HealthyWay CONSULTING

FANSHAWE School of Design

Understanding Active School Travel and the Built Environment: Research, Policy, & Practice

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Content

- Defining Active School Travel (AST) and the benefits
- Current Status of AST in Canada
- AST & the Socio-Ecological Model
- AST & the Built Environment
- AST Interventions
- AST Built Environment Policy

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What is Active School Travel?

Active School Travel is defined as “any mode of human-powered transportation to/from school” [1]

Rolling using Scooters, Skateboards, & Rollerblades

Walking

Biking

Benefits of Active School Travel

Active School Travel is connected with multiple health, social, environmental, and economic benefits at the individual and population level [1]

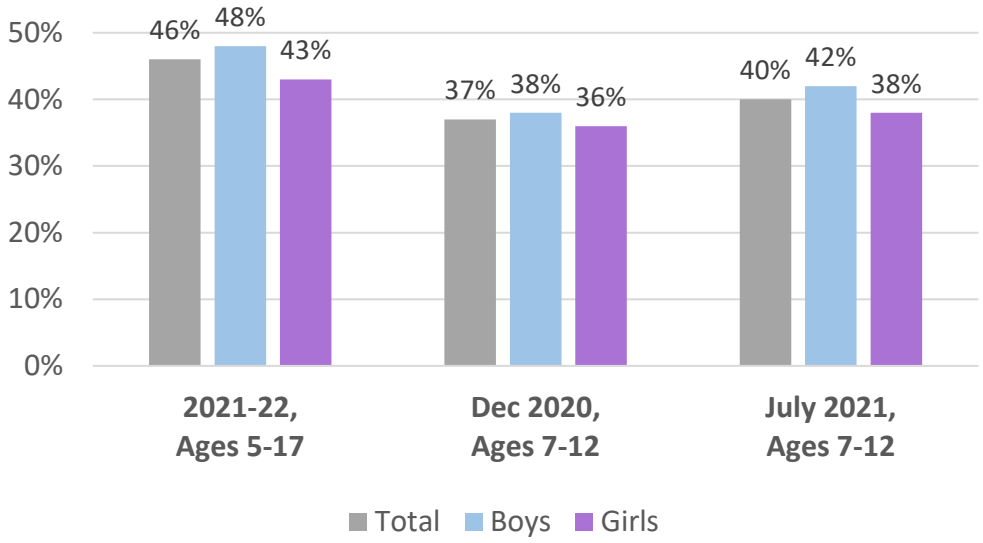
Children who actively travel to school engage in more daily PA [2] & higher energy expenditure [3]

Active School Travel linked to linked to better academic performance [4] & healthy brain development [5]

Children who actively travel exposed to less air pollution [6], reducing risk of asthma, cognitive deficits, & school absenteeism [7]

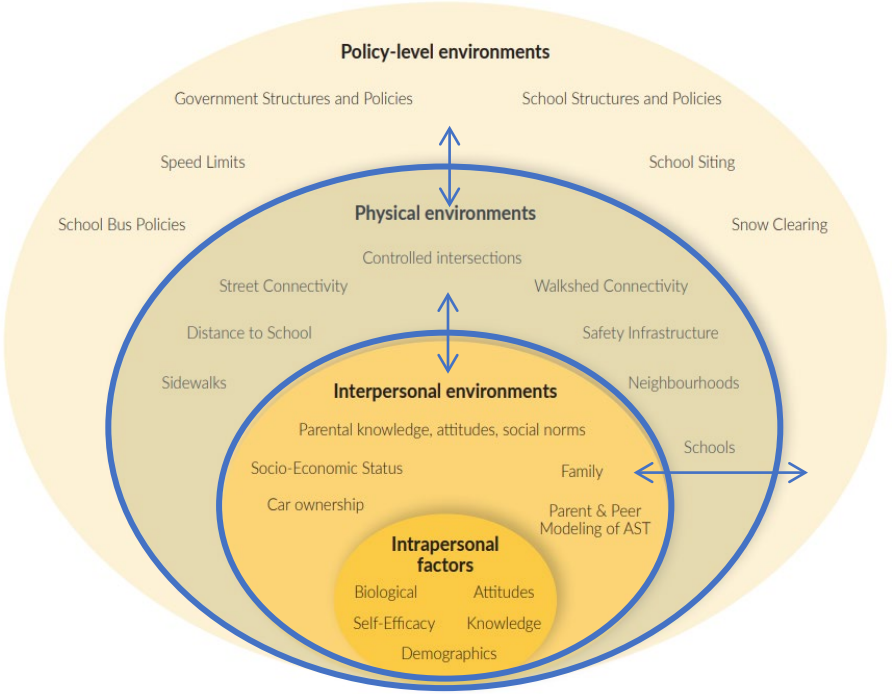
Current Status of AST in Canada

Rates of commuting are based on the proportion of children who commute entirely or partially by active modes (2021-22 for ages 5-17). Ages 7-12 are based on only children who entirely use active modes when traveling to / from school. [8]



The Socio-Ecological Model

Proposes that behaviour is influenced by various factors at different levels of the Socio-Ecological Model



Example of the socio-ecological model adapted from Bronfenbrenner [9]

