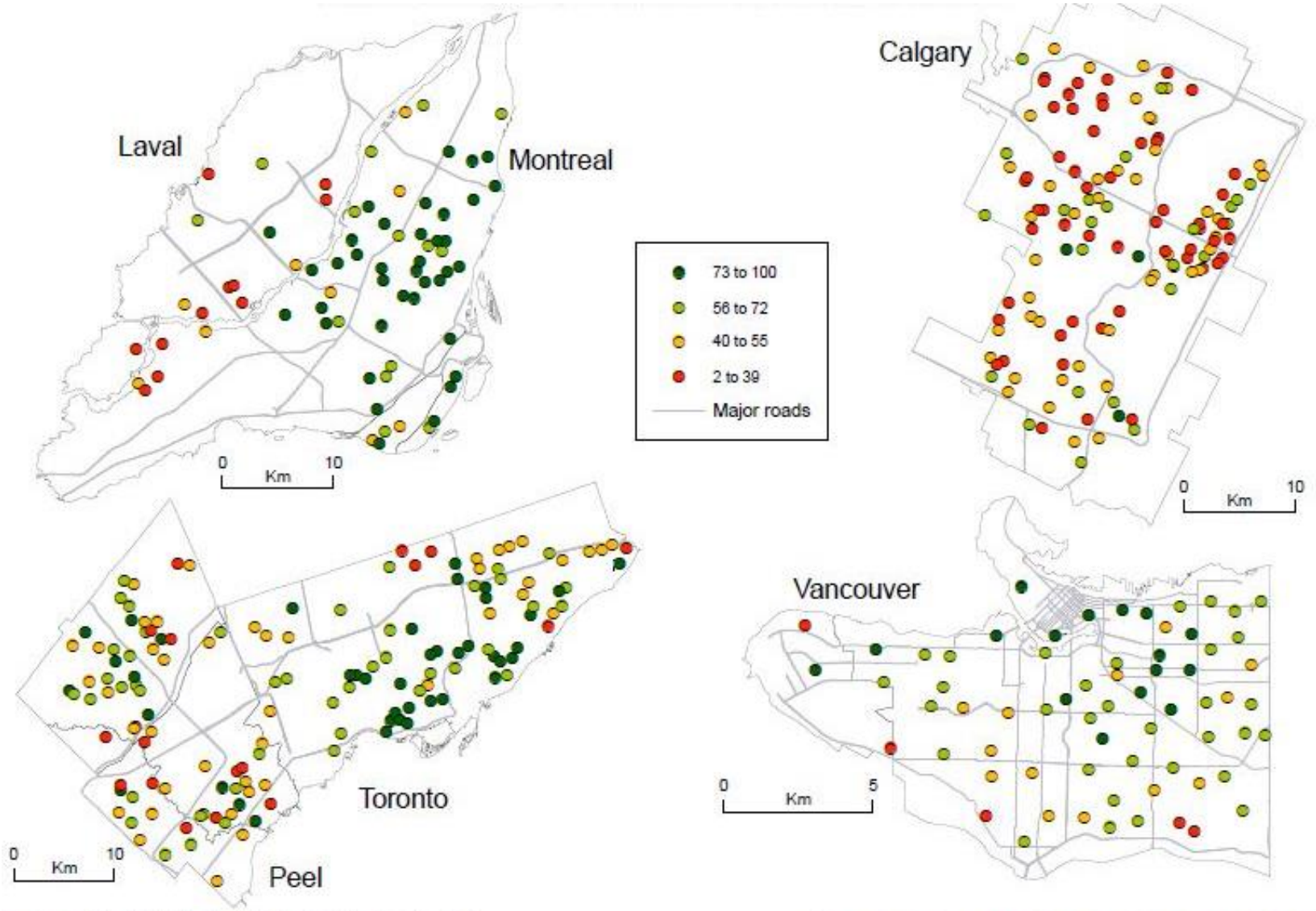
- **Outcome:** **%** Active School Transportation
- **Exposure:** Number of risky driving behaviours seen at least once (1-9)
- **Correlates:** Social and BE characteristics
- **Model:**
  - Random effects (centre), beta regression analysis (proportion outcome)
  - Odds ratios and 95% CI
  - **Preliminary Results**

