



**Literature Review for
Resource Conservation Manitoba's
"Safe, Active, Green and Easy Ways to School"
Program (SAGE):**

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Executive Summary

Providing alternatives to the car-dependent lifestyles of children and their families is the particular focus of Active & Safe Routes to School Programs (A&SRTS), which promote walking through a variety of measures, including “Walking School Buses.” This report is an appraisal not of the effectiveness of such programs, but of the many contexts that these programs should consider when promoting their efforts and in conducting future research. The issues under discussion in this report are contextualized in terms of the various levels of society (members of the family; the school; the city) and their relationship to – and impact on – the home-school journey. The physical, cognitive and psychological health and well-being of children is considered, as is the impact of travel on the family.

Children are particularly susceptible to the attractions of “car culture”, and are taught to desire and enjoy riding in cars from an early age. Yet studies also suggest that the passivity encouraged by car travel can be detrimental to a child’s cognitive development. The ability of children to successfully navigate space is an important part of their overall development and sense of competence.

In an environment designed for the automobile, however, walking and cycling to school can be particularly dangerous, and pedestrian education for children has proved no remedy. Experts agree that there is no substitute for adult accompaniment for children under the age of 9 walking to school. However, the fear engendered by traffic in the urban environment has kept significant numbers of children from walking regularly, and studies are showing a dramatic increase in the number of obese children. Regular walking is seen as a positive step towards raising a generation of healthier children.

Another barrier to walking is simply that families are so busy, and driving is seen as a way to fit more events into a day. For families who are too poor to own a car, though, walking is often the only choice, and when it requires passing through poverty-stricken areas, it can be dangerous as well.

Because of the presence of so many social risks and pressures, parents have a number of major reasons why they choose to drive their children to school, and these are in turn motivated by the values they hold on a variety of social and environmental issues. Successful A&SRTS programs, then, must take these reasons and values into account.

What is harder to address are physical factors, such as urban form and design. New schools are increasingly being built in remote locations that make walking almost impossible. The urban pattern around schools may also be heavily car-oriented and dangerous to pedestrians. A&SRTS programs may therefore be easier to administer in older parts of cities that were designed for walking.

In order to address many of the barriers to walking and cycling to school, some U.S. states have adopted legislation to fund and encourage such programs, and some of these models are seen as applicable to the Canadian context. The report concludes with recommendations.

Table of Contents

1.0	INTRODUCTION	1
1.2	Background	2
2.0	CONTEXTS FOR, AND IMPACTS OF, THE HOME-SCHOOL JOURNEY	4
2.1	Introduction.....	4
2.2	Children and the Home-School Journey.....	4
2.2.1	Kids and car culture	4
2.2.2	Environmental Cognition & Wayfinding.....	6
2.2.3	Environmental Competence	7
2.2.4	Child Health & Well-being: Injuries & death.....	9
2.2.5	Child Health & Well-being: Inactivity & Obesity	10
2.3	The Family and the Home-School Journey	13
2.3.1	Programmed Lives	13
2.3.2	Poverty and Carlessness.....	15
2.3.3	Motivations for Driving to School.....	17
2.4	Schools and the Home-School Journey: “Why Can’t Johnny Walk to School?”	19
2.5	The City and the Home-to-School Journey	21
3.0	POLICY CONTEXTS.....	23
4.0	CONTEXTS AND IMPACTS: CONCLUSIONS	25
5.0	RECOMMENDATIONS	26
6.0	BIBLIOGRAPHY	28
	APPENDIX: VALUE STATEMENTS RELATED TO DRIVING TO SCHOOL.....	34

1.0 Introduction

It has become increasingly apparent, both through empirical research and casual observation, that children and youth in the early 21st century are car-dependent like no generation before them. For a wide variety of reasons, parents are ever more reluctant to allow their children any independent travel beyond the immediate home environment, and instead act in the role of escort – and, indeed, “chauffeur” to their offspring. As a result, children are less often reaching regular destinations by walking, cycling, skating and skateboarding.

One of the most common destinations young people need to reach is, of course, their school. The journey to school can represent a quarter of all travel for the average youngster (Bradshaw 1995). Because 85 percent of schoolchildren are driven by their parents, other adults or teenagers, this translates into 27 percent of the average daily traffic in a given city being generated by home-to-school travel (Appleyard 2003). While many parents drive their children to school on their way to their own workplaces – and would thus be driving anyway – the extent of school-generated traffic is nonetheless quite significant. It is having serious consequences for municipal planners and schools (in the form of local congestion); families, who must structure their days around vehicle trips; and the children themselves, who are, by all accounts, getting less exercise and at may be at greater risk of obesity.