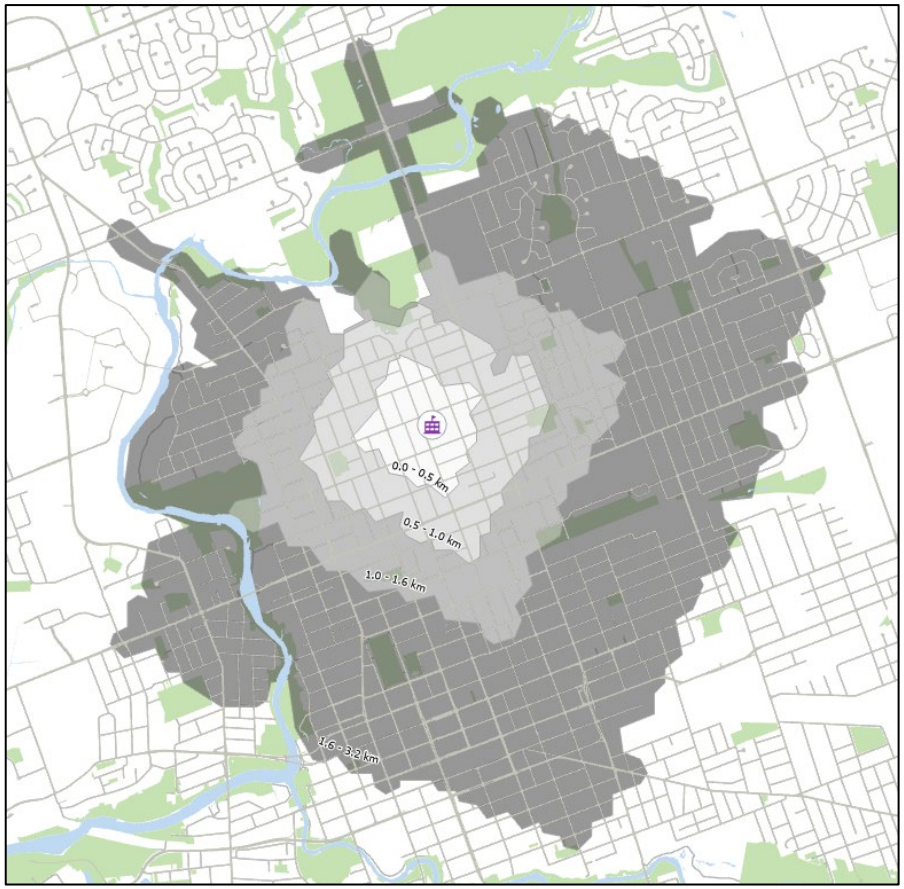
AST & the Built Environment

There are two different aspects of the physical environment that impact AST:

- ***Built Environment:*** Refers to City wide factors that can be measured using municipal data. Think “City building” features like land use zoning, road design, sidewalks, etc. Hard to change in the short term, but can make huge impact on large population.
- ***Engineering:*** Refers to traffic calming and safety features that make a difference locally to residents but hard to measure over large areas.

AST & the Built Environment

Distance



- Definition: Distance refers to the distance between a child's home and their school.
- ↑ distance leads to ↓ in AST
- In North America, from the 37 studies measuring distance, all have a negative relationship between distance between home and school and the odds of walking.[10]
- In New Zealand, odds of walking significantly decline as distance increases. [11]

AST & the Built Environment

Land Use Mix

- Definition: Land use mix refers to the diversity or amount of mix within a community of land uses.
  - Is it mostly residential land use like in suburban neighbourhoods?
  - Are there different types of land uses mixed together?
- Most research shows that if land use mix ↑, active transportation ↑
- AST research does not find the same things, as the relationship between AST and land use mix is weak and inconsistent [10,11]

AST & the Built Environment

Intersection Density

- Definition: Intersection density measures the amount of intersections (3 way or 4 way) that are within a given area.
  - High density: A neighbourhood with short grid like blocks.
  - Low density: A neighbourhood with many cul-de-sacs and significantly fewer four-way intersections
- Research generally shows that as intersection density ↑, AST behaviour ↑ as well [10,11]

AST & the Built Environment

Population Density

- Definition: Population Density (or Dwelling Density) refers to the number of people (or dwellings) located within an area per km^2.
  - Are there a lot of people living in close proximity of each other?
  - Is there a small number of people living closer to each other?
- Research generally shows that as population (or dwelling) density ↑, AST behaviour ↑ as well [10,11]

AST & the Built Environment

Sidewalk Presence

- Definition: Sidewalk presence is a binary variable based on the presence or absence of sidewalks between home and school
- Research generally shows that as sidewalk availability ↑, AST behaviour ↑ as well [10,11]

AST & the Built Environment

Traffic Volume

- Definition: Refers to how busy traffic is along the routes that children are walking.
  - Are the roads major arterials with lots of traffic during pick up / drop off times?
  - Are the roads local streets with minimal traffic?
- Research generally shows that as traffic volume ↑, AST behaviour ↓[10,11]

AST & the Built Environment

Walkability

Frank's Walkability Index:

Uses z-scores to normalize four metrics and combines them into an indices that indicates the walkability of the community, including

- Population Density
- Land Use Mix
- Intersection Density
- Commercial Floor Area Ratio

Findings in research show that as walkability ↑, AST behaviour ↑ [10]

AST & the Built Environment

Perceptions vs. Reality

- There is a different between what parents perceive and what is actually happening in the environment.
- A systematic review by Rothman and Colleagues show that there are different relationships between objective measures of the built environment and perceived measures [10]
- Need to determine which issues can be addressed by interventions, by policy, and then finally changes to the actual built environment [12]

AST & the Built Environment

So What?

By understanding how the environment influences behaviour, we can start addressing some of the barriers to AST through policy and practice!

Intervention

Active School Travel Interventions

Now that we know the built environment factors that influence AST behaviour, we can use the 6 E's of Active School Travel to identify solutions.

