PART II. THE GUIDELINES

5. General considerations in guideline development

Although some of the 19 guidelines proposed here are directed more to the benefit of some age groups of children and youth than others, most of the guidelines have common characteristics. They seek on the one hand to increase the amount of active transport—notably walking and cycling—engaged in by young people and also the use of public transit, and on the other hand to reduce their travel by car. As well, the guidelines are directed towards reducing the amount of all motorized traffic near children and youth.

The justification for taking these directions is set out above in Section 3. Present transport practices can damage the health of children and youth in one or more of four ways. They can harm the young person while travelling, as in exposure to collision risk or to poor in-vehicle air quality. They can harm the young person when not travelling, as in exposure to traffic noise or to poor ambient air quality. They can harm the young person by reducing opportunities for necessary physical exercise and exploration of the neighbourhood. They can damage the environment and keep children from experiencing the benefits of direct contact with nature.

The particular vulnerabilities of children and youth, noted in Section 3.1, position them as transport's 'canaries', providing stronger indications than adults exhibit as to whether something is wrong. This is not a reason to use them as mine canaries were used, i.e., to give them early exposure to danger. Rather, it is a reason to provide them with greater protection, when they are travelling and when they are not.

Most of the guidelines are not specific to children. Indeed, many of them echo what is found in more general-purpose land-use and transport planning documents, especially those designed to move transport and land use towards sustainability. There is widespread recognition that transport in particular, as currently practised, is not sustainable. Perhaps the most compelling statement to this effect, because of its source, is in a report by several of the world's largest automotive and oil companies, including General Motors, Ford, Toyota, DaimlerChrysler, Honda, Nissan, Renault, Volkswagen, Shell, and BP. The statement is this: "… today's system of mobility is not sustainable. Nor is it likely to become so if present trends continue."[74]

The guidelines cover all types of residential development, and also places where children and youth go. Their application will vary according to whether they are used to guide green-field development or in-fill development, or to assess and remedy existing development. Consideration of how the guidelines can be applied is the concern of Part III of this document. The balance of Part II is concerned with setting out and justifying the 19 guidelines.

As noted in Section 1.3, the guidelines are more for urban and suburban areas than rural and northern areas, but they may well be of value to communities in all parts of Manitoba and Canada.

6. Putting children and youth first

Guideline 1. In transport and land-use planning, the needs of children and youth should receive as much priority as the needs of people of other ages and the requirements of business.

This is the framework guideline that sets the scene for the guidelines to follow and for the implementation of the guidelines discussed in Part III. Putting children and youth first means that their needs—as set out in Section 4—are considered at every stage of transport and land use planning processes. Transport systems are designed so that their needs can be met. Land uses are developed to support such transport systems.

The needs of children and youth point towards implementation of 'softer', less threatening, less intrusive, more inclusive, and more collective transport systems. At first sight, such systems may not meet ideals based only on conventional transport objectives. For example, they may involve slower movement of traffic and thus appear to reduce the level of transport service. However, implementation of all requirements for children and youth could reduce journey times. Motorized road traffic may be slower, but distances may be shorter, and rapid transit may be more available to move people quickly from one place to another.

In Box 2 on the next page, Enrique Peñalosa, former mayor of Bogotà, Colombia, draws a direct link between planning for children and making transport more sustainable.

An essential feature of putting children and youth first is that transport and land-use planning issues are seen from perspectives of children and youth. This requires the participation of children and youth in planning processes, or, for the youngest children, the participation of those responsible for them. How this can be achieved is set out in Part III of this document.

Guideline 2. Within each municipality, designate a staff member or council member, or both, as responsible for bringing the perspectives of young people to consideration of transport and land-use planning issues.

Implementation of this guideline may be an essential requirement for application of all or most of the other guidelines. How this guideline is implemented will depend on how the municipality is structured, and also on its size. The role of a staff member, however, could be the same in all municipalities, similar in nature to that of the fire chief who checks each plan for consistency with fire codes and access requirements for emergency vehicles.

Box 2. Planning for children and transforming transport[75]

Former Bogotà mayor Enrique Peñalosa interviewed by Susan Ives (U.S.A.)

If you could wave a magic wand and create the perfect city, what would that city be like?
We really have to admit that over the past hundred years we have been building cities much more for mobility than for people's well-being. Every year thousands of children are killed by cars. Isn't it time we build cities that are more child-friendly? Over the last 30 years, we've been able to magnify environmental consciousness all over the world. As a result, we know a lot about the ideal environment for a happy whale or a happy mountain gorilla. We're far less clear about what constitutes an ideal environment for a happy human being. ***One common measure for how clean a mountain stream is to look for trout. If you find the trout, the habitat is healthy. It's the same way with children in a city. Children are a kind of indicator species. If we can build a successful city for children we will have a successful city for all people.*** [emphasis added]

Given the rapid growth of Third World cities, is this possible?
Many Third World cities today are really only half built. Many are still surrounded by undeveloped land that will be overtaken by the city very soon. We still have the opportunity to learn from the successes and mistakes of other cities around the world. We need to think about how to create cities that produce more convivial, creative, and happy human beings. Where is the urban expert who decided that cities had to be structured around cars? Why not begin to think differently? Why not dream of a city where half the streets would be for pedestrians, where the heart of the city would be a giant avenue lined with benches and trees, a meeting place for the community, where people go to jog, ride bicycles, talk, kiss, eat in cafes? A city doesn't have to be a bunch of roads for cars with some buildings around them.

As mayor, you made it your platform to transform the city's transportation system.
When I got to city hall, I was a handed a transportation study that said the most important thing the city could do was to build an elevated highway at a cost of $600 million. Instead, we installed a bus system that carries 700,000 people a day at a cost of $300 million. We created hundreds of pedestrian-only streets, parks, plazas, and bike paths, planted trees, and got rid of cluttering commercial signs. We constructed the longest pedestrian-only street in the world. It may seem crazy, because this street goes through some of the poorest neighborhoods in Bogotá, and many of the surrounding streets aren't even paved. But we chose not to improve the streets for the sake of cars, but instead to have wonderful spaces for pedestrians. All this pedestrian infrastructure shows respect for human dignity. We're telling people, "You are important--not because you're rich or because you have a Ph.D., but because you are human." If people are treated as special, as sacred even, they behave that way. This creates a different kind of society.