In response to these trends, more jurisdictions around the world are adopting Active & Safe Routes to School (A&SRTS) programs, which are designed to promote and facilitate walking to school. They are “an attempt to remove the physical and psychological barriers between home and school and give children (and their parents) more freedom and a healthier lifestyle” (Appleyard 2003, 34). Active & Safe Routes to School programs represent a form of transportation demand management strategy (or TDM) in that they utilize both marketing and promotion to alter travel behaviour and reduce automobile use. Specifically, A&SRTS programs are a part of School Transportation Demand Management, which can include such elements as ride sharing, route enhancement, enhanced law enforcement, traffic calming, and “walking school buses”, in which volunteer parents or other adults take turns walking neighbourhood children to school (Litman 2003).

In Manitoba, Resource Conservation Manitoba (RCM) is the regional delivery agent for the Active and Safe Routes to School Program. RCM partners with national A&SRTS coordinator Go for Green, and other regional delivery partners across Canada in program development, design and implementation. Manitoba’s A&SRTS Program began in 2002 as an 18-month pilot project entitled SAGE (safe, active, green and easy ways to school). The goal of the pilot project was to gauge interest in walk to school programs in Manitoba and determine the viability of a year-round program. In its first 18 months, the SAGE Pilot garnered a great deal of interest from community schools and community partners. Interest in the program led to the development of Manitoba’s A&SRTS Program. In less than two years, the A&SRTS Program in Manitoba has engaged over

150 schools in walk to school initiatives. During the Pilot phase, RCM worked with 4 pilot schools to develop, design and implement the different components of the program, including the ‘walking school bus’, walking clubs, (e.g. Walking Wednesday and Footloose Friday Clubs), Toboggan Tuesdays and safe routes to school classroom mapping exercises.

Clearly there is an important role for such programs in TDM, and there is great potential for their expansion in a large city such as Winnipeg. However, much still needs to be learned. Empirical research is needed into how the program is being received by families and schools; what benefits are accruing to children, families and schools; and if it is addressing all the issues that it could. What difference does walking to school make in overall fitness levels of participants? Do participating children feel more competent in their environment? Do such programs make a difference in childrens’ confidence levels? Does participation in SAGE translate into seeking active transportation opportunities in other aspects of family life? Does participation mean more or less convenience for families than former modal choices? Inasmuch as certain A&SRTS programs such as walking school buses expose children to adults other than their parents, and parents to other adults, to what extent can such programs contribute to fostering a sense of community?

The purpose of this literature review is not to answer these questions, but to establish a foundation on which further research may be built. In section two we will examine the larger social, economic, psychological and health contexts in which A&SRTS programs are situated, while the third section will review relevant policy and financial considerations.

It is hoped that A&SRTS program providers will be able to utilize this report to not only assist in developing their programs but also in developing collaborative, community-based empirical studies into the effectiveness of such programs.

1.2 Background

In his 1993 book *Reclaiming our Cities and Towns: Better Living with Less Traffic*, David Engwicht proposed a number of innovative solutions to the increasingly serious problems associated with car dependence. Among them were: the elimination of “cross commuting” through job/home rationalization programs, wherein employers were encouraged to find employees within a few kilometers’ radius; suburbs gated with “lift-bays” that single-occupant cars could only pass if they had a letter from their employer stating that the car was needed that day; and campaign to promote shopping locally; and “traffic reduction days” (Engwicht 1993, pp. 138-143). In addition to these ideas, Engwicht proposed that school and other authorities could organize “walking school buses”, adult volunteers would escort neighbourhood children to school along a previously chosen route – which could be marked prominently with yellow paint. A hand-pulled trolley could even be included to hold raincoats or other belongings (ibid., 143-144). To Enwicht’s later surprise, the Walking School Bus idea took off in a spectacular fashion, and “self-propagated across the globe” (Enwicht 2003). Walking

school buses and related programs (walk to school days and weeks) are now in place in all over the world; in 2002 International Walk to School Day was celebrated in 28 countries (International Walk to School Website).

