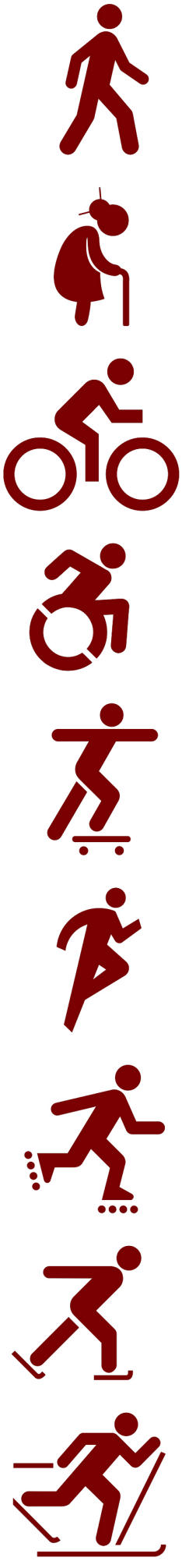

# *ACTIVE TRANSPORTATION = ENERGY*

*Tools for valuing active transportation initiatives*

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***Energy 2018***, BCSLA Annual Conference
May 10-12, 2018

Seaside Greenway in Yaletown, Vancouver.

In this handout we have summarized some of the pertinent information and references from our presentation. We hope it helps to make good arguments for more and better walking and cycling infrastructure in cities.

ACTIVE TRANSPORTATION (AT) IS:
All human-powered forms of transportation: walking, cycling, skateboarding, rollerblading, wheelchairs, walking + strollers, walking with walkers, dogwalking, skiing, skating…

**1. KEY MESSAGES ABOUT ACTIVE TRANSPORTATION**

TRANSPORT CANADA: Active Transportation in Canada

1. Active transportation meets multiple planning objectives.
   AT improves efficiency and effectiveness of the transportation system, builds transit ridership, supports 'smart growth' planning, climate change and greenhouse gas reduction strategies, as well as revitalization and economic development initiatives.
2. Active transportation improves community health, safety and well-being.
   AT is a major component of supporting more active, healthier lifestyles that will help reduce obesity levels and associated chronic diseases. The benefits of physical activity promote well-being and help combat mental illness and social isolation.
3. Active transportation is good for the bottom line.
   AT is cost effective and supports "triple bottom line" initiatives. Communities built to support active transportation are often more attractive to live in and retain property values better than more auto-dependent communities. Transportation infrastructure built for active transportation is less costly than infrastructure for cars.
4. Active transportation matters to many groups, departments and people.
   AT is about helping people and making communities better, safer, healthier places to live, work and play. With its wide ranging benefits, it should be everyone's agenda, from planning departments to school boards, and from chambers of commerce to health care providers.

VICTORIA TRANSPORT POLICY INSTITUTE, Todd Litman (2017) Benefits of improved active transportation infrastructure:

Improved public fitness and heath
Direct user benefits- convenience, attractiveness, cost savings
Equity- improved mobility for non-drivers and low-income people
Reduced municipal costs for vehicle infrastructure, parking, congestion
Reduced energy consumption and GHG emissions
Enables more compact development (reduced land area for parking and roads)
Cost effective infrastructure (investments return the above benefits)

**2. GREAT FAST FACTS**

ENERGY EFFICENT & ENVIRONMENT FRIENDLY
An average car releases about .85 kilograms of $CO_2$ per kilometre whereas active transportation releases virtually none. (Transport Canada 2011)

On 350 calories a cyclist can travel 16 kilometres, a pedestrian 5.6 kilometres, and an automobile 30.4 metres. Source: Transportation Alternatives - Bicycle Blueprint, 1998 in (Transport Canada 2011)

Each 1% shift from automobile to active travel typically reduces fuel consumption 2-4% (Komanoff and Roelofs 1993, cited in Litman 2017)

PEOPLE LIKE WALKING AND CYCLING
Statistics Canada study revealed that 19% of

cyclists reported their commute as the most pleasant activity of the day, whereas only 2% of drivers felt the same. Similarly, the probability that a driver would enjoy their commute was only 37%, compared with 59% for cyclists and 46% for pedestrian. (Turcotte 2006)

In a survey of potential, occasional, regular and frequent cyclists, Winters et al (2011) found that the top 3 motivators in a person's decision to cycle were: the route is away from traffic and pollution; the route has beautiful scenery; the cycle path is separated from traffic for the entire distance.

