Promoting Better Health Through Public Transit Use

Canadian governments and stakeholders face the challenge of making our transportation systems more sustainable. We must find a better balance among our social, economic and environmental objectives by shifting demand to more efficient modes of travel, increasing the energy efficiency of those modes, and limiting future growth in travel demand.

Passenger travel in urban areas is a major focus of sustainable transportation policy development because Canada's population is largely urban, and becoming even more so. Shifting urban passenger travel from the automobile to public transit is one of our principal opportunities to make urban transportation more sustainable. This would allow us to increase economic efficiency and safety, while reducing pollution, congestion, land consumption and noise.

Better public health is among the frequently cited benefits of sustainable transportation. This prospect is supported by the Canadian governments “population health” approach — one that acknowledges the many aspects of our social, economic and natural environments that affect the health of individuals. Transportation is but one of many sectors that must be involved in strategies to improve population health.

Transportation in general, and public transit in specific, have a significant influence on three of Health Canada’s nine key health determinants: physical environment, personal health practices, and income and social status. As components of these determinants, the factors tied most closely to transportation are air quality, climate change, safety, physical activity and equity.

This issue paper examines the impacts of public transit on each of these five factors, and how each factor, in turn, affects public health.

Public transit and air quality

Air pollution in Canada has substantial health impacts (see Figure 1). Most Canadians are exposed to harmful levels of air pollutants, and about 20% have a respiratory problem such as asthma or chronic obstructive pulmonary disease. Air pollution in Ontario alone is estimated to cause 1,900 premature deaths and more than $10 billion in economic costs each year. Several air pollutants from transportation sources significantly affect heart and lung health, including carbon monoxide (CO), nitrogen oxides (NOx), volatile organic compounds (VOC), sulphur dioxide (SO2) and particulate matter.

Transportation activities are the biggest cause of air pollution in Canada’s urban areas — in fact, one estimate attributes 90% of carbon monoxide emissions, 83% of nitrogen oxide emissions and 60% of sulphur dioxide emissions in Toronto to transportation activities in that city. This pollution would
be significantly worse without the contribution of public transit. Many people choose to take transit rather than drive, and by doing so they substantially reduce their own travel emissions (see Figure 2). When thousands of people make the same choice, the result is a measurable improvement in air quality.

While transit’s major contribution to air quality in Canadian cities arises from its ability to attract drivers out of their cars, the industry is also reducing emissions from its own operations. Several commercially available or developing bus technologies are less polluting than conventional diesel engines—these include clean diesel, natural gas, biomass fuels and hybrid-electric. Clean diesel requires a lower capital investment than the others, and emits substantially fewer pollutants than conventional diesel. Natural gas has a significant track record and offers similar benefits, but is more capital intensive. Electric fuel cells and hybrid-electric technology are still costly, but are being refined and offer the potential for a substantial reduction in emissions.

At a time when the transit industry’s capital and infrastructure needs already exceed available funding by a wide margin, the cost of converting Canadian transit fleets to less-polluting technologies in the near term is not manageable. Without additional investment, the widespread adoption of less-polluting technologies can only happen incrementally.

**Public transit and climate change**

There is a widespread scientific consensus that human activities, notably the burning of fossil fuels, are causing increased atmospheric concentrations of greenhouse gases (GHG) and rising global temperatures. Continued climate change could have numerous impacts on public health in Canada due to extreme weather events, heat waves, air quality deterioration, rising sea levels, flooding and the spread of disease-carrying insects.

There is substantial potential for public transit to reduce national GHG emissions by shifting travel from the automobile. Urban passenger travel causes 8% of Canada’s national GHG emissions, but public transit operations cause less than 0.3% (see Figure 3). Furthermore, because one passenger-kilometre of travel by public transit creates 65% fewer GHG emissions than the same travel by automobile, shifting travel from automobile to transit will lead to a net reduction in emissions (see Figure 4).
Promoting active transportation, such as walking or cycling, is a key element of Health Canada’s national strategy to encourage physical activity. Together, public transit and active transportation complement each other, and offer a “suite” of travel alternatives that help individuals adopt multimodal lifestyles and minimize their automobile use. As a result, levels of walking, cycling and transit use in Canadian communities tend to rise and fall together.