PRELIMINARY RESULTS

Proportion of AST within Different Centres

AST Mode	Overall (n = 411)	Calgary (n = 125)	Montreal (n = 72)	Peel (n = 71)	Toronto (n = 76)	Vancouver (n = 67)
Mean proportion overall (range)						
Walking	49.8% (2.0-98.9)	33.9% (11.4-69.6)	59.1% (19.8-95.0)	50.4% (7.0-84.7)	61.1% (21.5-98.9)	56.0% (20.4-81.9)
Cycling	4.6% (0-28.5)	7.7% (0-28.5)	3.7% (0-22.7)	3.1% (0-17.9)	2.2% (0-14.1)	3.8% (0-25.4)
Other AST	1.7% (0-20.6)	2.2% (0-20.6)	1.8% (0-17.1)	0.9% (0-8.6)	1.4% (0-9.5)	1.9% (0-12.7)
Total AST	**56.0% (2.0-99.2)**	**43.8% (16.5-9.6)**	**64.6% (19.8-95.6)**	**54.4% (11.6-86.3)**	**64.7% (24.4-99.2)**	**61.7% (27.5-84.9)**

Proportion of AST in Canadian urban/suburban centres, 2018



Sources : ©The CHASE project, 2018 ; Statistics Canada, 2016.