Encouragement

Education

Equity

Engineering

Enforcement

Evaluation

AST Interventions

Encouragement: Campaigns

Goal: "Inspiring students, parents and school staff to try active travel modes" (OAST, 2020)

- Campaigns are easy to complete due to the universal nature of them.
- Study of iWalk Day found 101% increase in AST rates and increase sustained for at least 2 weeks [13]
- Study of Nevada Moves Day shows 7% to 17% at intervention schools [14]

JOURNEY IWALK OUTSIDE

SPRING INTO SiS SPRING

WINTER WWD WALK DAY

AST Interventions

Encouragement: Policy

- Policies are hard to implement but their impact can be substantial!
- Faulkner & colleagues found that the policy increased support for AST & presence of written policies at the school level were associated with higher PA [15]

CANADIAN HEALTHY SCHOOL STANDARDS

AST Interventions

Encouragement: Walking School Bus

- Project in Houston, TX found increase in AST (23.8% to 54%) and 36% decrease in driving [16]

AST Interventions

Education

Goal: “Foster the skills, confidence, and awareness to allow students to walk and wheel to school safely” (OAST, 2020)

Research findings:

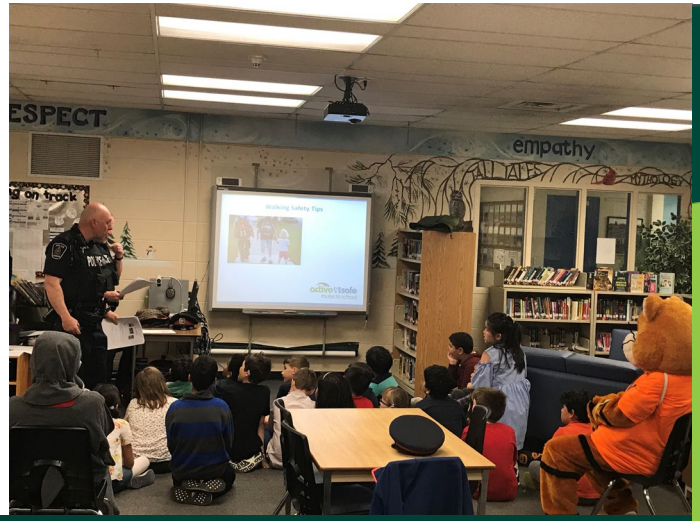
- Road Safety Education programs launched in schools are provided to increase knowledge [17-19]
- Bicycle Education Program shows measurable increase in skill and knowledge [20, 21]