Transit and walking have a strong historic relationship. Research shows that the willingness of passengers to walk to a transit stop increases with the quality of both transit service and the pedestrian environment, a dynamic that yields larger transit catchment areas and higher ridership. Cycling is also growing in importance as an element of multimodal transit trips. By combining transit’s speed and efficiency with cycling’s flexibility and independence, passengers find a level of utility that neither mode provides on its own.

Measures that make it easier for cyclists to get to transit services, and then store or bring along their bicycles, can boost transit ridership and reduce congestion and pollution. Such measures are becoming more common across Canada.

Automobile-reliant development patterns in Canadian suburbs pose concurrent challenges to transit, cycling and walking. However, conditions for active transportation and transit could improve if recent public dialogue over “smart growth” development practices brings some degree of change. Other encouraging innovations in urban transportation include transportation demand management programs, traffic calming and neo-traditional neighbourhood design.

Public transit and safety
Motor vehicle crashes kill almost 3,000 Canadians each year—nearly half of all accidental deaths—and are the most common cause of death for people under the age of 35.\(^1\) The economic costs of motor vehicle crashes are also high, with an estimated economic burden of $1.67 billion each year.\(^1\)

Transit contributes to road safety in our cities by being the safest mode of urban transportation. The risk of fatality for a car passenger is 20 times higher than for a transit passenger making the same trip (see Figure 5).\(^k\)

Public transit in Canada can improve its already outstanding contribution to public safety by attracting more automobile users, and by further reducing today’s low rates of transit passenger injury and death through passenger education and driver training.

Public transit and physical activity
While Canadians are more active than they were two decades ago, six in 10 are still insufficiently active to achieve the numerous health benefits of physical activity.\(^l\) The direct economic cost of Canadians’ physical inactivity is estimated to be $2.1 billion annually, or 2.5% of health care costs nationwide.\(^m\) A 10% reduction in inactivity could produce health care savings of $150 million each year.

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Public transit and equity

The health of individuals generally improves with higher income and social standing. This effect is related to personal opportunity and individuals’ ability to control their circumstances, as well as to the provision of food and shelter. For this reason, transportation strategies that help Canadians save money or reach new opportunities can also help to improve public health.

Personal spending on transportation can compete with the need for food, shelter, education and medicine. Indeed, the average Canadian household spends more on transportation annually — about $7,600 in 2000 — than on food (see Figure 6). Using public transit allows families to reduce their transportation expenditures, and devote more of their resources to the necessities of life.

Personal access to medical, employment and educational opportunities is important, and is partly determined by the ease of reaching those destinations. Inequities face people too young or old to drive, those who are disabled, and those who face cultural or language barriers. Only public transit can provide the basic level of mobility that these disadvantaged groups need to make important trips to work, school and health care.

Because of inadequate investment, transit is increasingly limited in its ability to contribute to equitable mobility in Canadian cities. Fare increases affect low-income patrons more severely, and the growth in demand for expensive accessible transit services continues to outstrip supply. However, opportunities to improve equity may arise if transit operators and social agencies can partner to provide disadvantaged groups with better access to essential services, following the lead of the welfare-to-work program in the United States.

References

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l) Canadian Fitness and Lifestyle Research Institute, “1999 Physical Activity Monitor” at www.cflri.ca
m) Canadian Fitness and Lifestyle Research Institute, “Economic Costs of Physical Inactivity” in The Research File, 2001
o) Federal Transit Administration, Bicycles & Transit, undated
q) See the Federal Transit Administration website at www.fta.dot.gov for more information

The Canadian Urban Transit Association (CUTA) is the voice of Canada’s public transit industry. For additional information, including research reports, industry updates, news bulletins and more, please contact us or visit our website.

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