How was your idea of putting pedestrians needs ahead of cars received?
I was nearly impeached when I said that cars shouldn't be allowed to park on the sidewalks. My opponents were business owners who said there was enough space on the sidewalks for cars to park and for people to still walk by. In Bogotá only 25 to 30 percent of the households have cars. Yet we use public money to build roads for the cars that so few people can afford, while the majority walk or use public transit. Democracy isn't just about casting a vote. It's about public good over private. If we can ban cars, isn't the majority better off?

What steps were you able to take?
We began to experiment by instituting a car-free day on a weekday. In a city of about 7 million people, just about everybody managed to get to work by walking, bicycling, bus, even on horseback--and everybody was better off. There was less air pollution, less time sitting in traffic, more time for people to be productive and enjoy themselves. Every Sunday we close 120 kilometers of roads to motor vehicles for seven hours. A million and a half people of all ages and incomes come out to ride bicycles, jog, and simply gather with others in community. We took a vote, and 83 percent of the public told us they wanted to have car-free days more often. Getting people out of their cars is a means of social integration. You have the upper-income person sitting next to the cleaning lady on the bus. This may be something you take for granted in your country. But in the Third World, society isn't so integrated. This is extremely powerful and revolutionary.

The responsible staff member would review all plans and proposals and have clear authority to advise as to their acceptance or rejection according to their compatibility with these guidelines and similar principles supporting the needs of children and youth. A further responsibility could include working with school officials to encourage use of active transport for the trips to and from school.

This official could also have authority to examine existing arrangements and recommend greater compatibility with the needs of children and youth. A key part of the work of this staff member would involve working with the forums for young people that could be established as a result of implementation of Guideline 3.

A council member responsible for bringing the perspectives of young people to consideration of transport and land-use planning issues would, of course, act through the council and its committees and in the community. Such a council member might take a special interest in establishing and working with the municipality's forum for young people.

Figure 2. Burlington, Ontario, Mayor's Youth Advisory Committee (MYAC)[76]

GET INVOLVED

Want to make a difference in your community? Bring your strengths to the Mayor's Youth Advisory Committee (MYAC).

Working closely with the Mayor, MYAC is a group of students from all over Burlington who advise the mayor on issues that are important to youth. Members are between the ages of 14 and 19 and meet on a monthly basis to discuss ideas and plan events.

HOW TO JOIN

New committee members are selected every September. In order to be reflective of the city's youth we try to maintain a balance of members from all schools throughout our community.

To join, send a copy of your resume and a brief cover letter explaining why you are interested in joining MYAC to the address below. Interested applicants should apply by the final week of August at the absolute latest. Selected candidates will be contacted in early September for an interview.

RECENT PROJECTS

- Youth Friendly Award application
- City Transit Advertising campaign
- Youthfest
- MYAC Art Show
- International Youth Leadership Conference

MYAC MANDATE

To provide an important voice for young people in the Burlington community.

To provide a youth perspective on municipal and other issues to be considered by the mayor and council as they carry out their civic responsibilities.

To provide input or advice to the Mayor, Council, and city staff as.

To involve and inform the young people of Burlington on issues, events and activities in the community.

CITY OF Burlington

Guideline 3. As may be appropriate, establish or adapt one or more forums for children and youth to ensure that their perspectives are considered by land-use and transport planners.

In the case of youth—i.e., about 12 years and older—this guideline might literally involve establishing a youth advisory committee or other such group, charged with reviewing and bringing forward plans and proposals. Some municipalities already have such a group, e.g., the Mayor's Youth Advisory Committee in Burlington, Ontario (see Figure 2 on the previous page). In such cases, the mandate of the existing group could be expanded.

Another approach is that of the Rural Municipality of Gimli, whose council appoints a youth representative to serve as a member of the council with voice but no vote.[77] Since 2006, Gimli has had a particularly active Youth Community Partnership that is somewhat apart from the formal municipal structure but has already concerned itself with municipal issues, including the quality of public transit in the community.

Yet another approach is that of the Village of Breton, Alberta (population 550). There, the Council comprising the mayor and four councillors also has two "youth advisors" as participants in meetings as well as two "seniors advisors."[78]

There is more on involving children and youth in Section 13 of this document (Page 60).

7. Providing for children and youth as pedestrians

Guideline 4. Identify where children and youth want to go or need to go and, to the extent possible, provide ways of getting there by foot.

Travel by foot should be the priority for children and youth who can walk. Walking can provide the maximum of exercise for the minimum financial outlay. Walkers encounter their surroundings and other people at a pace that facilitates beneficial contact. Walkers inhabit sidewalks and other paths in ways that add to the safety of other walkers. Similar considerations apply to children and youth who use wheelchairs. (Consideration of children and youth as cyclists is addressed in Guidelines 8-11.)

The travel patterns of children and youth can be identified by observation, by questioning them, and by questioning their parents and other household members. Such interventions have to be carried out with proper preparation and great care because of sensitivities about observing children and asking questions about them. In many cases, especially for school-related trips, the cooperation of schools could be a key factor. (See Box 3.)

Once travel patterns have been identified, each route should be assessed as to the degree it provides continuous pedestrian access:

- Are there sidewalks or off-road paths for the whole route?
- Can sidewalks or paths be installed where there are none?
- Are there pedestrian crossings or traffic signals at road crossings, however minor, or could they be installed?
- Do wide roads have two-stage crossings, with a protected island between traffic streams?

Of course, when new residential communities are being planned, there are no children to observe or household members to ask questions of. Experience with existing communities has to be applied. Destinations have to be presumed and routes figured out. The

Box 3. Registering 'children's tracks', Vestfold County Council, Norway[79]

This local government incorporates information from children in its land-use planning. The phrase 'children's tracks' is analogous to 'game tracks', also used in county planning. With parental approval, groups of children aged 8-13 plot their own tracks while at school, under the guidance of planning officials. The results are used to assess need and identify locations for numerous facilities. Plans that do not make use of children's tracks and other information about the needs of children and young people are likely to be returned for further work.

checklist above may be helpful. After occupation, the new neighbourhood can be assessed using input from residents.

A Swedish study explored the use of geographic information systems (GIS) to facilitate incorporation of the travel patterns and destinations of young people in urban planning. "Our findings suggest that GIS is effective in engaging children and a good tool for accumulating and processing children's knowledge about their environment. Students and teachers can use it with a reasonable investment of time. The results also suggested that the method could lead to trustworthy and meaningful information for improved traffic safety in children's local environments."[80]

Guideline 5. Assess pedestrian routes used or to be used by children and youth to ensure that they are as safe and suitable for them as possible.