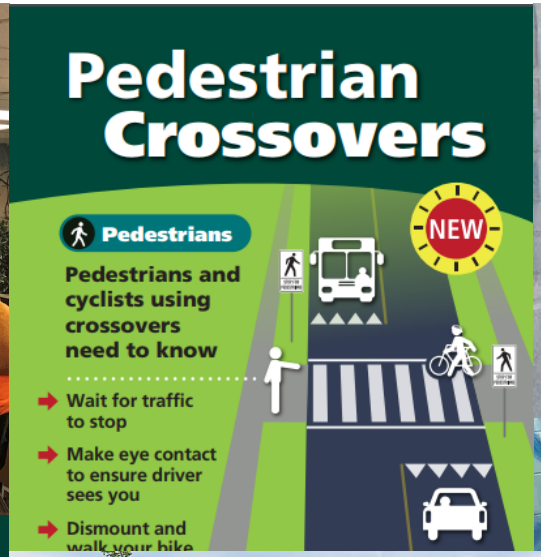


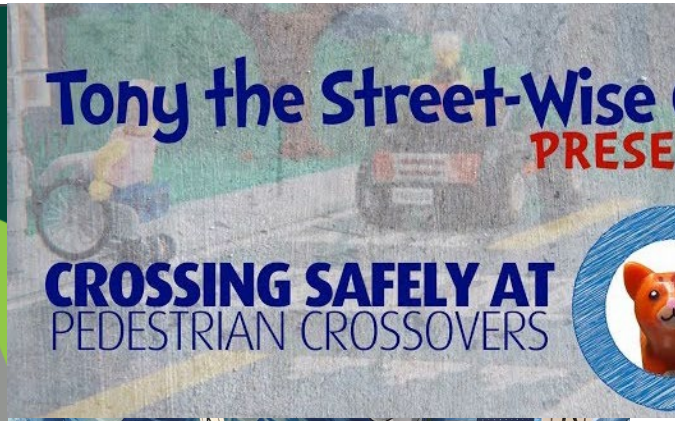


AST Interventions

Education Examples







Prepared for: Sir Arthur Currie Public School

VISION ZERO LONDON

AST Interventions

Engineering

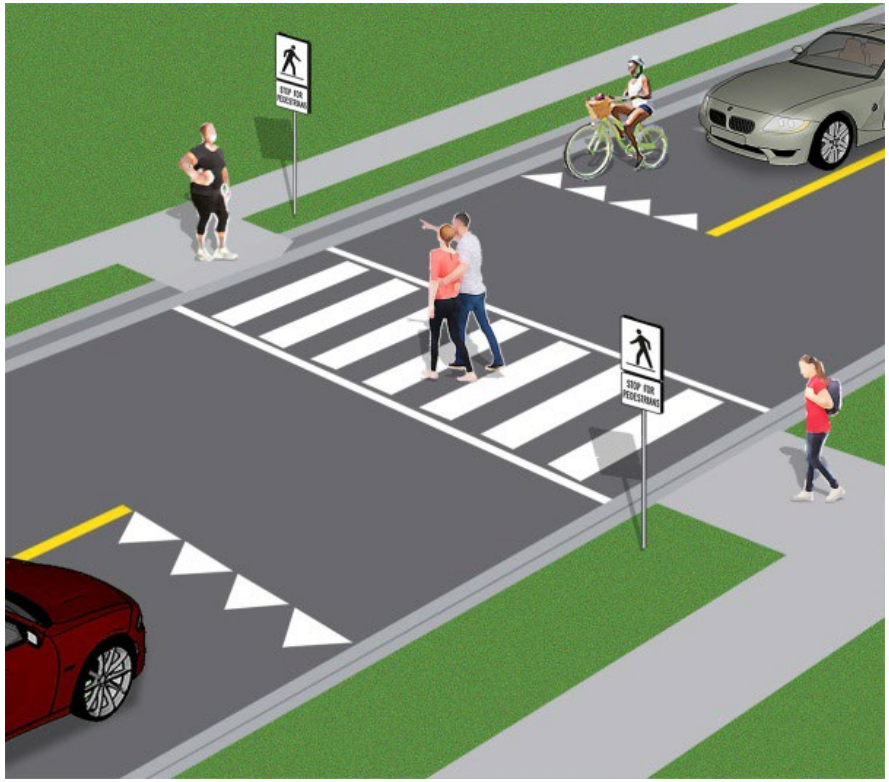
Goal: “Creating safe and accessible school sites, neighbourhoods and routes to school” (OAST, 2020)

Research findings for cumulative changes:

- Engineering changes in New York City decreased injuries per 10,000 people from 8.0 to 4.4 [22]
- Engineering changes in Texas decreased fatalities by 37.1% from 11 to 7 deaths per 10,000 & injuries decreased by 42.5% [23]
- In California, engineering changes correspond to a 50% reduction in collisions in the area around an engineering change [24]

AST Interventions

Examples of Engineering: PXO



AST Interventions

Examples of Engineering: Sidewalk Infills

AST Interventions

Examples of Engineering: Connecting Paths

AST Interventions

Examples of Engineering: Speed Cushions

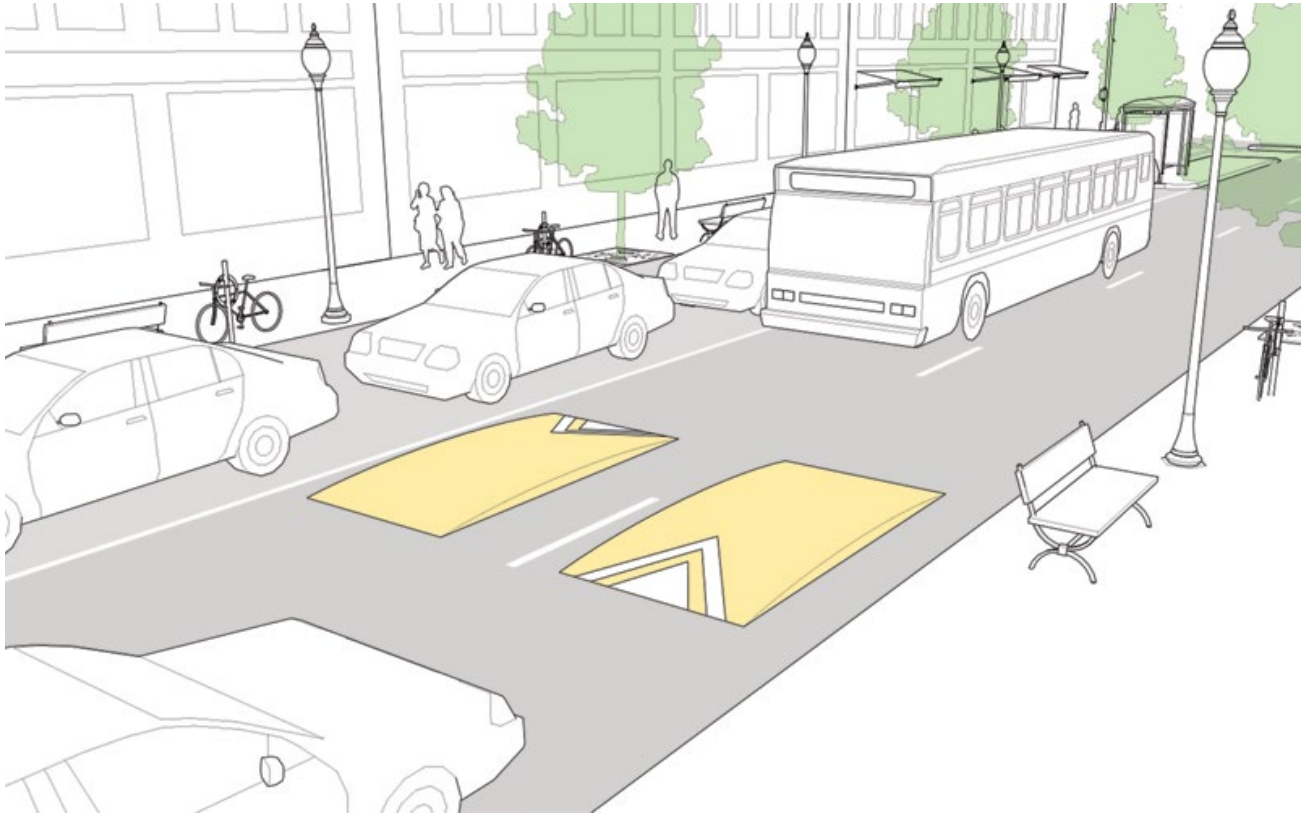


Image Source: [Speed Cushions | NACTO.org]