2.0 Contexts for, and Impacts of, the Home-School Journey

2.1 Introduction

While the promotion of walking to school may appear at first to be a simple enough proposition, an even cursory review of the literature reveals this simplicity to be illusory. There are, in fact, numerous social, cultural, psychological, economic, physical and institutional contexts and barriers that shouldn't be overlooked if such programs are to be successful. Given these complexities, any program intending to promote walking to school needs to be about much more than simply encouraging children to walk to school.

The interdisciplinary nature of both the issues and the literature addressing them requires a thoughtful approach; some attempt at classification is necessary. Rather than analyzing the literature according to contexts, issues, barriers, impacts, benefits and possible solutions, what follows below will instead be presented thematically according the levels of society at which the impacts of transportation decisions are manifested. This solution is probably not ideal, and there will inevitably be some crossover between these divisions, but this path does allow us to see how the home-to-school journey affects people. We shall begin, appropriately, with our primary concern: the child.

2.2 Children and the Home-School Journey

2.2.1 Kids and car culture

First off, we should be under no illusion about this: most kids love cars. Many children can make engine noises before they learn the most basic vocabulary, and can identify different makes of automobile much more readily and earlier than they can name different species of bird. Toy shelves are filled with miniature and model cars, and entertainment and advertising aimed at young people similarly glorify the automobile. The sheer ubiquity of this auto-culture has prompted one writer, with tongue not entirely in cheek, to muse if all this “autosexuality” is “a threat to our youth” (Litman 1997).

Much of this commercial output is concerned not so much with selling toys, but is directly related to the marketing of real cars. In what may be the ultimate expression of such “get ‘em when they’re young” marketing strategies, toy and car manufacturers are working together on producing pint-sized version of real cars and SUVs, with price tags ranging from a few hundred dollars for a Fisher-Price Jeep to over six thousand for a mini Mercedes Benz 500 SL. As one car dealer put it, “[w]e are a car culture and little kids love cars...All they want to do is imitate mom and dad, and these cars let them do this” (Beck 1997). It is also not lost on car manufacturers that children

help shape parental choices about cars...62% of parents say children ‘actively participate’ in car purchasing decisions, according to a 1999 study for Nickelodeon by J.D. Power and Associates. Toyota, seizing upon the finding, mounted an effort to incorporate the ‘kid factor’ into not only an ad campaign for

its redesigned Sienna minivan, rolled out in March, but into the redesign itself (Howard, 2003).

It must surely be a happy coincidence for the automotive industry that car ads aimed at children need not distinguish between the need to both influence the current generation of purchasers, and inculcate the next. Children also learn early on in life that cars are closely associated with status, and will express embarrassment if their family's car is not as new or as nice as that driven by their friends' families. Empirical research also demonstrates that there is active peer group pressure involved in the decision to drive to school: children believe their friends expect them to be driven, and parents may have a hard time resisting pleas to do so (Bradshaw 1995). A recent Cannes Lions International Advertising award-winning car ad playing on this theme featured a young girl running across a playground to be picked up after school, saying good-bye to her classmates and then hopping into the back seat of a shiny new vehicle. But a surprise is in store: the woman in the driver's seat turns around and asks, "who are you?" only to be told, "shut up and drive." While this is a very funny ad, it says something almost disturbing about the influence of the automobile on our sense of self, that a child would go so far as to essentially engineer their own abduction by a stranger, rather than be seen in an 'embarrassing' car!

The pressure to adopt normative values, dress and other possessions, combined with tendency of young people to measure their self-worth by their possessions, has led to a vast increase in automotive expectations: if one's friends are arriving at school in expensive SUVs, then to arrive in an older, plainer vehicle – or in no car at all – may be one's ticket to mockery and exclusion. As one young woman observed, "For my parents' generation, to even have a car when you were a teenager was a big deal...today, if it's not a Mercedes, it's not special" (Gibbs, et al 2001).

From the perspective of an A&SRTS coordinator, then, car culture presents a pronounced challenge. Far from being predisposed to think of their family's car use as a problem, young people may in fact view the drive to school as part of a necessary socialization ritual. Ultimately, one must be aware that, in order to address the impact of car culture on young people, one must also acknowledge the importance of cars in the culture of young people. The primary audience for A&SRTS programs may not be easily swayed from their regular rides by appeals to concern for the environment or their own physical fitness. However, what A&SRTS programs have going for them is that these programs are reaching children at a crucial age when they still enjoy the physical activity component of their home to school journey. Studies also show that children want to walk, and that if commonly-identified barriers to walking are absent, up to 2/3 of children in an areas may walk or bike to school (Barriers to children walking and biking to school - United States, 1999). Encouraging walking may become more challenging when youth reach driving age. The goal is to have active transportation habits solidly formed so that when participants reach driving age, active transportation is something that they have enjoyed for many years and as a result, and they may reconsider purchasing a personal vehicle.

