## Variability in Vehicle and Pedestrian Counts and its Effect on Warrant Evaluations (*breakout presentation*)

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*Background:* Requests for pedestrian crossings are evaluated using warrant criteria. Different properties of the location, such as vehicle and pedestrian volumes, are fed into a weighted matrix. If the location scores high enough, the location is placed on a waiting list to get the pedestrian crossing.
*Aim:* We performed a desktop statistical and simulation study to quantify the potential effects of variability in vehicle and pedestrian counts on warrant evaluations.
*Method:* Total pedestrian and total vehicle counts collected between 2013 and 2016 at controlled intersections were extracted from the City's traffic count database. The dataset was limited to standard 6 hr counts taken on weekdays, encompassing the periods between 07:00-09:00, 11:00-13:00, and 16:00-18:00. School and non-school periods were analyzed separately. Variability in vehicle and pedestrian volumes was defined using the relative percent difference (RPD) between subsequent pairs of dates at each location. The likelihood of a given vehicle or pedestrian volume meeting a warrant criterion was based on the empirical probability distributions of the RPDs extracted from the database.
*Results:* Overall variability was 9% for vehicle counts, and 20% for pedestrians. Variability in vehicle counts was not related to total volume, while variability in pedestrian counts was 10% larger on average (overall variability of 30%) when pedestrian volumes were low. Simulation results suggest that vehicle volumes of 187 and 468 were sufficiently close to the warrant criteria that, if a location were recounted, 20% of the time the observed volumes would meet the 200-500 and $>500$ vehicle warrant criteria, respectively. Similarly, pedestrian volumes of 13 and 26 could be observed 20% of the time as meeting the 15-30 and $>30$ pedestrian warrant criteria, respectively.
*Conclusions:* This study validates the use of the canonical 10% variability in vehicle volumes for Calgary. It also provides a default value for variability in pedestrian volumes. Evaluations based on fixed thresholds should account for variability in the input data. Simulations based on empirical probability distributions provide a low cost, low effort method of quantifying and predicting the effects of variability in vehicle and pedestrian volumes.

http://dx.doi.org/10.1016/j.jth.2017.11.082

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## The Six E's of Active School Travel: How Active and Safe Routes to School (ASRTS) Programs Across Canada Increase the Number of Children Walking to School Every Day (*breakout presentation*)

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In this ASRTS Canada collaborative presentation, three Active and Safe Routes to School (ASRTS) Programs from different regions of the country will discuss the various strategies they employ to increase the numbers of children engaged in sustainable, healthy school travel every day. The numbers of children who walk or bike to school on a daily basis has been in steep decline since the early 1980's, with a nationwide average of less than 20% of Canadian schoolchildren regularly walking or biking to school in 2015, from a high of over 80 % in the 1970's. This has resulted in vehicle congestion around schools, poor air quality due to the high volume of vehicles, increased injuries due to increased traffic, and poor health outcomes as children are increasingly driven short distances instead of exercising.

Starting in Europe in the 1970's, and adopted in Canada in the mid 1990's, ASRTS programs across the country seek to improve the health of our population through daily exercise, cleaner air due to reduced vehicle

emissions, and fewer injuries due to safer infrastructure and fewer vehicles on the roads. To do this, these programs have adopted many of the principles of the Safe Routes to School Partnership in the United States, that being the six E's: Evaluation, Engineering, Events, Enforcement, Equity, and Encouragement. In Canada, our programs have focused much of our efforts on a process known as School Travel Planning, whereby local residents and the school community are active participants in identifying the barriers to Active Transportation in their community, provide input on ways to remove these barriers, and become engaged in seeking resolution to these issues on an ongoing basis.

This presentation will discuss specific actions and programs employed to encourage Active School Travel, successes and failures, and lessons learned from these three ASRTS organizations in different regions of Canada. If you are interested in promoting healthy school travel in your community, we invite you to attend and share your stories with us as well, as we seek to make our children safer, healthier and happier.

http://dx.doi.org/10.1016/j.jth.2017.11.083

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# S3:05

# Community Actions to Improve Safe Walking

## Active Neighbourhoods Canada - Building Community-based Mandates for Walkable Urban Design (*breakout presentation*)

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*Sustainable Calgary, Canada*

*Background:* The Active Neighbourhoods Canada (ANC) project supports walking, cycling and vibrant streets through community-led and professionally developed urban design projects. The project represents a partnership between the Montreal Urban Ecology Centre, Toronto Centre for Active Transportation and Sustainable Calgary.
*Description of Program:* Since 2013, each organization has been working with four communities, with the aim of implementing a design project in each. Major milestones include leading a participatory planning process; producing a "community portrait" that summarizes resident feedback and data; a professional design workshop; 3-5 design schemes for each neighbourhood; and a design selection kiosk, at which community members can provide feedback and vote on design concepts. This presentation focuses on the outcomes of an innovative engagement and design process in the communities with which Sustainable Calgary worked, namely: Bridgeland, Acadia, Marlborough and High River. Each community was situated in its own unique context, but also presented prototypical urban conditions through which to understand the broader region.
*Outcomes:* In Bridgeland, we were challenged to consider the impact of major thoroughfares on liveability, and re-invite connectivity into a socially-isolated remnant institutional district. In Acadia, we tackled traffic-calming and urban legibility – in a neighbourhood with schools, seniors, and significant cut-through traffic – and proposed a model for the "soft edge" of a commercial zone. In Marlborough, we found under-used laneway spaces and pocket parks that could be brought back to life through green networks and moments of 'social refuge'. In High River, our view turned both big and small – from completing broad pathway routes to creating inviting pedestrian-scale spaces in the core. Between all four communities, common themes emerged around closed loops, active green edges and networks, and the spaces 'behind' primary roadways.
*Implications:* This work showed how participatory urban design can influence improvements in the shape of communities, encourage empathy and activism among residents, and help develop a collective mandate for community change. Strategic collaboration was crucial to achieving milestones in this project, and our strengths-based approach proved important in capturing the imagination and enthusiasm of local residents and designers alike.

http://dx.doi.org/10.1016/j.jth.2017.11.084