Availability of a route does not ensure its suitability for children. How suitable it is can be determined by walking or wheeling a child through the route or walking with a person who is wheeling a stroller. Here are some questions to be asked:

- Is the route clear to a child, including which part of the path is to be used?
- Are signs visible to, say, a nine-year-old child?
- At road crossings, is the pedestrian crossing area maintained at the same grade as the sidewalk, i.e., vehicles use ramps, not pedestrians?
- Where there are changes in grade, as at curbs, are there ramps for strollers and other aids used on sidewalks?
- Are motorized vehicles prohibited on the route's paths, trails and sidewalks?

The special problems posed by icy and snowy paths are addressed in Guideline 7 below.

In terms of the safety of young people as pedestrians, the primary danger is usually from road traffic, as discussed in Section 3.3. There can be heightened concerns about danger from strangers and, in some places, danger due to the nature of the terrain and other features of the route. Here are some questions:

- Are walking routes separated from traffic moving faster than about 30 kilometres/hour (see Guideline 6 and Guideline 18 below)?
- Where walking routes must be close to traffic, can traffic speeds be reduced to safer levels for children and other pedestrians?
- Are pedestrian crossings fully visible to drivers with clear advanced signage?
- Are road crossings supervised during high traffic times, particularly on routes to school?
- Are there 'eyes' on the route; i.e., it is well travelled, or does it pass through places where people are watching who walks or wheels by?
- Are there places along the route, e.g., variety stores, where children could take refuge if they feel in danger?
- Are dangerous areas well fenced, e.g., construction sites, slopes, and bodies of water?
- Are walking routes illuminated for use during hours of darkness?

Manitoba's Active & Safe Routes to School program promotes 'Neighbourhood Walkabouts' to identify problems and solutions concerning trips to and from school.[81]

As well as safety from traffic and strangers, there is also concern about pollution from nearby traffic, also addressed in Guideline 6.

Guideline 6. Separate sidewalks used by children and youth from heavily travelled roads.

The obvious reasons to keep young people away from road traffic and other motorized vehicles is to avoid injury. Less obvious reasons are to reduce their exposure to noise, which may be harmful (see Section 3.5 above) and to the high levels of pollution that may exist near traffic.

Information in Section 3.2 above suggests that atmospheric concentrations of harmful vehicle emissions can be higher in the breathing spaces of pedestrians on sidewalks than elsewhere, particularly in heavy traffic, and particularly when passing or idling vehicles have curbside tailpipes. The breathing spaces of walking children or children in strollers may be especially heavily polluted because of their proximity to the vehicle tailpipes. Here are some questions:

- Where heavily travelled roads must be used—for example, because children's destinations are located on them—are sidewalks wide enough to avoid proximity to heavy traffic?

- In new development and perhaps elsewhere, could sidewalks be separated from traffic by at least three metres, to avoid high concentrations of vehicle-related pollution?
- In other cases, would it be feasible to consider directing the operation of vehicles with curbside tailpipes away from curbside lanes where there are heavily used sidewalks?

On the last point, the ideal solution would be for manufacturers to locate tailpipes on the offside of the vehicle, i.e., away from the curb, which should be considered. However, the majority of vehicles on the road today appear to have nearside tailpipes, and most of these vehicles will be around for many years. Because sidewalk pollution can be extraordinarily high in the vicinity of nearside tailpipes,[82] action to separate sidewalks from such traffic may be especially important.

An additional point is that buffering against traffic should not become barriers to pedestrians, for example, preventing them from crossing roads at the best possible places.

Guideline 7. Ensure that sidewalks are always cleared of ice and snow.

It's hard to push a stroller or wheelchair through uncleared snow or on an icy sidewalk, or to expect a toddler or even a slightly older child to walk there. Thus, car journeys may be made in winter on days when walking would be possible if paths were cleared.

If accommodation of young children's needs were to have a higher priority, snow- and ice-clearing from sidewalks, trails and other paths might be given a higher priority in the setting of municipal budgets. Where sidewalk clearing is the responsibility of adjacent property owners, there could be more diligent enforcement of relevant by-laws. (See Box 4.) It wouldn't be only young children and their caregivers who would benefit. Elderly people and others who may have mobility challenges could benefit even more from proper removal of snow and ice.

Box 4. Snow-clearing helps Duluth, Minnesota, win award[83]

Walking magazine nominated Duluth as one of "America's best walking communities" in 2000, partly on account of how well sidewalks are cleared of snow. Here's the citation: "Residents here don't let the winter ice and snow keep them from walking. Downtown has a heated skywalk system. City ordinances require residents to quickly remove snow from their sidewalks, while the city takes care of public byways and the three-mile lakeshore walk. Along the scenic Skyline Drive walkway, snowshoes and cross-country skis help people exercise all winter. The city is pursuing a plan to connect all its trails.

8. Providing for children and youth on bicycles (and other wheels)

The guidelines in this section directly concern riding bicycles (and in some cases tricycles), which are the main ways young people ride between places on non-motorized wheels. Other wheels – including skateboards and rollerblades – are becoming increasingly popular means of active transport and should be encouraged as such. We have not addressed these other means here because making specific provision for them can be a complex matter. Moreover, attitudes to, for example, skateboarding are changing rapidly in some parts of Canada, usually but not always towards greater acceptance.

Often, guidelines for cycling can be adapted for use with other wheeled modes of active transport. However, unlike bicycles, skateboards, rollerblades, and scooters are not classified as road vehicles and their use on roadways should not be encouraged. Often their use on separate bicycle paths makes sense. With more experience as to how best to accommodate their use, development of one or more guidelines for these other wheels will be appropriate and useful.

The following guidelines are meant to complement rather than in any way replace bicycle safety programs for children and youth.

Guideline 8. For older children and youth, ensure that destinations that cannot be a walk away are no more than a bicycle ride away.

In transport and land use planning, bicycle use should have a priority similar to that for walking and wheelchair use. Indeed, for youth (about 13 years and older), bicycling could well have a higher priority, to ensure as much non-motorized mobility and independence as possible.

Walking is most suitable for journeys of less than two kilometres (a 25-minute walk by a teenager), while bicycling can be appropriate for journeys of up to five kilometres (also a 25-minute trip by a teenager) and even longer.[84]

Thus, in land use planning:

- Ensure that pedestrians' destinations are less than two kilometres distance (one kilometre for the youngest walkers).
- Ensure that bicycling destinations are less than about five kilometres from homes.