There is, however, another very compelling argument for getting children out of their family's cars that is not as often promoted, but may be powerfully compelling one for parents: the healthy cognitive development of their children may in part depend upon it.

2.2.2 Environmental Cognition & Wayfinding

Environmental psychology (or environment & behaviour) is an interdisciplinary research field that combines the concerns of psychology with those of the design professions. It seeks to understand how human beings and their environments interact: how the environment influences human behaviour, and the extent to which human behaviour within and towards the environment may be influenced by design interventions.

It has also long been a concern of environmental psychologists that we gain a greater understanding of the cognitive processes involved in navigating three-dimensional space. How is it that we learn to get from one location to another? In 1948, Edward Tolman posited that organisms develop a mental overview of a given environment, rather than simply remembering the relation between given landmarks (Tolman 1948). He called this overview a "cognitive map", and while subsequent research has shown that the inner workings of the mind are more complex and subtle than a simple "map" would suggest (spatial perceptions are often distorted, fragmented and inaccurate [Siegel, Kirasic & Kail 1978]), it nonetheless is a useful conceptualization that has formed the basis for a considerable body of research.

Cognitive mapping in the macro environment (i.e., out of doors) involves the recognition of familiar landmarks, and the realization that these landmarks may be utilized according to their relation to others within a spatial frame of reference to locate other objects and events (ibid). Such referencing is undertaken in one of three ways: with an egocentric system of reference (i.e., how the locations relate to the individual at a given moment; a fixed system of reference (how certain objects related to other fixed objects in the environment); or the coordinated system of reference, in which one orients according to a transferable point of reference, such as roads or rivers (Hart & Berzok 1982).

According to some researchers, the fundamental basis for the development of this knowledge is dependent on how one travels through space and encounters these landmarks in a given order: spatial knowledge is thus also sequence knowledge (Siegel, Kirasic & Kail 1978). While the basic ability to construct cognitive maps appears to be hardwired and functioning in early childhood,

[w]hat seems to evolve with development is a kind of higher-order knowledge. Specifically, increased capability of temporal integration permits not only a meta-knowledge of landmarks, but also conversion of landmarks associated with bearings into simultaneous temporal and spatial sequences, which may conveniently be called routes (ibid 245).

What is particularly of interest for our purpose is the notion that the development of cognitive maps is to some extent dependent upon the way in which the individual

encounters the landmarks in the environment. Do children who walk to local destinations learn to navigate environments better than those who ride in cars?

What has emerged as the more important concern is not so much the mode of travel, but rather the degree of activity or passivity children exercise in the journey. In other words, to what extent can a young person decide to move or not move in a given direction? In their study of the impact of freedom of movement and environmental knowledge of elementary school children, Rissotto and Tonucci (2002) found that children who walked to school on their own demonstrated the most sophisticated understanding of the landscape (as determined through drawing the route taken afterwards), while those who were accompanied by an adult – and thus not required to navigate on their own – fared more poorly. The worst results, however, were found among those children who were driven and thus not only experienced the route passively, but engaged in no locomotion themselves.

Given these tendencies, it would not be surprising that children who see their world only from the confines of an automobile would gain an impoverished sense of the world around them, particularly those too young to sit in the front seat or see out the windows. But this becomes especially true if the parent makes no attempt to engage the child in the particulars of the journey, such as asking, for instance, if they can tell where to turn next. Developing skills of navigation are but a part of another important element of child-environment transactions: the development of environmental competence.

2.2.3 Environmental Competence

A child whose outdoor mobility is restricted to a backyard playset, but is otherwise not permitted independent interaction with the street environment in the surrounding area, will be denied experiences, sensations and information vital to their cognitive, intellectual, perceptual and emotional development. Research (e.g., Garling & Golledge 1989) has shown that the ability of children to play on, and travel through, streets is essential for a number of reasons:

Children receive information from the street environment. The information they receive is employed in the child's intellectual development. In every society, children need to receive information that is life-enhancing, provides a range of choices and experiences, and is stimulating and challenging. This has implication in the provision of texture, color, sound, and aesthetics (Abu-Ghazze 1998).