AST Interventions

Examples of Engineering: Raised Intersections

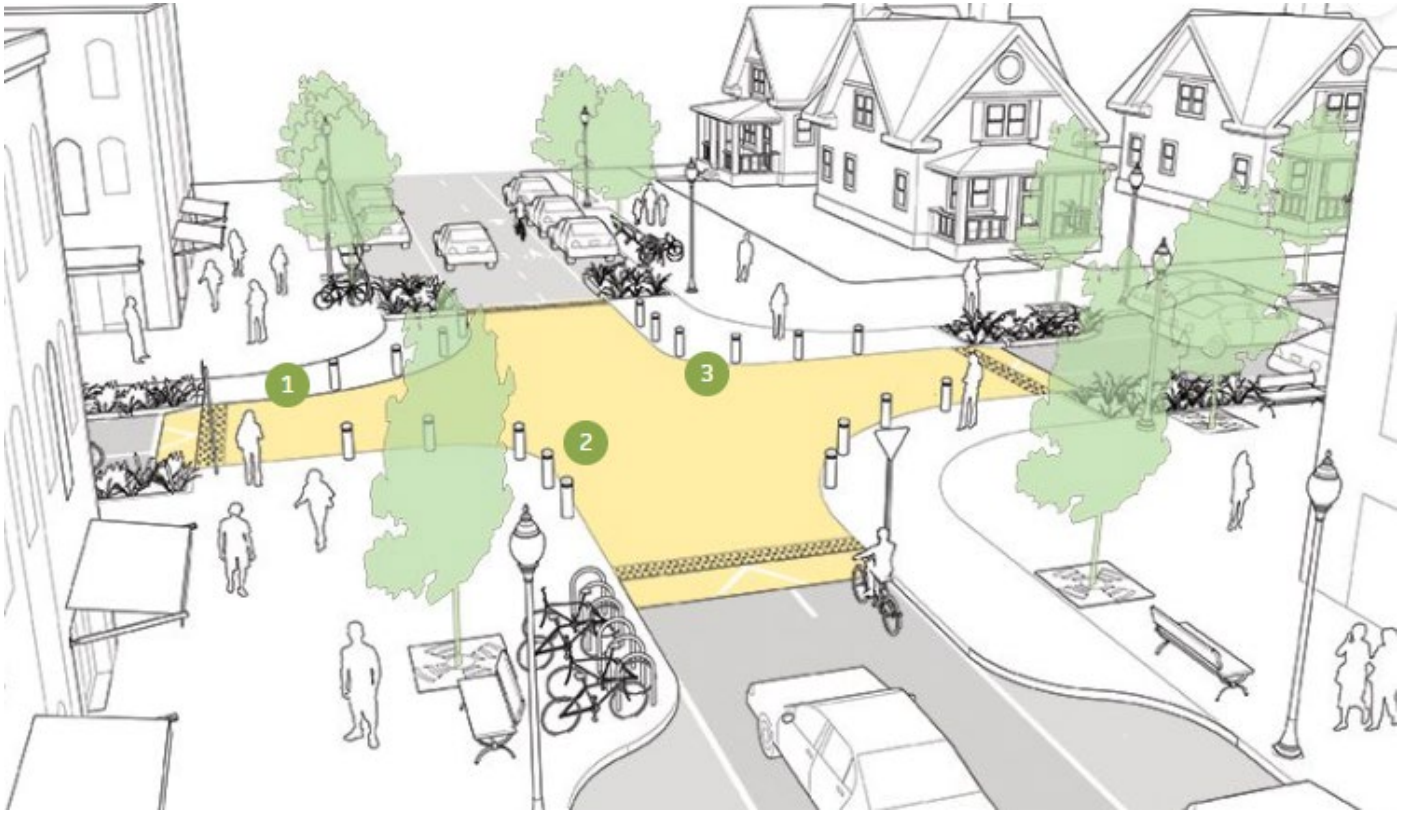


Image Source: [Raised Intersections | NACTO.org]