In a 2004 nation-wide survey, 84% of respondents agreed that they would like to walk more often and 64% agreed they would like to cycle more often (& 84% of those surveyed also supported spending to create dedicated bike lanes and paths) York University, Institute for Social Research, National Survey on Active Transportation, 2004.

66% of Canadians would like to cycle more and 70% say they would cycle to work if there was a separated bike path. (Environics 1998)

Equity: Approximately 20% of Canadian households do not own a car. Another 10% cannot drive because of a disability, while a further 10% simply do not have the income to support car ownership = 40%. (Litman 2010).

HEALTH BENEFITS

91% of Canadian children and youth and 51% of Canadian adults are not getting the recommended levels of daily physical activity (Transport Canada 2011).

Each additional hour spent in a car per day was associated with a 6% increase in the likelihood of obesity. Conversely, each additional kilometer walked per day was associated with a 4.8% reduction in the likelihood of obesity (Frank Andresen Schmidt 2004 p. 87).

A 5% increase in [neighbourhood] walkability [was] associated with a per capita 32.1% increase in time spent in physically active travel, [and] a 0.23-point reduction in body mass index (Frank et al 2006 p. 75).

WALKABLE URBAN FORM MATTERS

In a study of Atlanta Georgia, one of the least walkable cities, Frank et al (2005) found that "Only 18% of those living in communities with the lowest level of walkability recorded ≥ 30 minutes of walking on at least 1 day[/week], compared with 28.1% in the second, 32.3% in the third, and 37.5% in the top quartile of walkability." (p.123)

Creatore, et al. 2016 found that rates of overweight, obesity and diabetes decline with neighborhood walkability in southern Ontario neighbourhoods. From 2001 to 2012 rates of obesity increased in non-walkable neighbourhoods but did not in walkable neighbourhoods. They also found that rates of walking, cycling and public transit use were significantly higher in the most walkable neighbourhoods while car use was lower.

Buehler and Pucher (2011) "cities with a greater supply of bike paths and lanes have significantly higher bike commute rates" and "cities with safer cycling, lower auto ownership, more students, less sprawl, and higher gasoline prices had more cycling to work." (p 409)

SPACE EFFICIENT

in urban areas, where cars and bicyclists travel at similar speeds, bike lanes can accommodate 7 to 12 times as many people per metre of lane per hour than car lanes. Pedestrian infrastructure such as sidewalks can handle approximately 20 times the volume of people per hour than roads for cars in urban traffic. (Campbell and Wittgens 2004).

Road and parking space requirements are far less for AT. Driving (vehicles) requires approximately 15 times as much space as bicycling, and about 100 times as much as walking. (Litman 2017)

Non-motorized modes of travel (walking, bicycling) are also important for short trips: 28% of all 2001 work and school trips with a straight-line distance of 5 km or less in the Central Ontario Zone were made by walking or cycling. (Miller and

Soberman 2003)

SAFETY
Data from New York City showed that adding protected bike lanes to streets reduced injury crashes for all road users by 40% over four years. https://nacto.org/publication/urban-bikeway-design-guide/

Dill (2009) found that cyclists in Portland are willing to increase trip distance and travel time to ride on separated bike paths compared to shorter, more direct routes that require cycling on roads with motor vehicle traffic.

