Key Lessons from Project BEAT
What is Project BEAT?

Project BEAT (Built Environment and Active Transport) is a large-scale, mixed-methods and multidisciplinary research program designed to explore the interrelationships between the built environment and children’s physical activity behaviours, primarily, active school travel (AST). This three year body of work, running from 2009-2012, was funded by the Canadian Institutes of Health Research and the Heart and Stroke Foundation of Canada under their “Built Environment, Obesity and Strategic Health Initiative” competition. The primary objective of this initiative was to support policy-relevant collaborative projects across the country designed to advance and translate knowledge connecting the built environment with health. In a series of sequential stages and studies, active school transport has been researched at the provincial (Ontario), regional (Greater Toronto Area, GTA) and local (Toronto) scale. Project BEAT is now complete and we are ready to share several key findings with local, provincial and national stakeholders who are in a position to address some of the critical issues identified.

For a complete list of publications from Project BEAT, see the list at the end of this report.

Links to School Travel Planning

Since the inception of Project BEAT, the issue of how children get to school in Canadian cities and regions has received increased attention from researchers, government agencies (e.g., Metrolinx) and the media. In January 2010, funding from the Canadian Partnership Against Cancer Coalitions Linking Action and Science for Prevention scheme has enabled a National School Travel Planning Project (STP) to take shape (www.saferoutestoschool.ca). STP brings community stakeholders together to devise detailed plans for making active travel a safe and realistic choice for children at individual schools across Canada. School specific interventions are proposed and developed to affect mode shift (e.g., being driven to walking). School Travel Plans are based on travel demand management principles; they have the potential to benefit schools, surrounding neighbourhoods, and host municipalities alike.

We believe that the STP process might be strengthened by considering and integrating key lessons that we have learnt from conducting Project BEAT. These lessons are now ready to share with the STP community with a view to potentially changing practice. We classify these lessons as three interrelated themes of time, space, and gender. School travel does not occur in the same way everywhere, all of the time. It is important that we utilize our emerging understanding of school transport to properly target STP intervention into places that do not already have high levels of active transport. Links to policy also require clarification, with a view to understanding how school, municipal, and even provincial policies may or may not affect school transportation outcomes. It is also important to highlight that STP is by no means a panacea. As our research has found, there appear to be systemic patterns of disparity in the active school travel behaviour in children, which STP alone may not be capable of overcoming.
Project BEAT worked with children and their parents at schools within the Toronto District School Board. These schools varied with respect to school neighbourhood built form ("old" urban grid-based street layout vs. "new" inner suburban looping street layout) and socio-economic status (SES; low and high based on median household incomes derived from 2006 census data). This yielded four school categories: “Old, Low” (OL), “Old, High” (OH), “New, Low” (NL) and “New, High” (NH).

These graphs are based on data from 16 schools across Toronto. There are clear differences in school travel behaviour when examined by time of day, neighbourhood and gender.

- **Time:** There is an increase in walking in the afternoon period.
- **Space:** Walking rates are higher in the older neighbourhoods
- **Gender:** Boys walk to school more often than girls.

**Health Link:** Using accelerometers to measure physical activity, we found that children who walked to school accumulated more minutes of Moderate to Vigorous physical activity each week compared to children who were driven.

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**Figure 1:** Project BEAT results of morning school travel mode.

**Figure 2:** Project BEAT results of afternoon school travel mode.
School Travel Behaviour in the GTA

As part of our research, we have also examined school travel using existing data from the Transportation Tomorrow Survey (TTS). Between 1986 and 2006, rates of walking to school declined in the GTA, while rates of driving increased.

Figure 3: Cross-sectional data of travel behaviour of 11-13 year old children in the GTA.