AST Interventions

Examples of Engineering: Raised Intersections

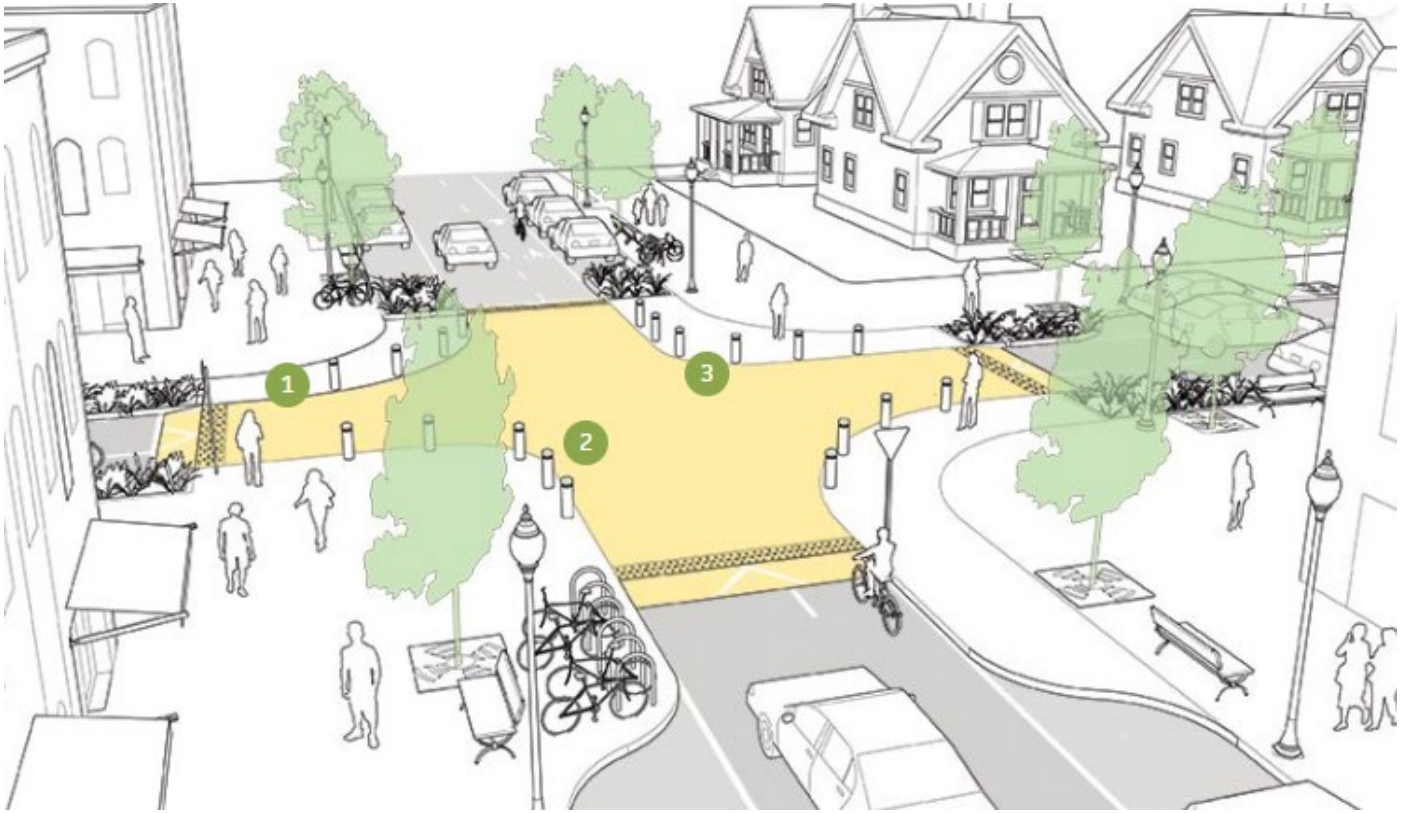


Image Source: [Raised Intersections | NACTO.org]

AST Interventions

Examples of Engineering: Curb Extensions

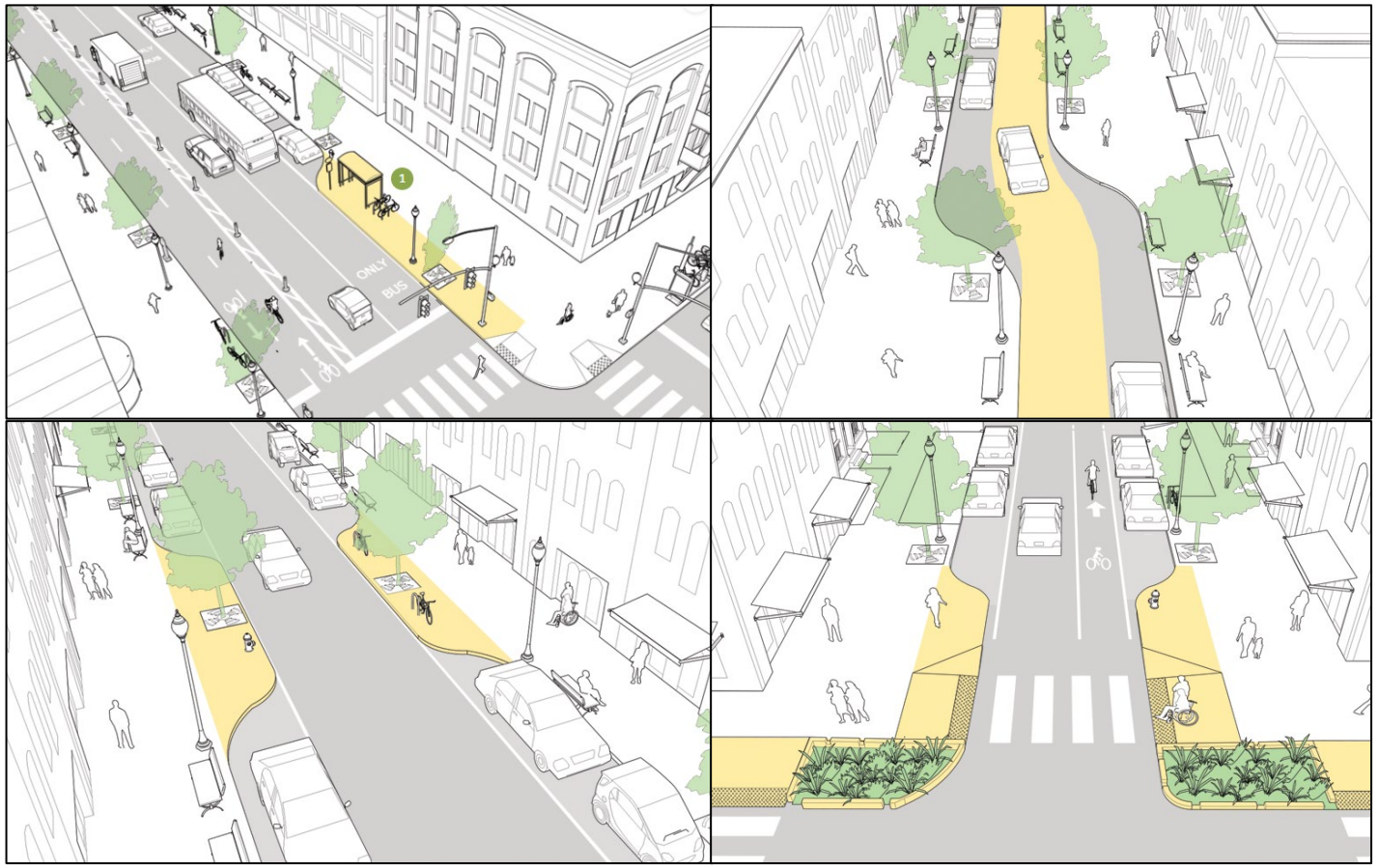
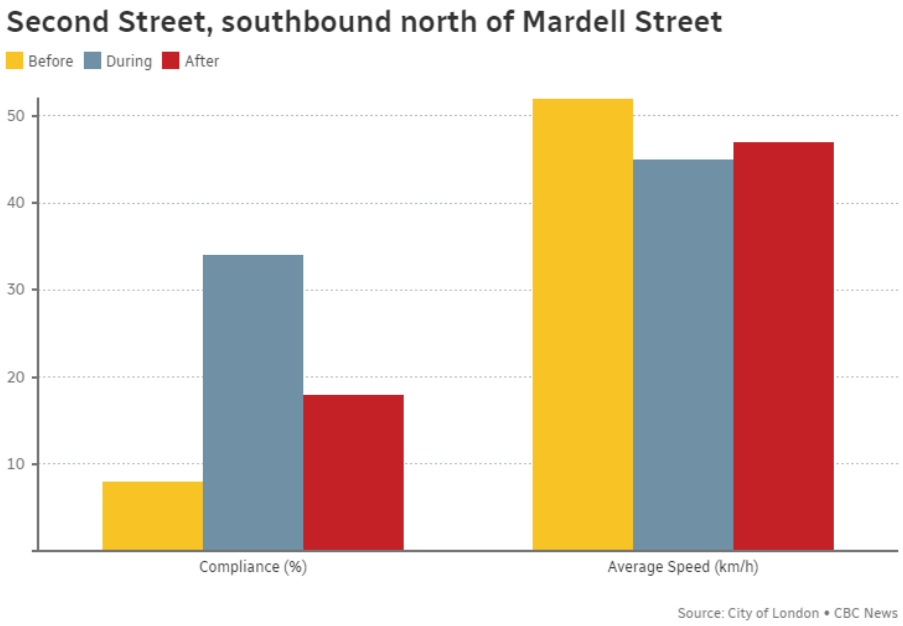


