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The relationship between motor vehicle speed and active school transportation at elementary schools in Calgary and Toronto, Canada

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BACKGROUND

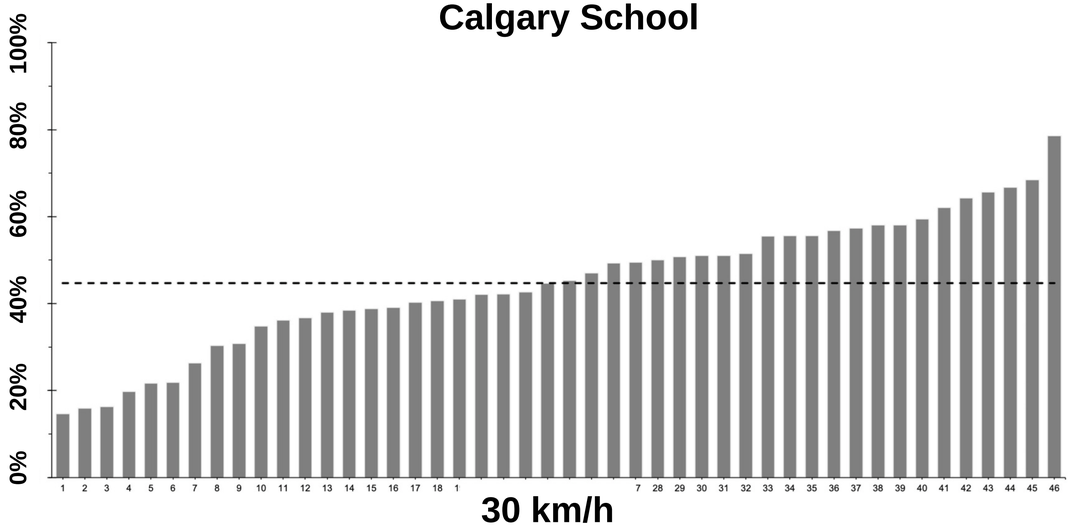
- In Canada, only 1 in 5 children use active transportation to school[1]
- Active transportation increases physical and mental health[2]
- Active transportation is associated with higher exposure to traffic and injury risk[3]
- Parental safety concerns can lead to less child active transportation[4]

- **Aim: To investigate the relationship between vehicle speed and active transportation**

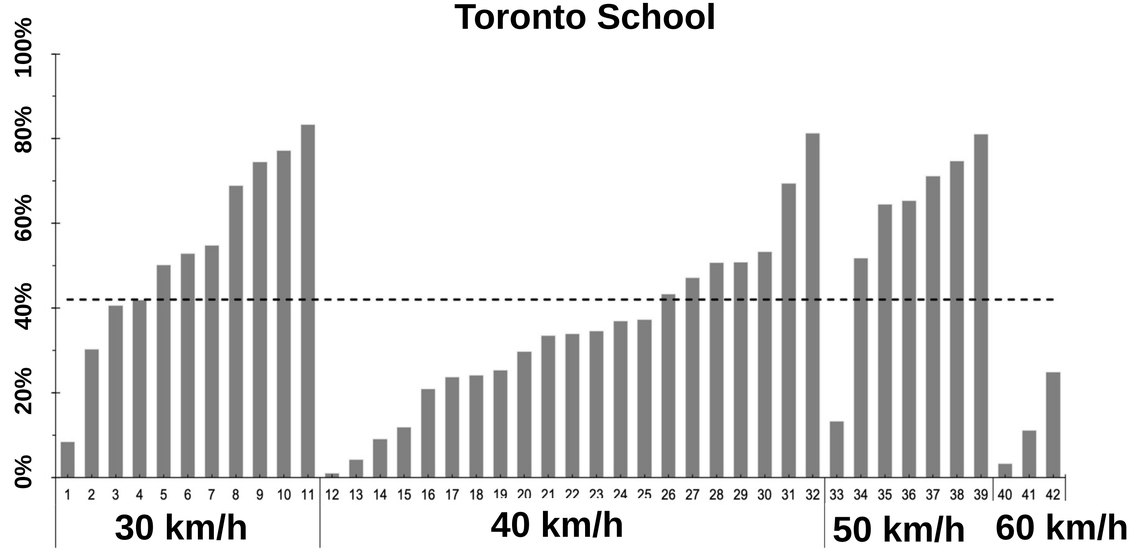
METHODS

- Active transportation counts
  - 20 min before morning bell to 5 min after
  - Single day, in good weather
  - 2 observers per school
- Vehicle speeds
  - Pneumatic tubes were placed in front of school and measured
    - Proportion over 30km/h
    - Proportion over posted limit
    - 85th percentile speed
- Built environment was collected using Google Street View and included:
  - Sidewalks
  - Cycling infrastructure
  - Pedestrian crosswalks
  - Traffic lights
  - Crossing guard
- Multivariable beta regression analysis was conducted

Proportion of vehicles exceeding speeding limit, by Calgary School



Proportion of vehicles exceeding speeding limit, by Toronto School



The dashed line represents the average proportion of vehicles exceeding the speed limit across schools in each municipality

RESULTS

- 88 schools included (Calgary=46, Toronto=42)
- Only 1 speed limit in Calgary (30km/h)
- A range of speed limits in Toronto (30-60km/h)
- Calgary
  - 45% travelling over 30km/h
  - 44% mean active travel
  - 85th percentile speed was 35km/h
- Toronto
  - 72% travelling over 30km/h
  - 64% mean active travel
  - 85th percentile speed was 47km/h
  - 42% exceeded speed limit
- Vehicle speed and active transportation
  - No significant relationship in Calgary
  - For every 1 km/h increase in mean 85th percentile speed in Toronto, the odds of active transportation dropped by 3% (OR: 0.97, 95%CI: 0.95-0.99)

CONCLUSIONS

- No relationship between speed and active transportation in Calgary, due to consistent 30 km/h zones
- Greater speeds in Toronto related to decreased active transportation prevalence
- Reduced speeding may be achieved through reduced posted speed limits, which may encourage more active school transportation

1 - Canadian Fitness & Lifestyle Research Institute (2018). Physical Activity Levels o Canadian Children and Youth.
2 - Faulkner, G. E., Buliung, R. N., Flora, P. K., & Fusco, C. (2009). Active school transport, physical activity levels and body weight of children and youth: a systematic review. Preventive medicine, 48(1), 3-8.
3 - Rothman, L., Howard, A., Buliung, R., Macarthur, C., Richmond, S. A., & Macpherson, A. (2017). School environments and social risk factors for child pedestrian-motor vehicle collisions: A case-control study. Accident Analysis & Prevention, 98, 252-258.
4 - Cloutier, M. S., Bergeron, J., & Apparicio, P. (2011). Predictors of parental risk perceptions: the case of child pedestrian injuries in school context. Risk Analysis: An International Journal, 31(2), 312-323.