Guideline 9. For destinations to be reached by bicycle, provide separate bicycle paths or trails or, if not possible, install bicycle lanes on regular roads.

The best solution for all bicycle users is to have bicycle paths that are not used by motorized vehicles. The bicycle paths can be alongside sidewalks and pedestrian paths or, if they are well signed and accessible, have different routings.

Where sidewalks are wide enough (four metres or more) a section could become a dedicated path for bicycles and other non-motorized vehicles. This is a frequent arrangement in other countries. Aligning bicycle riders with pedestrians rather than with motor vehicles provides for greater safety and more clearly positions bicycle riding as non-motorized transport.

As a last resort, bicycle lanes should be provided on the pavement. Here are some requirements for bicycle lanes on regular roads:

- They should not be too wide (i.e., not more than about 1.5 metres) or else motor vehicles will travel in them.
- When they are passing parked cars, each side of the lane should be marked, with the nearside line a sufficient distance from the parking areas to avoid cyclists being hit by opening car doors.

We say 'as a last resort' fully recognizing that bicycle riders have as much legal right to be on most roads as operators of other vehicles. Our words recognize the North American reality that there is less acceptance of and familiarity with bicycles in regular traffic than in other countries. Many adult cyclists argue that bicycle lanes should receive priority in transport planning because many kilometres of bike lane can be provided for the cost of installing and maintaining one kilometre of a bike path. This argument may have less merit when children and youth are considered.

Figure 3. A family riding together in Kansas City, Missouri (children aged 17 months and four years)[85]

One measure of the overall acceptance of cycling could be the extent to which children are carried on adults' bicycles. Where bicycling is common, children

aged 10-30 months may be carried as much on adults' bicycles as by stroller. This can be a convenient and healthful way of carrying a child, that may also please the child.

Making roads safe enough for adults to be confident about riding with young children on their bikes or riding with them could be a reasonable objective for transport planners.

Children under 13 years of age generally ride on sidewalks unless there are bicycle paths. Such riding should be encouraged rather than seen as a nuisance to pedestrians. Early bicycle users may be more likely to be bicycle users as teenagers and adults. Here are some requirements for bicycle riding on sidewalks:

- Sidewalks should be wide enough (at least 3.0 metres and up to 4.0 metres) to accommodate pedestrians and young cyclists comfortably.
- Even though young cyclists should be walking their bicycles at crossings, ensure that roads are crossed at the same grade as sidewalks, or that ramps are in place. (See Guideline 5.)
- Young bicycle riders should be required to give way to pedestrians at all times, to ride at a speed that is comfortable to pedestrians (i.e., less than 10 kilometres per hour), and always to stop and dismount when crossing roads.

The last point reinforces the principle that sidewalks are primarily for pedestrians. Box 5 sets out the City of Toronto's position on this matter, which notes that riding on sidewalks

Box 5. Toronto's 'Sidewalks are for Pedestrians' campaign[86]

Pedestrians use sidewalks to travel safely along busy city streets. During the summer months sidewalks are congested with pedestrians, cafes and vendors. When cyclists, in-line skaters and scooters are also involved, conflicts arise that could be prevented.

A City bylaw allows cyclists with a tire size of 61cm or 24 inches or less to ride on the sidewalk. The intent of this bylaw is to allow young children to cycle on the sidewalk while they learn to ride. The bylaw is based on wheel size because it is difficult for Police to enforce age-based bylaws, as most children do not carry identification. This is a municipal bylaw and rules vary in communities across Ontario.

The Toronto bylaw states that riding a bicycle with tire size over 61cm (24 inches) on sidewalks is prohibited, as is riding/operating a bicycle (or roller skates, in-line skates, skateboard, coaster, toy vehicle) on a sidewalk without due care and attention and reasonable consideration for others. The fine in downtown Toronto for not following this bylaw is $90 and aggressive cyclists can also be charged with careless driving.

There are many hazards involved when cycling on the sidewalks. If a cyclist hits a pedestrian, the injuries can be severe. Seniors are especially vulnerable and can fall merely by being startled. Anyone with a visual or hearing impairment is at increased risk.

Many cyclists ride on the sidewalk because they are afraid of cars. But choosing to ride on the sidewalk does not eliminate the risk of a car and bike collision. Cycling on the sidewalk is a contributing factor in 30 per cent of car and bike collisions. Collisions occur when cyclists ride off the sidewalk into the roadway or when motorists are exiting a laneway or driveway.

also carries the risk of dangerous bike-car collisions. Many other communities in Canada have similar positions.

Guideline 10. Ensure that bicycle riders are well provided for at intersections and have sufficient priority for forward movement.

Whether riding on bicycle paths, bicycle lanes or roads, intersections and road crossings pose the greatest challenges for bicycle riders. They are where most collisions occur.

The best solution for bicycle lanes is to provide a space in front of other vehicles with priority of movement for bicycles, whether or not the intersection is signalized. At the least, there should be a clearly marked, separate space for bicycles at the intersection. (See Figure 4 for an example: one of ten or more 'bike boxes' installed at intersections in Portland, Oregon.[88] On a red traffic signal, bicycles stop at the forward line; other vehicles stop at the rear line.)

Figure 4. Priority for bicycles at an intersection in Portland, Oregon[87]

The best solution for bicycle paths is to provide separate routing or signalling that guides riders safely through the intersection.

Guideline 11. At destinations, provide secure, convenient bicycle parking.

Bicycle theft is a regrettable impediment to bicycle use today, whatever the age of the rider. Several measures help, including use of older bicycles of evident little value, and double locking with removal of portable parts such as lights, saddles, and even wheels.

The strongest protection can be provided by secure bicycle storage. This should be a routine service provided by schools and other places where young bicycle riders congregate. Locating bicycle storage in a highly visible location increases security and safety for cyclists. Ideally, there would also be provision of shower facilities and locations to store cycling gear.

Regular bike posts and racks should be positioned away from walls – to allow for maximum use – and always be in highly visible locations.

According to an Australian report, providing secure bicycle storage on school property "can increase the number of students riding to school by 50 per cent overnight".[89]

9. Providing for children and youth as transit users

Guideline 12. Ensure that every part of a transit system is safe and welcoming to young people, and affordable.

Youth can be heavy users of transit, and in some communities comprise a significant share of transit users. However, they sometimes may not be as welcome as passengers as adults for fear they will be rowdy, vandalize transit property or do something unsafe.

