



The Centre for
Sustainable
Transportation

Le Centre pour un
transport durable

CHILDREN, YOUTH, AND TRANSPORT

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THE CONCERN

Evidence mounts as to the adverse effects on public health of transport and thus urban form. Children and youth are among those most affected by motorized transport and auto-dependent community design. Available data suggest they are adversely affected by poor air quality, by the confining effects that traffic has on their lives, and by the consequent lost opportunities to engage in physical activity and to experience the wider world.

This booklet outlines some of the key health concerns. As well, it sets out some of the things public health and recreation professionals can do to improve the health and well-being of children and youth by reducing their exposure to transport's adverse impacts.

HOW TRANSPORT AFFECTS CHILDREN'S HEALTH

References to children and youth as society's 'canaries' are not exaggerated when we consider the harm that motorized transport can have on their developmentally vulnerable bodies. As with many environmental health factors, children are especially susceptible to exposure to poor air quality, high noise levels, insufficient active transport (walking and cycling), and high risk of injury or death in traffic. They are developing emotionally, learning about their neighbourhoods, establishing habits, and discovering whether the world is a safe place in which they can be confident and independent.

Transport, physical activity, and obesity

We are now living in 'obesogenic' environments: communities, workplaces, schools and homes that actually promote or encourage obesity.

Dr. Sheela Basrur, Ontario's
Chief Medical Officer of Health²

Poor nutrition and sedentary lifestyles that revolve around television and video games have been blamed for children's reduced physical activity and rising average body weights.⁴² Recent evidence from Canada,⁴³ the United States,⁴⁴ and the United Kingdom⁴⁵ suggests that dependence on automobiles to transport children to school and leisure activities may also be a factor.



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This booklet can help public health and recreation professionals reflect on the many impacts of transport on the health and well-being of children and youth. **Super-script numbers** point to sources detailed in a more comprehensive document *Child- and Youth-Friendly Land-Use and Transport Planning Guidelines*, available at the Centre's Web site.

“Less than half of Canadian children and youth are active enough to ensure proper growth and development.”

The following data are relevant:

- Less than half of Canadian children walk to school.⁴⁶ (Most children who live within three kilometres of school walk to school. But, enough children live farther from their schools to bring the average who walk down to less than half.)
- Less than half of Canadian children and youth are active enough to ensure proper growth and development. Among teenagers, perhaps less than 20 per cent do sufficient exercise, although the amount of physical activity by teenagers may have been increasing recently.⁴⁷
- In 1998/99, 37 per cent of children aged 2-11 were overweight, up from 34 per cent in 1994/95. These included the 18 per cent of children in this age group who were obese in 1998/99, up from 16 per cent in 1994/95.⁴⁸
- In the Greater Toronto Area—for which we have good data on schoolday travel by 11- to 19-year olds—there was much more travel as a car passenger by children and youth in 2001 than in 1986. For 11- to 15-year-olds the per-person increase was 83 per cent; for 16- to 19-year-olds it was 61 per cent (with essentially no increase in driving by this age group). For 11- to 15-year-olds, just over half of the additional trips by car were trips to and from school. They replaced trips that in 1986 had been made by transit, walking or bicycling. The remaining additional trips—i.e., trips other than between home and school—were all new trips, i.e., trips that had not been made in 1986.⁶⁹
- A UK study demonstrated that children who walk to school burn more calories than those who are driven. The number of calories burned weekly by walking to and from school is the equivalent of two hour-long classes of physical education.⁴⁹

Effects of traffic-related poor air quality, including poor in-vehicle air quality

Road traffic is the main cause of poor air quality in most urban

areas of the world and many rural areas, including in Canada. There is considerable evidence that this poor air quality harms children, including the following:

- The World Health Organization found that children may be more vulnerable to airborne pollution because their airways are narrower than adults' airways.¹³
- The same work for WHO indicated that there appears to be no threshold for ozone levels that are safe, and children are particularly susceptible.¹⁴
- Other work for WHO and for the United Nations Economic Commission for Europe (UNECE) reviewed numerous reports of significant associations between respiratory symptoms or hospital attendance and exposure to particulate matter or nitrogen dioxide, or both (two products of vehicle exhaust) in healthy children and in children with asthma or other chronic respiratory disease.¹⁵ The same work reviewed studies of non-respiratory effects, including children's mortality and adverse pregnancy outcomes.¹⁶
- Work in Denver, Colorado, found that children who live near high-traffic areas (20,000 cars per day) may be six times more likely to develop childhood leukemia and other cancers.¹⁷
- Children living in areas of Europe and California with poor air quality have been found to have reduced lung function growth that places them at risk for future respiratory illness.¹⁸
- A Finnish study found that preschool children who were taken to day-care centres by car or bus had higher peak exposures to carbon monoxide than children who walked or who were taken by bicycle.¹⁹