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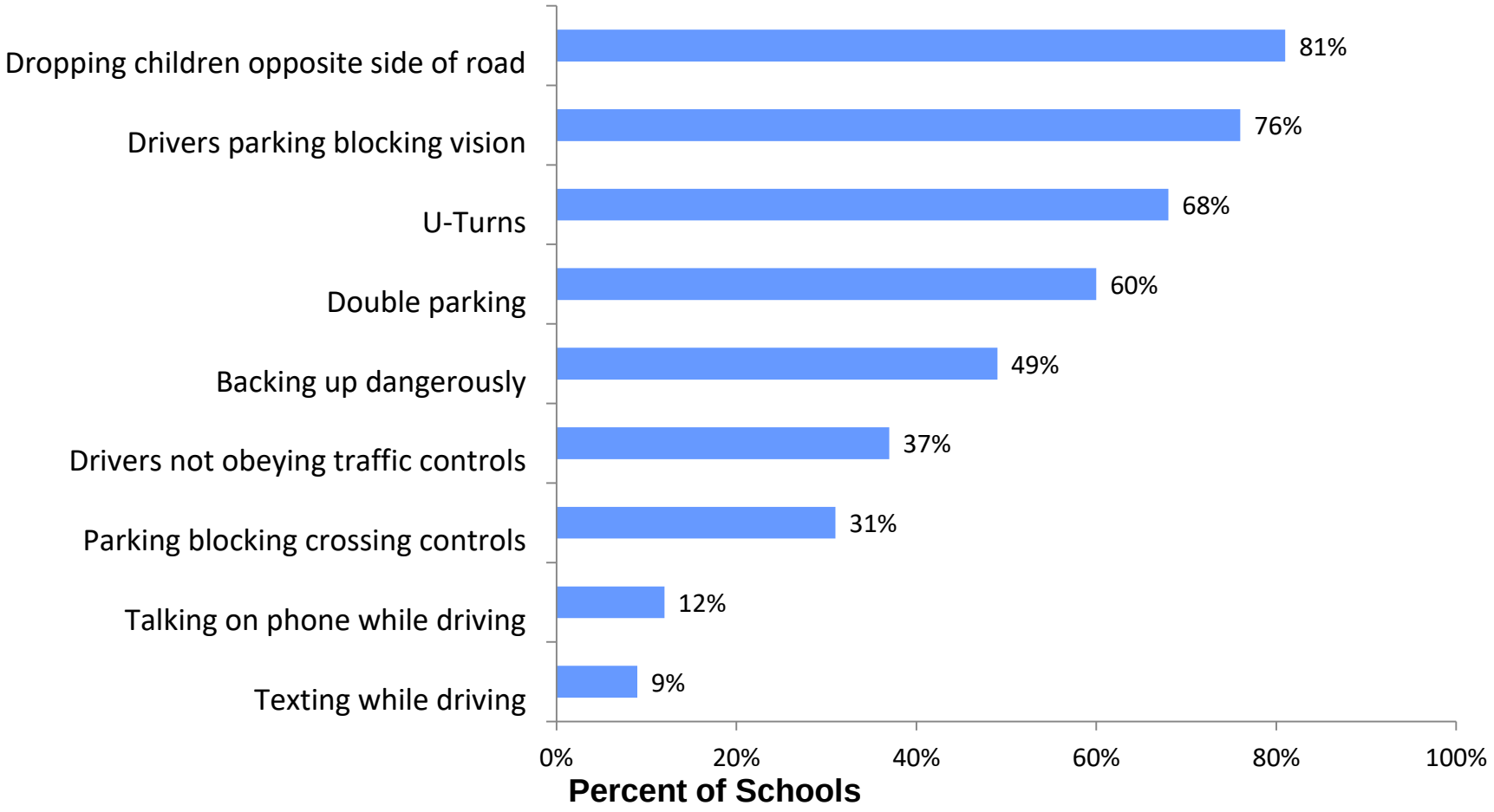