In much the same way as self-directed navigation builds cognitive mapping abilities, so too does general self-directed activity in the environment lead to greater levels of environmental competence through the development of cognitive strategies (Cornell et al., 2001). This means not only the increased ability to know how to move through a place, but greater knowledge of the place itself. When it is possible to include the street in a child's environment through staged progression from short, closely supervised walks through to independent exploration, a young person gains knowledge of a place's identity, which includes both physical and social components:

The child is faced with many situations in the neighborhood that require behavioral responses unnecessary in the home. Simply crossing a street involves a great many sensory discrimination skills to be learned...In addition, there are relative strangers whom the child in time not only recognizes...but sees as another stable feature in the neighborhood. Children must learn their social role relationships to all of these individuals, and in every instance the relationships involve how they are to act in this neighborhood setting (Proshansky & Fabian 1987, 30).

Cahill (2000) characterizes this suite of skills as “street literacy.” Street literacy also suggests

[w]ays in which young people read and make sense of the implicit rules of the neighbourhood. Knowing your place, that is, where and where not to go, what to do and when, is indelibly, yet invisibly, inscribed into the environment. Understanding the semiotics of the street is an important part of growing up, and for the youngest children many of the messages are inevitably acquired through the primary habitus of the family and taken on. Heightening children’s awareness to possible danger in order to prepare them for forays beyond the home is a formative aspect of socialization (Matthews 2002, 108).

We see then that allowing a child to explore the urban setting permits them to gain knowledge not only of the place and other people, but of themselves.

Street literacy gained at a younger age can also be extremely beneficial as a young person matures. A teenager who has had but limited exposure to the street environment and is then sent out unsupervised into traffic “can be at a much greater risk than a 5 year old that has learnt the basic rules and procedures” (Holzapfel 2000, 6)

Finally, when young people access, explore and learn in the urban environment, there is a transaction involved: influences are not uni-directional. When the streets of their neighbourhood become a part of young peoples’ familiar environment, it will not only shape them, but will permit them to shape it. We must remember that children are not merely passive observers of the environment; they are active cultural producers who are capable of claiming urban public space as their own. Such locations then become cultural gateways (more commonly referred to as “hangouts”) in which and through which young people can express and develop their identities (Matthews 2002).

In summary, what we learn from the literature is that child-environment transactions, especially those related to mobility can have a powerful impact on the development of the inner life and mind of a child. But what of the body?

2.2.4 Child Health & Well-being: Injuries & death

Cars have maimed or injured 250 million people, and killed more Americans than have died in all wars in the country's history (Hawken 2000, p. 22)

The figures are repeated every year with depressing predictability, yet always fail to elicit outrage. Study after study in countries around the world show a consistent trend: the leading cause of accidental death among young people is the automobile, and, unfortunately, most of these deaths are due to collisions with the unprotected pedestrian. According to British figures, a child is 50 times more likely to be killed as a pedestrian than a passenger in a vehicle (Roberts 1996). Figures for Canada show that car-related accidents account for 34% of accidental deaths, and of these, 17.5% were pedestrians. However, rates for children 0-14 are lower than all other age groups; it is only when they reach driving age themselves that their death rates become double that of the rest of the population (Brownell et al, 2001).

The statistics, as depressing as they are, also contain some hidden truths: while rates for pedestrian injuries and deaths have fallen in recent years, this has more to do with the general decline in walking, rather than any advances in safety (Roberts 1994).

Because the home-to-school journey represents a significant and frequent journey for children, it is worth examining specifically. In 2003 the American Transportation Review Board (TRB) released a report called *The Relative Risks of School Travel* (summarized in Fischbeck & Huey 2003) which looked at the risks in terms of overall exposure that a child would face with differing transport modes. Each year, the report found, an average of 800 school-age children are killed during school travel hours, representing 14 percent of annual child car-related deaths, and 2 percent of all annual road deaths. Of these, a very small number – twenty – occurred on school buses. The majority (75 percent) were killed in passenger vehicles, but most of these were when a teenager was doing the driving. Finally, 22 percent of these fatalities were pedestrian or bicycle-related. On an per-student-mile basis, though, the statistics are even more sobering: while the greatest risk may be seen with a teenaged driver, the next most dangerous mode is cycling, followed by walking (although the report concedes that all data relates to car accidents: there are no figures included for fatalities associated with other types of mishaps) (Fischbeck & Huey 2003).