The immediate cause of the higher exposures in the last finding was not clear. It could have been because car and bus journeys are longer, or because in-vehicle air quality was particularly poor. According to another report,

Elevated in-car pollution concentrations particularly endanger children, the elderly, and people with asthma and other respiratory conditions. While it receives little attention, in-car air pollution may pose one of the greatest modern threats to human health.²⁰



There's other work on this topic:

- A study of children's exposure to diesel exhaust in California, found that

A child riding inside of a diesel school bus may be exposed to as much as four times the level of toxic diesel exhaust as someone riding in a car ahead of it. ... these exposures pose as much as 23 to 46 times the cancer risk level considered significant under federal law. What's more, these troubling results suggest that diesel exhaust on school buses could contribute to respiratory problems among sensitive children, such as asthmatics.²²

- One author reviewed relevant data and concluded,

Drivers and passengers in cars may inhale up to 18 times as much pollution as people outside their vehicle, the worst occurring in slow-moving driving conditions in urban areas. Levels of benzene were found to be two to 18 times higher than ambient air and levels of carbon monoxide two to 14 times higher. Nitrogen dioxide is also higher (1-2.5 times), especially during high-speed driving on motorways and during afternoon rush hours.²³

Traffic-related fatalities and injuries

The rates of traffic-related injury and fatality are generally lower for children than for adults. Nevertheless, the following should be considered:

- Road traffic crashes are the leading cause of injury death in Canada for children over the age of one year.²⁶
- The risk of harm to a child from traffic is very much higher than the risk of harm from a stranger.²⁷
- A study in the UK found that one third of children who survive traffic crashes may suffer from post-traumatic stress disorder. Symptoms include depression, recurring nightmares, difficulty attending to school work, and fear of cars.²⁸

Keeping Children Safe in Traffic,³¹ a recent report by the Organization for Economic Cooperation and Development, outlines current risks for children in traffic, progress made towards creating safer environments, and the best practices of countries that have made concerted efforts to reduce the risk to children from traffic. Some of the

best practices include measures to reduce traffic speed, and public education for children, parents, and drivers.

Effects on emotional and behavioural development

A road traffic crash can have an extreme impact on a child's development, even if the child is not directly injured. There are more subtle effects from being in an automobile and from the effects of road traffic generally, including the effects of traffic noise. Some relevant findings include the following:

- An Australian study found that heavy traffic reduces the independent mobility of children and youth.³²
- An investigation in the UK found that opportunities and locations for spontaneous, non-structured play can be severely restricted by traffic.³³
- An Austrian study found that low-level but chronic noise of moderate traffic can stress children and raise their blood pressure, heart rate, and levels of stress hormones.³⁴
- Clear evidence on the effects of road traffic noise on the development and behaviour of young people may result from an ongoing major European Commission project (RANCH).³⁵ In the meantime, work showing an adverse effect of

"... children who live near high-traffic areas ... may be six times more likely to develop childhood leukemia and other cancers."



“The risk of harm to a child from traffic is very much higher than the risk of harm from a stranger.”

aircraft noise on children’s cognitive performance can be noted.³⁶

- A Swiss study found that half of five-year-old children who lived on an “inadequate” street “where traffic is a nuisance and menace to children at play” never played outside, and only 10 per cent played outside for more than two hours a day, mostly in play-grounds.³⁸ All five-year-olds who lived on an “adequate” street played outside, most for more than two hours a day.

- U.S. work on adult social bonds in neighbourhoods found that these were weaker according to the extent of automobile dependence of a neighbourhood’s residents (but not according to the extent of sprawl *per se*, i.e., according to how thinly the neighbourhood was populated).³⁹
- A report on a California Department of Education study suggested that physically fit students performed better academically.⁴⁰

CHECKLIST FOR HEALTH AND RECREATION PROFESSIONALS

- ✓ Include information about transport and children’s health in resources for the public
- ✓ Consider the potential role for your department in local Active and Safe Routes to School programs
- ✓ Consider strategies to promote active transport to recreation facilities
- ✓ Create opportunities for staff in health, recreation, and planning departments to work jointly on strategies and action plans that create more child-friendly communities
- ✓ Review municipal plans for development and redevelopment for their potential health impacts on children
- ✓ Consider how your department can encourage active transport for its employees (e.g., encouraging car pooling, transit, teleworking).