Image Source: [Curb Extensions | NACTO.org]

AST Interventions

Speed Cameras



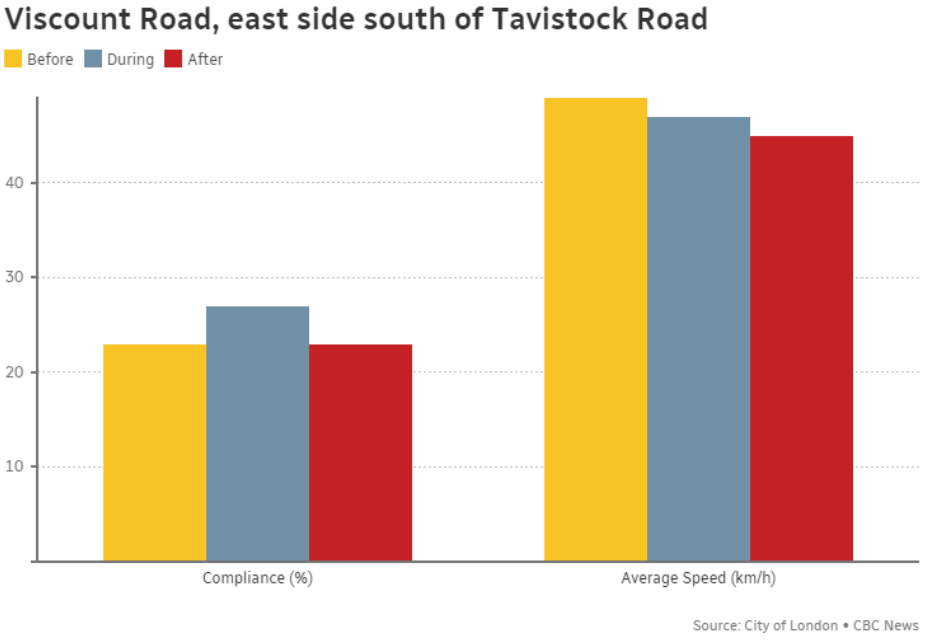


Image Source: [Photo Radar Article | London, ON | Dec 16, 2022 | CBC News]

AST Interventions

All the E's A.K.A. School Travel Planning

Purpose: "Community-based model for implementing active school travel that systematically addresses barriers to and incentives for walking to school. STP strengthens local commitment to active school travel." (OAST, 2020)