On women and cycling:
To increase cycling rates it is necessary to determine what will get more women cycling. In the U.S., men's cycling trips surpass women's by at least 2:1. This ratio stands in marked contrast to cycling in European countries, where urban biking is a way of life and draws about as many women as men—sometimes more. In the Netherlands, where 27 percent of all trips are made by bike, 55 percent of all riders are women. In Germany 12 percent of all trips are on bikes, 49 percent of which are made by women. (Baker 2009)

**3. HOW TO MEASURE ACTIVE TRANSPORTATION**
Indicators are conceptual tools that highlight desirable performance and provide a basis for comparing one place or proposition to another. Each typically embodies an expression of a desired outcome and a measure with which to evaluate and compare performance. Metrics are the actual measures of performance that enable consistent measurement of the most important factors affecting walkability and AT. (ITDP 2018, Kellett, 2009) Employing consistent and accepted indicators over time allows designers and decision-makers to understand better which policies and physical design changes make the most difference. Logical and well visualized metrics will be meaningful and relevant to non-experts. However, to be useful to planners and designers in their day to day work, indicators and the related metrics must be relatively easy to measure and objective (ITDP 2018). Benchmarks refer to known high-level performance either derived from research or from real cities.

URBAN FORM
- City density- people/ha and/or Neighbourhood density- people/ha
  Benchmark: population density should exceed 100 people/hectare (pph) for walking and cycling to flourish. Minimum- 30 pph for transit supportive communities. (Bailie and Becksted 2010)
- Block density: blocks/square km (ITDP 2018, Cervero and Kockelman 1997)
- Walkscore- selected locations in neighbourhoods (up to 100%)
- % population (or dwellings) within 100 or 400 metres of designated bike route
- Grain of network – including pedestrian, cycling and AAA network (ratio of #intersections: network length) (Dill 2004)
  Benchmark for pedestrian block lengths: 100 meters/side (Dill 2004)
- Pedestrian Route Directness (PRD) is the ratio of route distance to straight-line distance for two selected points (1 is lowest- straight line) (Dill 2004)
  Benchmark- 1.2 - 1.5 for good walkability (INDEX- Criterion, cited in Dill 2004)

COUNTING AMOUNTS OF WALKING AND CYCLING
- Mode share of trips to work - %walk, %bike, %transit %vehicle
- Change in mode split over time
- Walking and cycling counts at specified locations/ change over time

BICYCLE INFRASTRUCTURE
- Total kilometers of bike infrastructure: on-street (local bike streets + striped lanes), separated bike & multi-use routes and AAA routes.
- Network density: kilometers of cycling infrastructure/ha of city area— for all cycling infrastructure, or on-street, or all AAA etc
- Network density: kilometers/person

EVALUATING STREET SCALE PUBLIC REALM
For methods to evaluate detailed qualities of the public realm, see: ITDP 2018; Ewing and Clemente 2013; Gehl Institute, (2016) Public Life Diversity Toolkit.

**4. REFERENCE LIST**


GUIDELINES:

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National Association of City Transportation Officials, (ND) Urban Street Design Guide https://nacto.org/publication/urban-street-design-guide/

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On **350 calories**, a car can go 30.4 meters, a pedestrian can go 5.6 kilometers and a cyclist can go 16 kilometers. Get out of your car and walk or ride!

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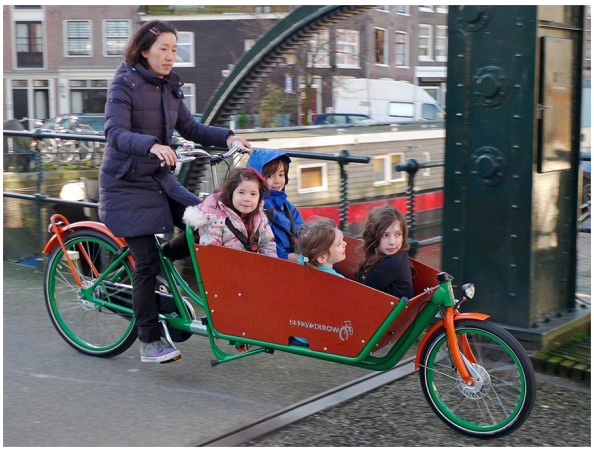

Seats 5: A box bike by Flying Dutchman Bicycles.