Transit managers could help ensure that children and youth are welcome on their systems by appropriate messaging in schools, on the systems themselves and in other ways. Edmonton's transit system is known for recognizing the importance of young people as current and future customers and goes out of its way to attract them, especially for the journey to and from school. Box 6 shows the relevant part of the City's Web site.

Box 6. Edmonton Transit System (ETS) strongly encourages student use of transit[90]

School Service

ETS strives to provide safe, reliable transit service to students.

We offer reduced student fares, travel training, and community outreach programs as part of our superior service to student travelers.

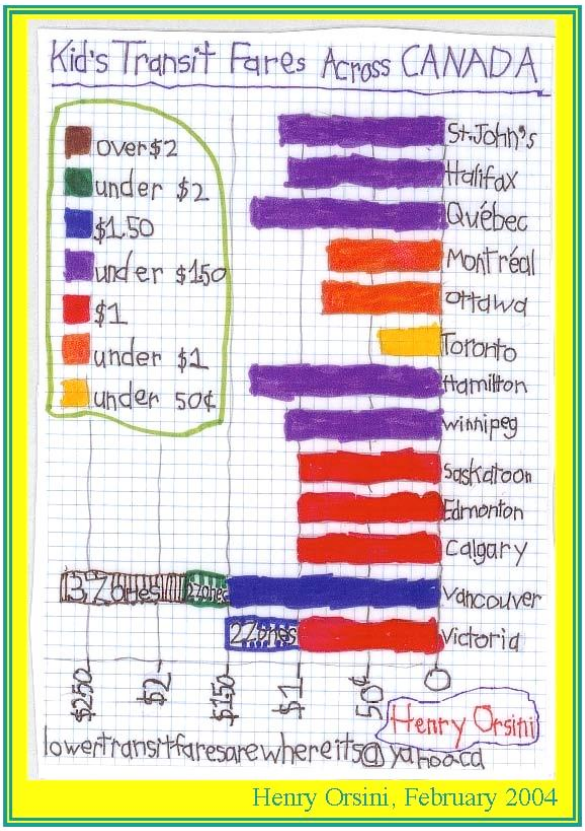
ETS School Service information that outlines which routes service any given school are available through BusLink, ETS Customer Services, and the School Services tool.

Subsided ETS student monthly passes are available to elementary, junior and senior high school students only through the school they attend.

Young people in Edmonton want their transit system to be even more friendly: "Investing in future users is certainly very important. How about finding new and innovative ways to engage with children of different ages? For instance, transit agency involvement in school events: why not offer 'premier' bus service to high school graduation ceremonies? At younger ages, bus operators could give out candy on Halloween, etc. The goal should be

to give kids great memories on transit and give them confidence to travel independently using it!"[91]

For younger teenagers, and especially for even younger children who use transit without an adult, safety in relation to strangers is an important feature. Consideration of children's needs when managing such aspects of transit systems would lead to provision of higher levels of supervision in places where children might be vulnerable. Moreover, a transit system that is friendlier to children will also be friendlier to other vulnerable groups. Children of seven or eight years and older are capable of using transit systems alone, and do so in many large Asian cities including Hong Kong and Tokyo. This used to happen in North American cities a few decades ago but now, even though cities may be objectively safer,[92] allowing a child to use transit can be frowned on. A writer resident in Manhattan who allowed her nine-year-old son to use the subway was called "America's worst mom."[93] In many places, not allowing transit use can represent lost opportunities for children's independent mobility.



Useful objectives for the planning of a transit system could be that eight- or nine-year-old children are confident about using it without supervision, and that the children's parents are comfortable about such use.

Children's fares vary greatly even between transit systems serving adjacent areas. For example, in early 2010 in one part of the Toronto region the children's cash fare is 75 cents. In the neighbouring area the children's cash fare is $3.25 ($4.25 for longer trips), the same as the adult fare.[95] A young Vancouver resident's research in 2004 on this matter is shown in Figure 5.

Low fares for children can be an investment in future regular riders. They can also be of special benefit to families with low incomes.

One way of encouraging the transit habit at an impressionable age could be to provide all high-school students with a no-cost (to them) transit pass. A model could be the kind of transit pass, known as a U-pass, available without additional charge to students of some universities in Canada.[96]

Municipalities and transit systems might want to consider these suggestions carefully and, if they are adopted, engage in appropriate educational campaigns, particularly in connection with providing attractive fares for young people. The result could be a generation more inclined to use transit, and thus an investment in the future.[97]

Guideline 13. Avoid transfers by routing vehicles where children and youth want to and need to go; make transfers easy where necessary.

A challenging feature of transit systems, especially for younger children, is the frequent requirement to transfer between routes and even between modes. Transfers can be avoided by more appropriate routing of vehicles.

Where transfers are nevertheless required, directions could be positioned to serve the needs of younger children who might need them as well as youth and adults.

As in other respects, designing this aspect of transit systems with children and youth in mind can result in systems that are attractive to a wide range of users.

Guideline 14. Examine every aspect of a transit system from the perspective of a parent with a child in a stroller, and make adjustments to meet such a traveller's needs.

Among the most challenged users of transit systems are passengers with young children in strollers. These users have particular difficulties when there are stairs or steps and when vehicles are overcrowded.

For stairs and steps the remedies are to change the infrastructure or the vehicles. Elevators can be sometimes be added; low-floor vehicles can be used (see Figure 6). A lower-cost option can be to encourage a culture of watching out for persons travelling with young children. Such a

Figure 6. More than half of Winnipeg Transit's 535 buses are low-floor, made by New Flyer Industries, based in Winnipeg[98]

culture can be of value in periods of overcrowding, when passengers with young children could be given more space, and help getting on and off transit vehicles.

A transit system that is congenial to an adult pushing a child in a stroller, and to the child, will likely be congenial to a wide range of users, including older people who are frail and young people and adults who live with disabilities.

10. Providing for journeys to and from school

Providing for journeys to and from school is usually regarded more as a matter for school boards. Municipalities also have an interest, because of the advantages to the community of having less motorized transport and of having children and youth who may sustain practices of active transport into adulthood. Actions by municipalities can have an impact on travel to and from school. As noted in the text for Guideline 15 below, these trips are more likely to be motorized if residential densities are low, or if there are no means to walk or cycle to school. The ability of municipalities to encourage school boards to help provide for active travel to and from school should not be overlooked. Opportunities to collaborate with school boards can be created through a process known as School Travel Planning.[99]

The sparse available data and informal reports suggest that more and more children and youth are being driven to school. A Saskatchewan planner and single father offered several reasons why this might be happening, set out in Box 7.