Walking was more common in urban and inner-suburban neighbourhoods within the GTA, and in areas with low household income. However, there are some places in the outer-suburban GTA with high rates of walking to school. Urban children are most likely to walk on both school-bound and home-bound trips.
**Key Themes: Time, Space and Gender**

**TIME:** Parental value of time (seen in our work as parental reference to convenience of the various travel modes available) and changing AST rates in the morning and afternoon, are time based issues that the STP intervention does not typically address. For example, participation in active school transport increases in the after school period from the morning by approximately 10% across Ontario\(^3,6\). We have also demonstrated that the prevalence and correlates of active school transport varies across time\(^2,6\). What this means is that an intervention into the built environment might not have the same or intended impact during the morning and afternoon school trips.

*Question for AST promoters: Is there a way to take advantage of this natural shift toward active transport in the afternoon, in promoting walking/cycling to school?*

**SPACE:** Participation in AST varies regionally and also across different neighbourhoods\(^5,7\). For example, AST was more common in the urban and inner-suburban areas compared to the outer-suburban parts of the Greater Toronto Area\(^7\). Additionally, high rates of AST were also found within the outer suburban GTA where one might expect low levels of AST. STP work has traditionally targeted the school environment, while our research also suggests that features of the built environment around the home also play a significant role in the school travel mode decision-making process\(^8\).

*Question for AST promoters: How can STP take into account the importance of children’s various home neighbourhoods in addition to the school neighbourhood?*

**GENDER:** Girls and boys experience school travel differently. Fewer girls engage in AST and parental perceptions regarding school travel are different for girls than they are for boys. Girls are granted less independent mobility than boys; the ramifications are likely contributing to lower levels of physical activity and less outdoor play time observed in girls\(^2\). School travel is also experienced differently by adult male/female caregivers – when children are escorted to school by adults it is usually the female caregiver who takes this responsibility*. 

*Question for AST promoters: How can we get more girls engaged in active school travel?*

**Independent Mobility and Convenience**, spanning the three key themes, are critical factors in school travel mode choice. Independent mobility is the freedom children have to move around their neighbourhood or city without adult supervision. This interrelates closely with convenience, in that children with independent mobility need not be escorted to/from school. Many parents feel they must choose what’s quickest and easiest for their child’s trip to school\(^9\), which may limit options for active forms of commuting, especially if they are accompanying their child on the trip.

*Questions for AST promoters: How can we promote greater independent mobility for children? Is it possible to make active transport a more convenient choice for the morning school run?*

* Based on parental survey responses from Project BEAT.
Travel mode shift: There is a significant shift in travel modes between the AM and PM school travel periods—about a 10% shift from driving to walking in the afternoon. Many of the factors associated with AST in general are also related to this mode shift.

AM to PM mode shift from passive to active travel is greater in urban than rural areas.

Built environment (BE) factors may be more important around the home than around the school in influencing transport mode.

Walkability: Most parents and children in our Toronto sample felt their neighbourhood was easy to traverse on foot.

Children’s geographies: Children experience the trip to school differently in different places.

Urban vs. suburban and rural: AST is highest in urban Toronto, compared to suburban areas and Ontario overall.

Safety: Boys and parents of boys are more likely to feel their neighbourhood is safe.

Independent Mobility (IM) and Convenience: 2 stage decision-making process regarding school travel: 1) IM Primarily influenced by concerns about traffic, child personal safety, and child maturity. 2) Mode Choice Based on what is perceived to be most convenient; influenced by perceived travel time, distance and/or the necessity for multi-stop trips.

Gender

Independent Mobility: Girls are generally allowed out on their own less often than boys. Girls who walk to school are more than twice as likely to be allowed out on their own than those who are driven.

Mode prevalence: Girls are consistently less likely to walk to school than boys, and more likely to be driven.

Distance: Travel time is the strongest predictor of school travel mode choice, with long distances negatively correlated with AST.

Caregivers: The school run is primarily coordinated by the mother/female caregiver.

* Based on parental survey responses from Project BEAT.
Works Cited


Complete List of Publications from Project BEAT (Updated Fall 2017):

**Barriers, Facilitators and Attitudes related to Active School Travel**


**Built Environment and Active School Travel**


**Children’s Perceptions of the Journey to School**


**Equity in Active School Travel**


**Independent Mobility**


**Physical Activity and Active School Travel**


**School Travel Planning**


**Trends in Active School Travel**