In light of these results, one of the strategies the report advocated was “to shift students from modes overrepresented in crashes (bicycling [and] walking)...to modes that are underrepresented (school buses, other buses and passenger vehicles with adult drivers” (ibid, 41). Another strategy was to reduce the risks of each mode. However, the report stressed that because so many important issues and constraints may be involved in different jurisdiction, no one policy solution would work for all schools (ibid).

One solution that doesn't seem to work very well is pedestrian education. As Ian Roberts reports (1994) studies have not identified any trait that distinguishes children who have

fallen victim to traffic accidents and those that have not; rather, it is the physical environment (the extent of traffic volumes and speeds) that seems to be more significant. Furthermore, while numerous programs and evaluations have been undertaken to determine the success rates of educational programs that teach children about traffic safety, there is little evidence that crossing behaviour has improved and deaths and injuries show no sign of abating. As Roberts puts it, “[t]he physical and developmental abilities of young children have long since been outstripped by the complexity of the traffic environment” (Roberts 1994, p. 414).

Other research has confirmed the general inability of children to safely negotiate the traffic environment on their own. Few studies have actually been done, however. Part of reason for this is methodological: it is simply too dangerous and unethical to conduct real-life experiments with children in traffic situations. One research study that avoided this dilemma set up a simulated and controlled but realistic traffic environment in which the cars were driven by police officers and children were accompanied by adult co-experimenters. The 46 children aged 5-6 were told they were on a treasure hunt, so this distracted them and, as would typically be the case, prevented them from paying attention to their immediate surroundings. The results were discouraging: 40 percent of children never looked at the car moving towards them; 60 percent didn’t stop before running out into the street; and no more than 15 percent bothered to check for oncoming traffic. The authors stress that it before education programs try to impress on children what they should do in traffic, it’s important to know what children actually do (Zeedyk, Wallace & Spry 2002).

Further work in this area posits some surprising but discouraging ideas: that children who have taken education programs may be more likely to be involved in an accident (Johansson et al 1996); and that involving children as young as 5-6 in such programs at all may be dangerous in that it lulls both children and parents into a false sense of security. When combined with a recognition of how complicated a task crossing the street actually is, this consideration becomes even more compelling: research shows that there are as many as 26 different tasks a person must undertake when crossing the street (Van der Molen et al., 1981). Young children also cannot successfully navigate traffic owing to their egocentric thinking (since they are the centre of the universe they cannot imagine they cannot be seen); rigid thinking (they cannot apply generalizations to individual circumstances, so even carrying out simple rules may be dangerous); not understanding cause and effect (no sense of dangers posed by cars); and their ability to fantasize and construct a personal reality (they may feel they have magical powers) (Hunt 1998). For these and other reasons, experts and child advocates therefore argue that children under the age of nine should simply never be allowed onto streets unaccompanied (Why kids lack good judgment about traffic). In part because of this reality, and the fear it engenders, children are walking and cycling less. There is a growing suspicion that this means young people are more likely to become overweight as a result.

2.2.5 Child Health & Well-being: Inactivity & Obesity

By now the warnings have become a chorus: North American children are becoming the fattest on Earth. Surrounded by heavily advertized fatty foods and addicted to enticing but sedentary multimedia experiences, young people today are more inclined to suffer from obesity and the health problems that attend it, including Type II diabetes and heart disease – ailments once only found in unhealthy adults. Such health problems are often carried into adulthood, raising the prospect of multi-generational obesity. One projection that is frequently repeated in the literature estimates that if current trends continue unabated, by the year 2230 all Americans will be obese.

The statistics are indeed sobering: a Canadian study conducted in 2000 concluded after synthesizing several key data sets that, between 1980 and 1996, the number of overweight boys increased from 15 percent to 35.4 percent and overweight girls from 15 percent to 29.2 percent -- up, respectively, 136.0 percent and 94.7 percent in just 16 years. Furthermore, rates for obesity jumped from 5 percent to 16 percent among boys and 5 percent to 14.6 percent among girls (Ball & McCargar 2003). Figures for Manitoban children show that between 23 percent and 36 percent are obese or at risk of obesity, depending upon the region in which the study was done (Brownell et al., 2001).