Box 7. Reasons why people drive their kids to school

- new, flexible, work start time allows you to take your kids to school and then be off to work
- fear that someone will snatch your kid
- taking kids to day-care, then they get shipped by bus to school, then bused back to day-care and picked up after work, and driven home
- weather – it is cold, very cold in the winter
- moms are off to their mom groups after dropping off their kids; they also 'car pool' other kids
- split parent duties, it is hard to have kids bouncing around, and off to 'here and there'
- extracurricular activities (kung-fu, snowboarding, swimming ...).

Guideline 15. Help ensure that school policies and practices favour walking, cycling, and other modes of active transport for trips to and from school, and also regular public transport where this is available and appropriate.

More person-kilometres may happen in school buses in Canada than in the vehicles of all of Canada's transit systems.[100] Where distances to school are too great for walking or cycling, and there is no feasible transit alternative, school buses can be a more environmentally sound and more convenient alternative than being driven or driving to school.

However, school buses present problems. Children may stay in them too long because of the way routes are arranged. Air quality inside school buses may be poor. Some say bullying on school buses can be a worse problem. Time spent in buses is time not spent walking or cycling, or achieving independence by travelling on the regular transit system.

School bus travel is made necessary by large school catchment areas, which in turn arise because residential densities are low or schools are large, or both. Distance to school and residential densities are key factors that influence active commuting to school.[101]

Children can spend quite long periods in school buses. There are few data on actual travel times. For 11-15 year-olds in south-central Ontario, the median length of the journey to school by school bus is only three kilometres. However, more than one in 20 of these students travel more than 15 kilometres by school bus.[102] Given the usual stops and starts of school bus trip, the time in the school bus could well be considerably more than an hour.

Even within the City of Winnipeg, students can spend up to 75 minutes per trip.[103] Outside Winnipeg, they may spend longer. This is acknowledged, for example in the policies of the Interlake School Division, one of which is "The maximum ride for any student on any route or combination of routes will be one hour and thirty minutes."[104]

Section 43.1 of Manitoba's *Public School's Act*, as amended in 2008, requires school boards to use their best efforts "to ensure that a pupil's one-way travel time to his or her designated school is not longer than one hour."[105] It also gives school boards until 2013 to meet this requirement, as long as they are making progress towards it.

Thirty minutes used to be regarded as a long one-way school bus trip.[106] Considering the potential for poor in-vehicle air quality (see Section 3.2 above), a limit of 20 minutes per trip, or 40 minutes per day, could be more reasonable. Achieving this could be costly in terms of the need for additional buses and operators, and even additional schools. On the other hand, given the evidence noted in Section 3.2 on air quality in school buses, not reducing children's exposure to pollutants in these vehicles could be more costly in the long run.

Alternatives would be to design school buses so that there is little infiltration of polluted air or to ensure adequate ventilation. However, these options would not reduce the time children spend in buses, forfeiting the opportunity of exercising, or the time during which they see the world as a passing show rather than something to be interacted with.

Yet another alternative would be to reduce the availability of school buses, especially for older students where shorter distances are involved. The *Public Schools Act* seems to encourage busing of all elementary and high school students who live 1.6 kilometres or more from their schools and the provision of bus routes to within 0.8 kilometre of each young person's home.[107] Relaxation of these requirements could result in more active

transportation. On the other hand, it could also result in less walking and cycling and more chauffeuring to and from school.

Parents may sometimes welcome longer school bus journeys for their children because they can leave for work earlier knowing that someone else is responsible for their children. If this is true, it would likely be less true if information about potential poor air quality inside school buses were better known (See Section 3.2 above.) Shorter school bus journeys could create a need for additional child care, perhaps at the school. The public cost of providing such care could be lower than the cost of ill-health through exposure to in-vehicle pollution.

Concern about the exposure of children to poor air quality in school buses appears to be stronger in the U.S. than in Canada (see Box 8).

Box 8. Guidance to school officials developed as part of the Clean School Bus USA program[108]

- Establish anti-idling policies.
- Work with bus companies to ensure anti-idling policies are adopted.
- Minimize the time that children spend outside when school buses are arriving or departing
- If possible, shorten commute times for children.
- Discourage drivers from following directly behind other large vehicles, including school buses – especially if they see visible smoke being emitted.
- Deploy cleanest buses on longest routes.
- Post no-idling signs on school grounds.
- Provide a space inside the school where drivers can wait on cold days.
- Limit idling of delivery vehicles on school grounds.
- Develop educational programs for students about air pollution.

Land use and transport planners can help reduce school bus travel by ensuring higher residential densities. School boards and municipalities can explore options for reducing school bus routes through strategically placed infrastructure that enables students to walk or cycle safely. Where available, transit routes can be rearranged so transit can be readily used for travel to and from school.

Parents could be encouraged to take their young children to school by regular transit by not requiring them to purchase two fares to do it: one to the school and one to their place of work or back to home. Transit systems that allow a fare to apply for a fixed period after first use, rather than for a particular trip, are more convenient for dropping off children.

Older students could be encouraged to use public transit rather than school buses, where transit is available. Some transit systems go out their way to serve high-school and even some younger students. Others do not. Generally, young people are not scared by transit but, to use of the words of a workshop participant "are thrilled to use it, especially without adults." However, in some communities transit has an unsavoury reputation that deserves attention so as to make it more appealing to young people, and others.

Rising fuel costs and growing school board transport budgets provide additional incentives for collaborative efforts regarding school travel demand management.

Guideline 16. For younger children, help arrange walking school buses and other means of supervision.

This guideline applies mainly to walkable regular journeys to and from school, kindergarten, and day care, and might be best implemented through those organizations. It can also apply less regularly for trips to neighbourhood events and birthday parties, and then would be implemented directly by parents and caregivers. In all cases, municipalities could offer encouragement and even facilitation.

Figure 7. The rear part of a walking school bus[109]

The essential feature of a walking bus is a line of children, even holding a rope if they are under five years, led by and followed by one or more adults with perhaps another one or more adults roving the line. (See Figure 7 – in which more than the usual number of accompanying adults may have joined the bus for the picture).