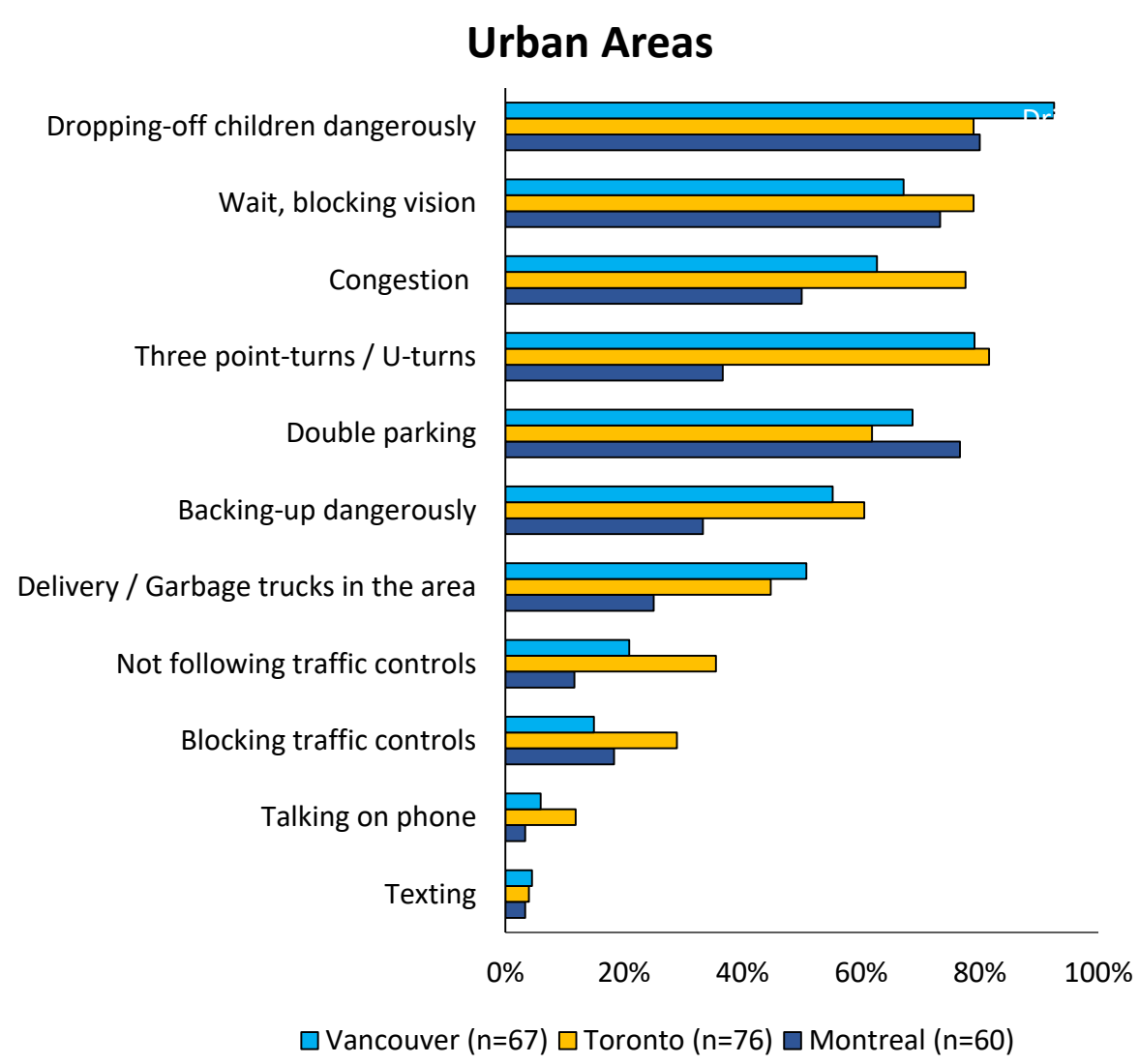
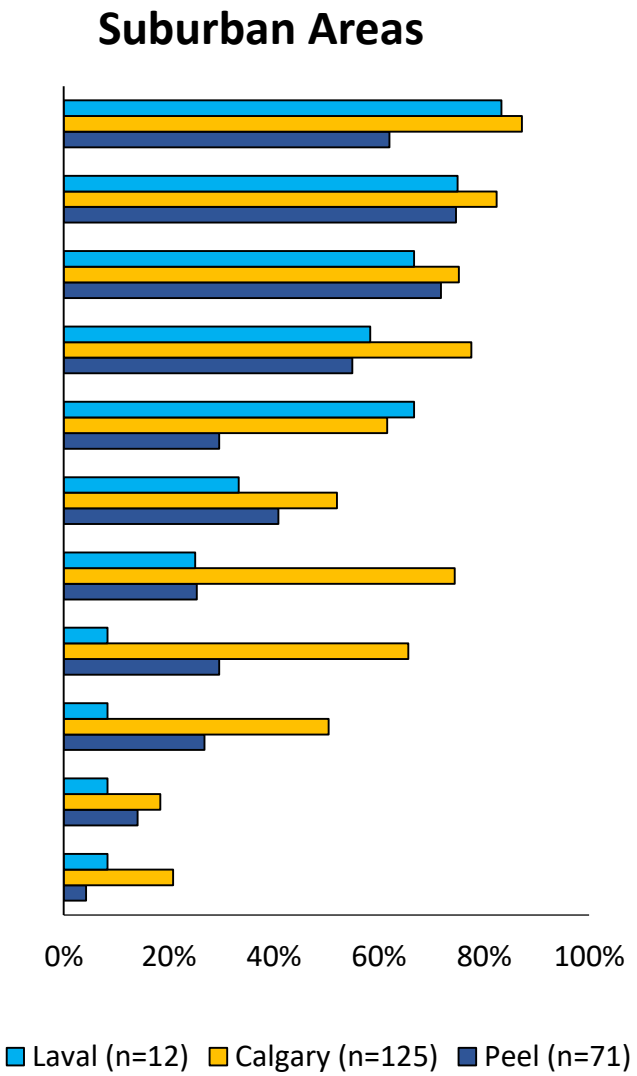
Risky Driving Behaviours (n = 411 schools)