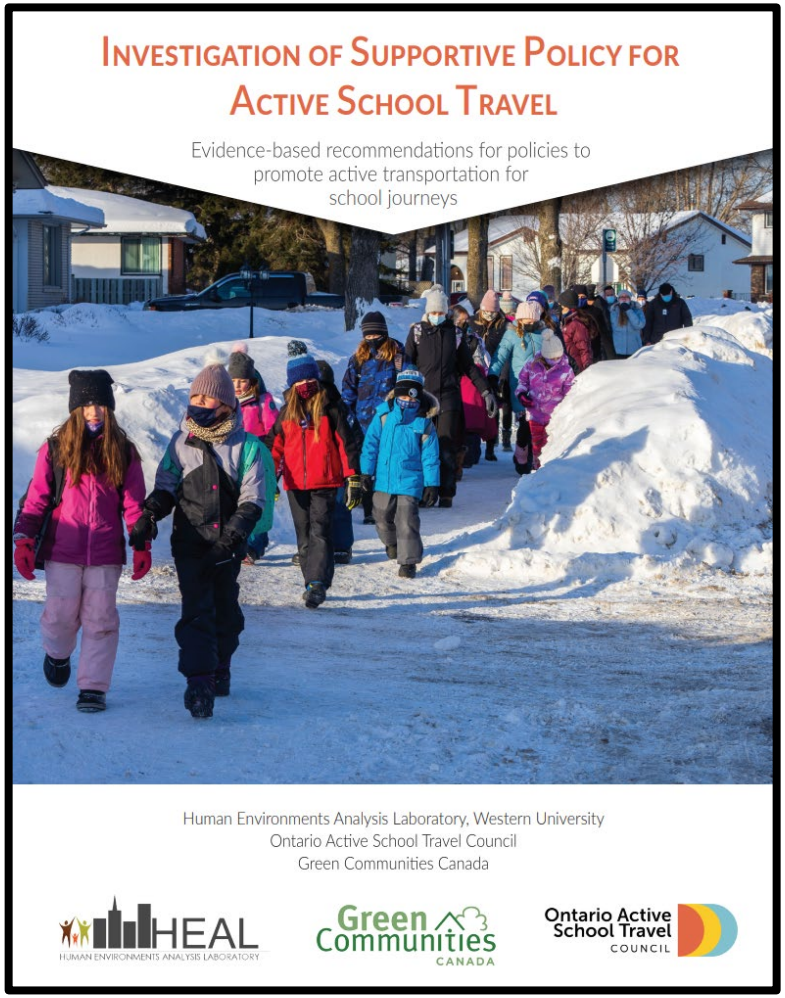
Research findings:

- Small rate of AST increase in Canada during the STP Pilot (2008-2010) from 43.8% to 45.9% [25]
- STP in 106 elementary schools in Canada show mixed results, with average rates showing an increase from 27% to 31% [26]
- Project in Eugene, Oregon found a significant increase in walking (+5%) and cycling (+4%) in STP schools. [27]
- STP program in 53 schools across the USA found an overall increase from 12.9% to 17.6%, with walking increase from 9.8% to 14.2% and cycling increase from 2.5% to 3.0%. [28]

AST Built Environment Policies

To improve built environment policies that support AST, Ontario Active School Travel Council commissioned a policy scan conducted by the Human Environments Analysis Laboratory at Western University.

Thanks to those of you that participated in this project by completing a survey or taking part in an interview or focus group!



AST Built Environment Policies

A few key take home messages:

- Increased collaboration regarding sustainability, school siting, and school closures.
- Development of ‘Active School Travel Zone’ in communities
- Increase pedestrian infrastructure and traffic calming in school zones
- Improve school drop off areas to focus on pedestrians, cyclists, and school busses.
- Develop a Traffic Management Plan for each school

Download the OAST Policy Scan Report by Scanning this QR Code!

AST Built Environment Policies

Increased Sidewalks & Traffic Calming

B.6.1	Implement a sidewalk network completion program to infill sidewalks, especially (1) in Active School Travel Zones and (2) when streets are undergoing repair or replacement.
B.6.2	Ensure all new developments have sidewalks on both sides of the street to ensure safe school travel.
B.6.3	Pave paths with high pedestrian use to make them easier to use in the winter months.
B.7.1	Reduce speed limits on residential streets to 40-km/h and 30-km/hr if they are within Active School Travel Zones. These lower limits should be applicable 24 hours per day and 12 months a year.
B.7.2	Implement traffic calming measures (e.g., narrowing streets, curb extensions, driver feedback signs) and enforcement measures (e.g. automated speed enforcement cameras, police speed monitoring and ticketing) together with ongoing speed monitoring to support adherence to the speed limit.
B.7.4	Restrict cars from entering streets immediately beside a school during the normal morning drop-off and afternoon pick-up times. Exceptions should be made for emergency responders, school buses, and caregivers of children with special needs or mobility limitations.

AST Built Environment Policies

Improve School Drop Off Areas

C.2.1 Consider removing Kiss & Ride facilities, when and where appropriate, to discourage driving children to and from school.

If this is not possible, a Kiss & Ride facility should operate as follows:

- Do not open until school ends to prohibit cars from arriving early and disrupting traffic flow during pick up and drop off;
- Are not located close to the school bus loading zones, so that they do not impede school bus operations; and
- Are designed and located to minimize conflict between drivers, and children walking and cycling.

C.2.2 Avoid installation of new 'Kiss & Ride' facilities to discourage driving children to and from school.

C.3.1 Restrict vehicle access to parking lots and driveway facilities where vehicle traffic and congestion create unsafe conditions on a school site, allowing access only to: Staff, visitors (e.g., volunteer), delivery drivers; school buses; and Caregivers of children with special needs or mobility limitations.

AST Built Environment Policies

School Traffic Management Plan

C.3.2 Develop a 'Traffic Management Plan' for each school, working in collaboration with the municipality to create a safer arrival and dismissal experience for students and families accessing the school site.

Questions?

Thank you for the opportunity to speak to you today. You can connect with me as follows

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