Older children and youth can supervise walking school buses. This has been done with success at Westvale Public School in Waterloo, Ontario.[110] The school's Trailblazer program has students in Grades 5 and 6 walking younger children to and from school (see

Figure 8). The program has been extended to other schools in the Region of Waterloo. It has been endorsed by the police service and three municipalities.

A walking bus shares responsibility for children's travel and provides social interaction for children and their caregivers. It helps teach traffic safety. Above all, it adds to the opportunities for children to travel by walking.

Figure 8. Student-led walking school bus[111]

11. Reducing transport's adverse impacts on children and youth

The Guidelines in this section are directed towards reducing all adverse traffic impacts on young people (and others), whether or not they are in a vehicle. Children and youth appear to be particularly vulnerable to traffic impacts. Therefore, reducing traffic impacts could have an especially beneficial effect on young people. Similarly, communities designed around the automobile may be less child- and youth-friendly than communities with a low dependence on automobile use. To the extent this applies, it may follow that all steps taken to reduce road traffic can be steps in the direction of child- and youth-friendly planning.

It is not a coincidence that implementation of the Guidelines in this section (and some of the other Guidelines) could make a substantial contribution to progress towards sustainable transport and particularly towards a transport system that requires reduced levels of fossil fuel use and produces lower emissions of greenhouse gases (GHGs). Transport that meets young people's needs is generally more sustainable than transport that does not meet their needs. Meeting young people's needs would help Canada meet its international obligations to reduce GHG emissions.

Guideline 17. Where destinations cannot be reached by foot, bicycle or transit, arrange land uses so that in-car time is reduced.

To the extent that children's travel by car is undesirable—because of poor in-vehicle air quality, discussed below, and opportunities lost to exercise, gain independence, and experience neighbourhoods—land use and transport planners should help ensure that the distances children travel by car are kept as short as possible.

The desirability of compact urban form applies even where automobile use is required because, other things being equal, a more compact urban form is associated with shorter journeys.

Mixing uses can also help reduce travelling time. When uses are mixed, destinations are likely—although not certain—to be nearer.

Finally, specific knowledge of where children and youth travel—as could be mapped for journeys by foot or wheelchair in respect to Guideline 4—can contribute to locating facilities in ways that reduce travel time. Such facilities would include recreation centres and parks, and even shopping malls, as well as schools.

As discussed above in Section 3.4, a potential hazard to children in vehicles is poor in-vehicle air quality. This can arise from the vehicle's own emissions, but it is more likely to result from emissions from other vehicles.

As well as avoiding the need for children to travel by car, and keeping necessary journeys short, the following actions can be taken to prevent the exposure of children and youth to poor in-vehicle air quality:

- Avoid driving in heavy traffic, driving close to other traffic, especially vehicles with diesel engines, and idling.
- Use vehicles for which the manufacturer has considered the possibility of poor in-vehicle air quality and has taken design steps to minimize it.
- Ensure a free flow of air through the vehicle at all times.

Note that many of these suggestions match those made by the U.S. Environmental Protection Agency for school buses (see Box 8 on Page 47).

Guideline 18. Post and enforce much lower speed limits, particularly in urban areas.

Other things being equal, collisions are more likely to occur and are more likely to be severe when speeds are high. Moreover, speeding traffic frightens cyclists and pedestrians and generally reduces the congeniality of streets. Major reductions in permitted maximum speeds could significantly improve the quality of life for everyone, while having only a relatively small effect on overall average journey times.

To provide a better, safer environment for children and youth, but also to provide a better urban environment generally, maximum traffic speeds should be much lower than are presently permitted. Based on the information in Section 3.3, particularly Figure 1, reasonable limits might be 40 kilometres an hour on arterial roads, and 25 km/h on other roads. In this way, damage might be limited to scrapes and broken bones (see Figure 1).

This may be the most controversial guideline of the present set because it speaks to a radically different relationship between vehicles and the urban environment, in which the speed for which vehicles exist becomes more strongly subordinated to other requirements, notably but not only those of children.

In Manitoba, the speed limit in residential areas is almost always 50 km/h, as it is in most of the rest of Canada. There is reluctance to consider changing this. For example, both Traffic Safety Education & Consulting Manitoba (TSECMB)—"Rural Manitoba's no-for-profit traffic safety resource"—and the City of Winnipeg argue against lowering the limit below 50 km/h. TSECMB says that "Research on driver behaviors and attitudes has shown that the arbitrary reduction of the speed limit has no significant effect or impact on

average vehicle speeds."[112] The City says that "However, unrealistically low speed limits may cause an increase in collisions."[113]

Only the provincial government has the authority to change this; and the government appears reluctant to do so. This is not withstanding the campaign by Safe Kids Canada to lower the limit to 30-40 km/h, which notes that "Pedestrians are eight times more likely to be killed by cars traveling at 50 km/h than at 30 km/h."[115]

In Europe, low speed limits in residential and other areas are common. However, speed limits on urban arterial roads are at least as high as they are in Manitoba (see Box 9).

Box 9. Traffic speed limits (kilometres/hour) in Europe and Manitoba[114]

	Residential areas	Traffic calming zones	School areas	Pedestrian streets	Fast urban roads
Austria	10	30, 40		6	
Denmark	30	30	30	30	60, 70, 80
Finland	20, 30, 40	30, 40	30, 40		60, 70
Germany		6, 30	30	6	60, 70
Greece	30	20, 30			70, 80
Netherlands	30	30	30		70
Portugal					
Spain					
Sweden	30	30	30	30	70
UK	32	32	32		64, 96
Hungary	20, 30	20, 30			60, 70, 80
Iceland	50	30			60, 70
Latvia	20		30, 40		
Lithuania	50	40			60
Norway	30, 40	30	30		60, 70
Romania	30				60
Slovakia	20, 30	20, 30		40	60, 80
Slovenia		20, 30, 40	40		
Switzerland	20	30			60, 70
Manitoba	*50*	*50*	*50*		*60-80*

It's not necessary to go to Europe to experience a community with low speed limits. Since 1981, there has been a 30-kilometre/hour speed limit on all residential and collector roadways in Airdrie, Alberta, 33 kilometres north of Calgary, 2006 population 28,927.