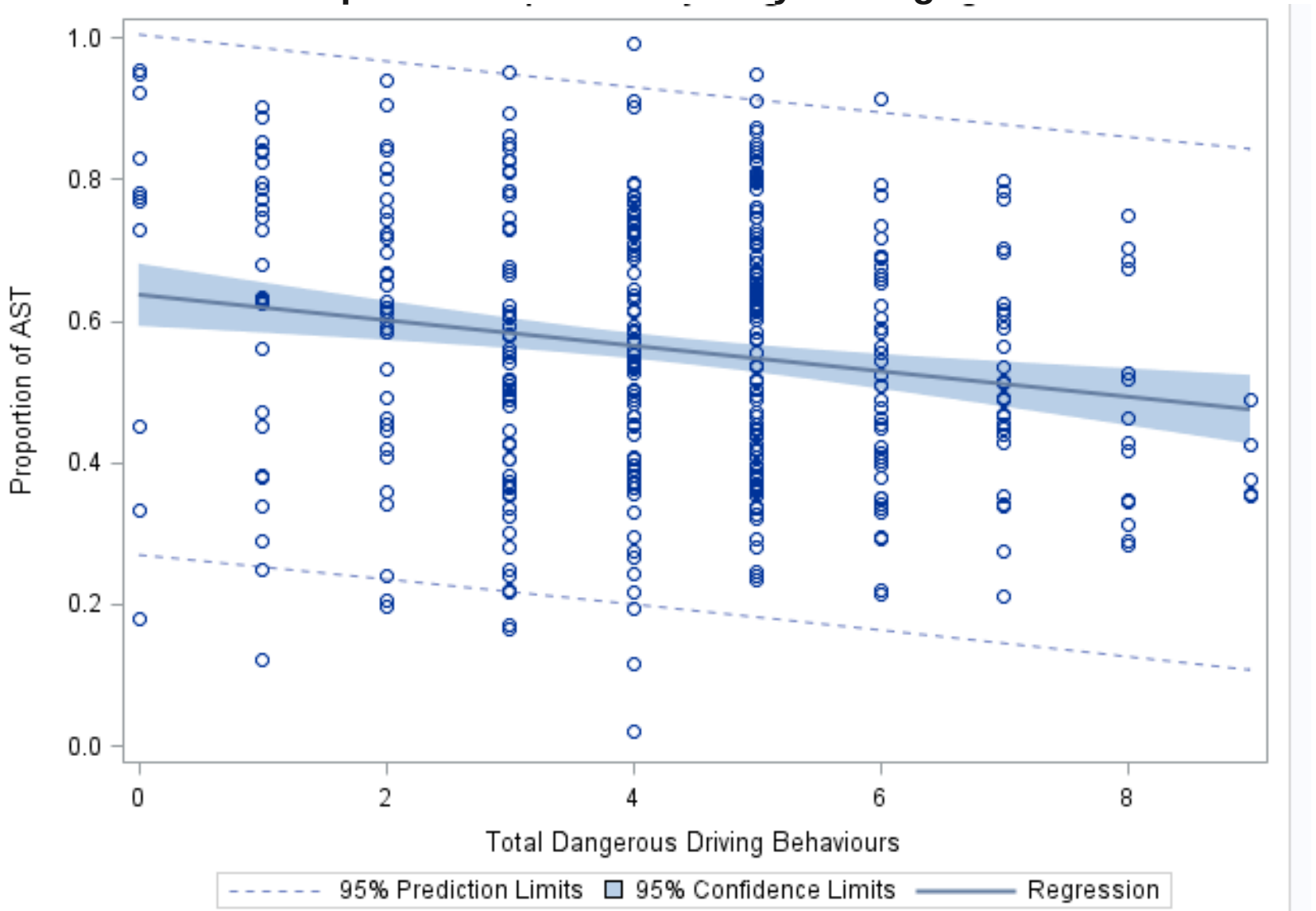


Risky Driver Behaviours





Proportion of AST and Risky Driving Behaviours

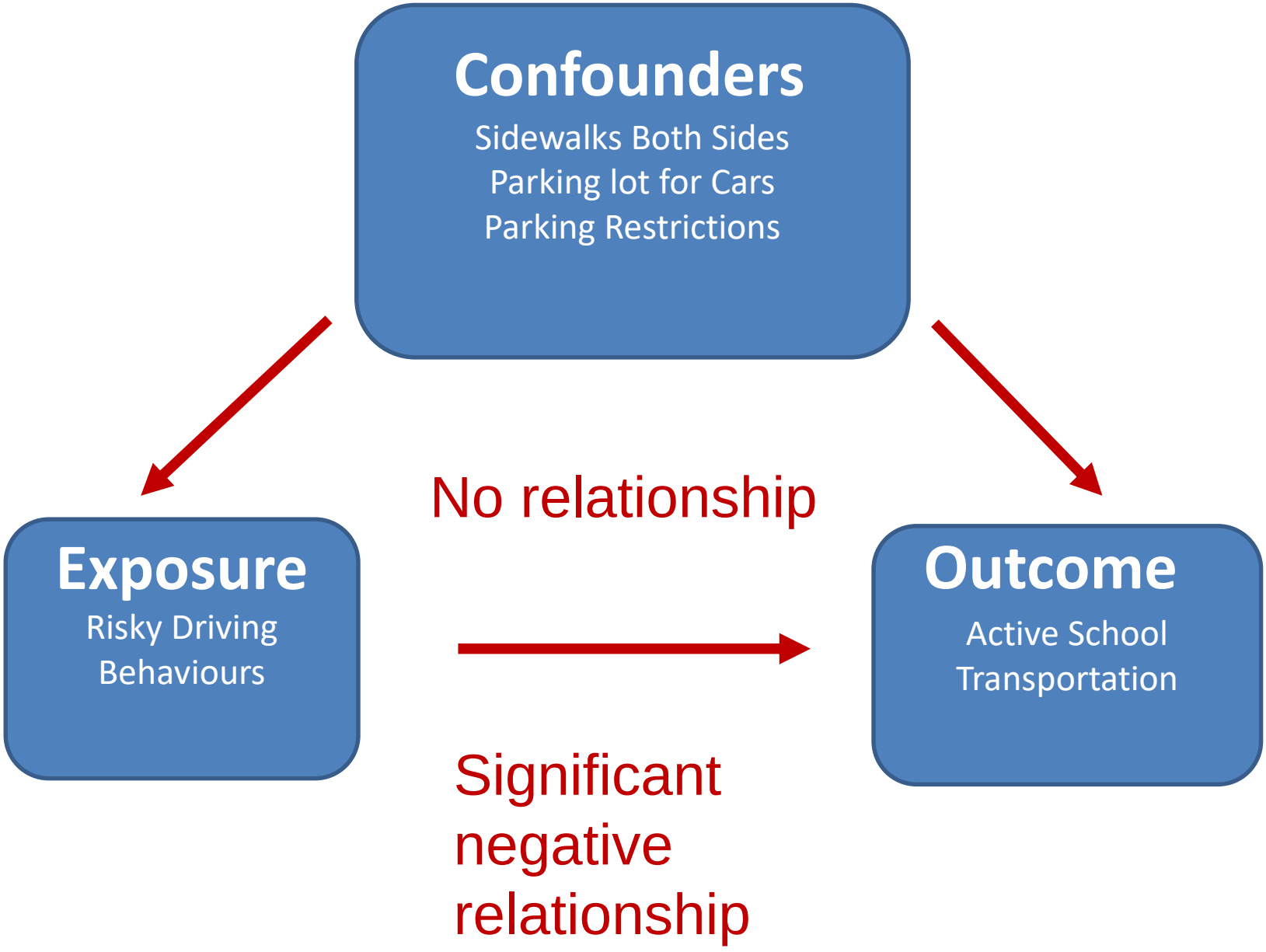


Unadjusted odds ratio: 0.93, 95% CI 0.89, 0.96

PRELIMINARY RESULTS Multivariable Analysis (N = 411)

	Odds Ratio (95% Confidence Interval)
Outcome % AST	-
Exposure Total dangerous driving behaviours (1 to 9)	**0.97** **(0.94, 1.01)**
Built Environment Traffic calming device - % of street segments bordering school	1.05 (0.81, 1.35)
Bike Infrastructure - % of street segments bordering school	1.09 (0.85, 1.39)
Sidewalks both sides **- % of street segments bordering school**	**1.53** **(1.17, 2.01)**
Parking restriction signs **-% of street segments bordering school**	**1.39** **(1.01, 1.91)**
Child and school specific marking - % of street segments bordering school	1.07 (0.81, 1.43)
Designated car drop off - % of street segments bordering school	1.11 (0.80, 1.53)
Presence of parking lot for cars (y/n)	**1.34** **(1.10, 1.64)**
Adjacent Schools (y/n)	1.13 (0.98, 1.30)

Bold = significant


Confounders
Sidewalks Both Sides
Parking lot for Cars
Parking Restrictions
No relationship
Exposure
Risky Driving
Behaviours
Outcome
Active School
Transportation
Significant
negative
relationship

PRELIMINARY RESULTS Univariate Analysis

	Calgary (n = 125)	Montreal (N =72)	Peel (n = 71)	Toronto (n = 76)	Vancouver (n = 67)
Outcome % Active School Transportation					
Exposure Total dangerous driving behaviours (1-9)		-		-	
Built Environment Traffic calming device - % of street segments bordering school		+	+		
Bike Infrastructure - % of street segments bordering school		+			
Sidewalks both sides - % of street segments bordering school		+		+	
Parking restriction signs -% of street segments bordering school		+		+	
Child and school specific marking - % of street segments bordering school		+			
Designated car drop off - % of street segments bordering school		+			
Presence of parking lot for cars (y/n)		-			
Adjacent Schools (y/n)		-			