HOW THE HEALTH AND RECREATION SECTORS CAN CONTRIBUTE

Taken together, the above findings suggest that more attention should be given to transport’s impacts on the health of children and youth. Health and recreation professionals can contribute to efforts that reduce the dependence of both adults and children on motorized transport. Here are some suggestions:

Education. Health and recreation professionals can play important roles in public education regarding children’s health, transport, and land use planning. Disseminating information, training staff, and engaging in discussions with the general public can add to awareness of the significant issues. Public health and rec-

reation resources can outline the potential links between physical activity, obesity, and transport choices.

Contribution to Planning. Health and recreation professionals can influence policy and planning towards the creation of more liveable communities. Recognition that land-use planning has impacts on health, physical activity, and mobility is gaining considerable attention worldwide. The U.S. organization Active Living by Design, part of the University of North Carolina School of Public Health, leads efforts to demonstrate that new collaborations are needed to create environments that contribute to active living, including collaboration between public health and recreation officials and land-use planners.

“I can do more for public health by talking to planners.” This was said by Harry Rutter, a public health physician in Oxfordshire,



UK, at a workshop held in October 2003 in The Netherlands entitled *Health Impacts of Transport on Children*. He was expressing his beliefs that current transport practices in his jurisdiction are a major cause of ill health, that poor land-use planning has been a major contributor to these practices, and that land-use planners can be persuaded to do better.

Participation in, even coordination of relevant programs. In many municipalities, public health staff play a leading role in introducing and supporting Active and Safe Routes to School programs (see Initiative and Resources section below). It's possible to think of stronger roles for public health and recreation staff, including coordination of such programs and child advocacy generally.

“Solutions range from removing barriers to active transport for all people to creating incentives and opportunities for reducing society’s dependence on the automobile.”

INITIATIVES AND RESOURCES

Addressing the health issues outlined above requires an integrated and committed effort by many sectors: transport and land-use planners, educators, health and recreation professionals, parents, transit authorities, and all levels of government. Solutions range from removing barriers to active transport for all people to creating incentives and opportunities for reducing society’s dependence on the automobile. A detailed account of barriers and recommended actions may be found in The Centre’s *Child- and Youth-friendly Land-use and Transport Planning Guidelines* at www.ctsctd.org.

Programs

Safe Routes to School. Green Communities Active and Safe Routes to School program, designed for schools in Ontario, is a comprehensive and adaptable program that engages community partners in finding solutions that meet their needs. Visit www.saferoutestoschool.ca. This web site also has information about programs for youth.

Also visit:

Way to Go! School Program in British Columbia at www.waytogo.icbc.bc.ca

Go for Green at www.goforgreen.org

International site for **Walk to School** initiatives at www.iwalktoschool.org

OffRamp for Youth. A program for high school students that helps youth support sustainable transport choices and creates more opportunities for active transport. It is managed by the Vancouver-based organization Better Environmentally Sound Transportation. Visit www.best.bc.ca.

Other organizations

Safe Kids Canada. This organization provides information about keeping children safe. Its Web site includes safety tips, resources for teachers, and suggestions for advocacy. Visit www.safekidscanada.ca.

Child Friendly Cities. UNICEF’s Child Friendly Cities initiative is at the forefront of efforts to consider children’s needs and aspirations in an urban environment. The Secretariat documents and publicizes child-friendly initiatives and supports national and international networks. It addresses the needs of youth up to 18 years of age. Visit the Web site of the UNICEF Innocenti Research Centre, Florence, Italy at www.childfriendlycities.org.



MORE RESOURCES

“The present booklet is one of five being prepared by The Centre for Sustainable Transportation.”

Books

David Driskell, *Creating better cities with children and youth—A manual for participation*. Earthscan Publications, 2002.

Louise Chawla (ed), *Growing up in an urbanising world*. Earthscan Publications, 2002.

Other documents

Kids on the Move, European Commission.³⁰

Catherine O’Brien, Richard Gilbert, *Kids on the Move in Halton and Peel*. The Centre for Sustainable Transportation.³

This booklet for health and recreation professionals is one of five prepared for The Centre for Sustainable Transportation by Catherine O’Brien, Research Associate, and Richard Gilbert, Research Director. The other four are for educators, municipal officials, parents, and youth.

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A walking school bus in Toronto

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