The City of Airdrie says that "World-wide research indicates a decline in accident frequency and severity when speed limits are reduced. Other secondary benefits include reducing fuel and vehicle operating costs, increased pedestrian safety and significant reductions in vehicle emissions and noise."[116]

Children in cars may not be as secure as adults (because seats and seatbelts are designed for adults) and they may be more fearful of speeds. Moreover the consequences of collisions may be more devastating in respect of children in terms of years of life lost, years of life enduring major disability, and years of life suffering from major trauma. Thus the imperative to travel slowly and carefully when children are passengers is strong, as well as the more general requirements regarding vehicle speed set out above.

An additional point is that the ability to view and reflect on what is being passed is reduced with speed. Thus, a child travelling in a slowly moving vehicle can gain more familiarity with a neighbourhood, although much less than if the route were walked or cycled.

Finally, driving habits in adulthood may be influenced by experiences of being driven as a child. A child exposed to speedy dangerous driving may grow up to become a speedy dangerous driver.

Guideline 19. Do what is possible to reduce amounts of motorized traffic generally and reduce its adverse impacts.

Actions that may reduce the amount of motorized traffic overall include:

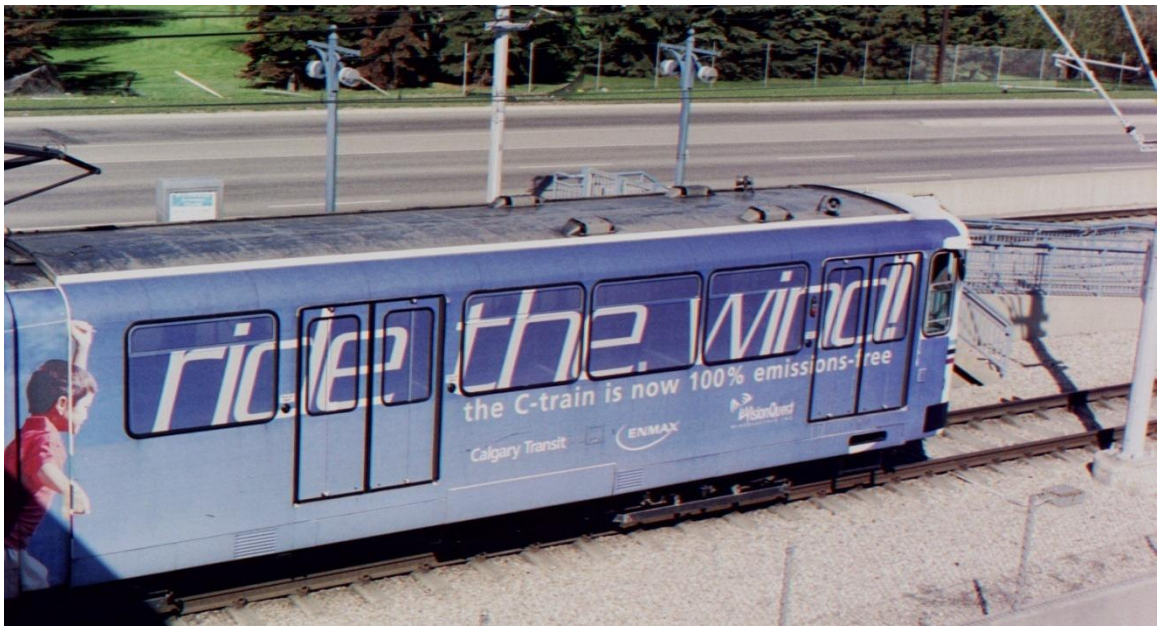
- Discouragement of car ownership (in that ownership is a major factor determining car use).
- Discouragement of car use when a car is owned.
- Facilitation of alternatives, including provision of pedestrian and bicycling infrastructure and provision of adequate, comprehensive public transport.
- Deployment of land-use arrangements that support low levels of car ownership and use, chiefly high residential densities but also a mix of uses and other arrangements that support non-motorized travel and transit use.
- Ensuring that shared-use paths and trails give priority to active transport modes.

Another action that a municipality can take is to use or require the use of low-emission rather than regular diesel vehicles for urban transit or, where possible, electric vehicles.

Electric vehicles are more 'at home' in the city because they emit almost no pollution where they move (and little elsewhere if the electricity is generated from renewable re-

sources). Because Manitoba's electricity is entirely renewably produced, and because North America's major manufacturer of electric trolleybuses is located in Manitoba, there is good reason to consider use of electric transit vehicles, although there are presently no electrically powered transit systems in the province. Calgary's light-rail system is especially interesting because in a province where almost all electricity is generated from coal, it runs on the energy from several wind turbines (see Figure 9).

Figure 9. A light-rail train in Calgary sporting its justified 'Ride the Wind' slogan[117]



Winnipeg used to have a trolley bus system and Winnipeg and Brandon both had streetcar systems.[118]

Diesel-powered buses, by contrast, can be major sources of pollution along urban and other roads. Indeed, a regular diesel bus carrying fewer than six passengers can produce more pollution per person-kilometre than the average single-occupancy automobile.

Electric vehicles—trolley buses, streetcars, and electric trains of various kinds—are usually more expensive than buses because of the special infrastructure required, although, for given levels of ridership they generally have lower operating costs. Quite high settlement densities are required to justify electric transit over buses.

Electric vehicles can also be more suited to urban situations because they can be quieter than buses. Moreover, they often provide a more comfortable ride. Their evident infrastructure can be useful as clues to the availability of transit service when negotiating unfamiliar parts of a city.

Lower air pollution and noise, and comfort about availability can all be conducive to children's health and well-being. In a city where children were put first, transit might make more use of electric vehicles.

Where installation of infrastructure for electric vehicles is not possible, the best use should be made of low-emission diesel buses, including hybrid buses, which can result in considerably lower pollution along bus routes (although in some cases higher fuel use and higher rates of emission of greenhouse gases).

Finally, a municipality can seek to influence the way freight moves. It can encourage use of rail for freight, and use of electric vehicles, including hybrid vehicles, where road freight must be used.

Freight transport, notably trucking, is a major source of pollution and noise in urban areas. Movement of more goods by train could be beneficial in this respect, although the first and last few kilometres of each freight movement, usually in an urban area, might still have to be performed by truck, except where major shippers are involved, with their own rail sidings.

Hybrid trucks, which use electric motors to supplement their diesel engines, are coming onto the market. From a children's perspective, their use can be encouraged as they have considerably lower fuel consumption and consequent lower emissions of pollutants. Moreover, within limits, they can operate entirely on battery power, which would be desirable, for example, when operating near schools.

Again, if the needs of children and youth were put at the forefront, shifts to rail and adoption of new technologies could well be implemented earlier.