Bold = significant

DISCUSSION

- Risky behaviours were pervasive; most common was dropping children off at opposite side of the road
- There was an significant inverse relationship between risky driving behaviors and AST in the unadjusted analysis, however, once we controlled for BE variables this relationship was no longer statistically significant

CONCLUSIONS

- The BE is related to both risky driving behaviours and AST
- Changes to the BE could have an impact on both risky driving around schools and AST

Next steps

- To *further* examine the relationships between
  - BE and risky driving behaviours
  - Child pedestrian motor vehicle collisions and risky driving behaviours

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Thank you

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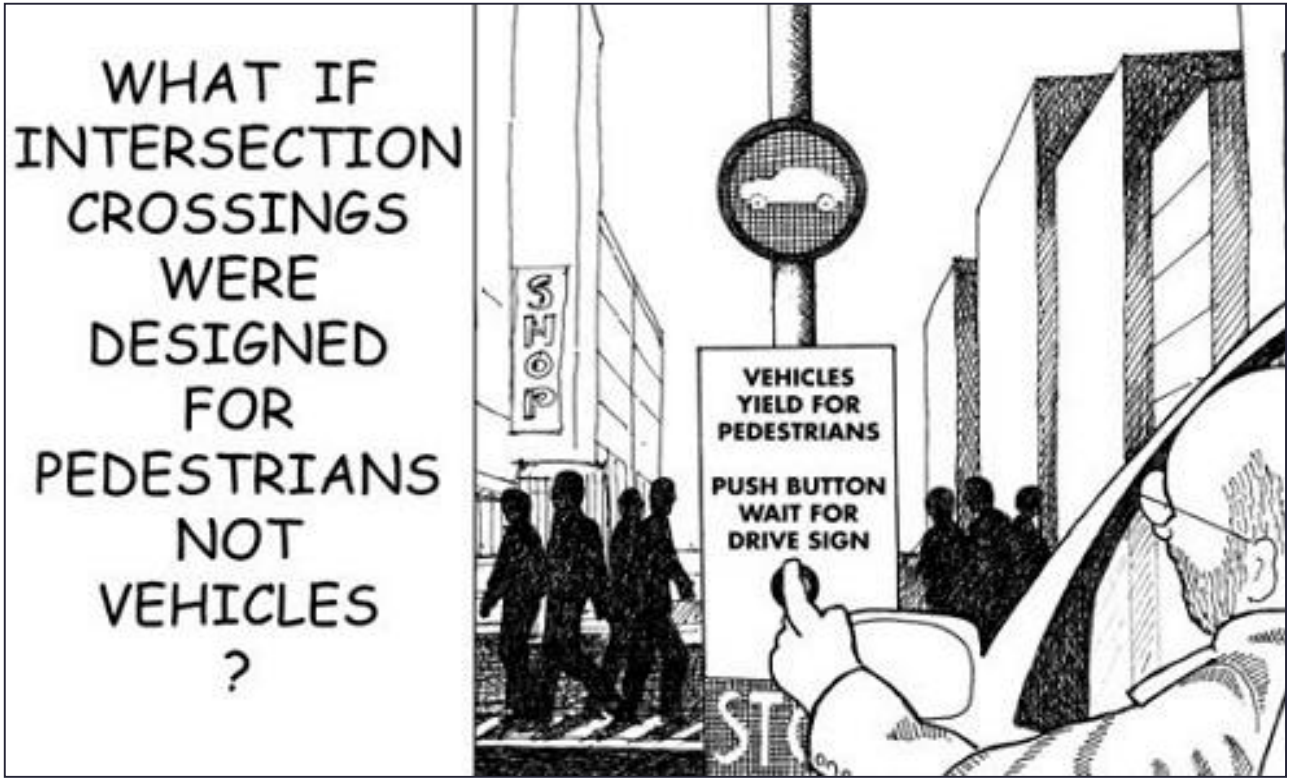
QUESTIONS ?



Source: http://shadeparadenashville.blogspot.ca/2015_08_01_archive.html