Apart from the untold personal human costs these statistics represent, there are also pronounced financial and social ones:

In Canada, the total direct cost of obesity in 1997 exceeded \$1.8 billion (approximately 2.4% of total health care expenditures) with hypertension, type 2 diabetes, and coronary heart disease being the largest contributors... In the United States, it has been estimated that obesity is responsible for between 280,000–325,000 deaths each year... [which is] second only to smoking (ibid).

Attempts to explain these trends are legion, with television and video games frequently named as culprits. The American Obesity Association has specifically cited the following as being the contributors to childhood adiposity:

- Physical Activity - Lack of regular exercise;
- Sedentary behavior - High frequency of television viewing, computer usage, and similar behavior that takes up time that can be used for physical activity;
- Socioeconomic Status - Low family incomes and non-working parents;
- Eating Habits - Over-consumption of high-calorie foods;
- Eating patterns: eating when not hungry, eating while watching TV or doing homework;
- Environment - over-exposure to advertising of foods that promote high-calorie foods and lack of recreational facilities (American Obesity Association 2003).

What is interesting about much of the literature discussing this problem is that, while the lack of physical activity amongst young people is universally recognized, the most commonly advocated remedy is to re-invest in physical education programs and sports activities. While a general lack of high quality physical education has indeed contributed to the current state of child and youth health (Langford 2003), some researchers are

beginning to point out that this emphasis on formal physical education programs has resulted in a lack of emphasis on utilitarian (i.e., transport-related) walking as a means of improving physical fitness. To illustrate the significance of this oversight, a major longitudinal study of Russian schoolchildren conducted between 1992 and 1998 found that when only formal phys-ed and afterschool sporting activities were accounted for, and data related to active transportation was omitted, there was a

statistically significant decrease in the prevalence of achievement of health-related guidelines from 12 percent to 20 percent similar for both genders. Likewise, the prevalence of sedentarism (defined as not meeting any of the guidelines) was increased by 17-22 percent (Tudor-Locke, et al 2002).

With the growing realization of the links between active transportation and health there is a concomitant currency amongst observers that an important barrier mediating against wider adoption of walking is the physical environment itself: that car-dependent urban sprawl is a health hazard (Frumkin 2002). A day-long conference held in April 2003 at the New York Academy of Medicine discussed the link between the urban form and health trends. They concluded that

despite an intuitive link between the structure of neighborhoods and cardiovascular disease, among other chronic ailments, there's only some empirical evidence to support it... "[t]here's an intuitive sense that how one organizes space is going to influence health, but the amount of evidence is limited at this point," (New York Academy of Medicine).

Other recent research concurs: claims linking the urban form to physical fitness have yet to be substantiated by formal empirical research (Jackson 2003). Some attempts to document this link have been made however. One massive survey of 12,000 American urban residents, conducted by Lawrence Frank, Associate Professor of Urban Planning at the University of British Columbia sought a correlation between urban density and obesity (Flint 2003). The authors determined that people living in low-density suburban areas tended to weigh more than those who lived in higher-density, mixed-use areas, such as are found in the centres of cities.

Such evidence as has been gathered paints contrasting views: the results can change when the research focuses not on urban density, but on actual car use. Turbin, Mackett and Paskins (2002), as part of the "Children's Car Use Project", studied 849 Hertfordshire students and found that although higher rates of car use was indeed associated with lower levels of physical activity, this did not translate into a relationship with actual obesity. Car-dependent children were found among all body types; indeed, more children of normal weight were found to be riding in cars than otherwise. This is probably owed to the fact that parents are regularly driving their children to a variety of athletic activities which mediate against weight gain. What appears to be the case is that the link between sprawl, car use and obesity has only recently come under scrutiny and has not as yet been adequately examined. Further research is definitely needed. What is well-established however, is that regular walking is very healthy for people of all ages:

Regular walking can both help to reduce weight and maintain weight loss - walking just one mile can burn up at least 100kcal and walking two miles a day three times a week can help reduce weight by one pound every three weeks. Uphill walking can have an even greater effect and can reduce weight by 14 pounds in only 3-4 months (Morris & Hardman 1997).

For young people who are not involved in other athletic activities through lack of interest or intimidation there is another benefit:

Walking de-emphasizes competition. Walking lets everyone win. Today we are so busy testing kids for fitness and ranking them on how fast they can run a mile. These tests are painful and distasteful to many children. They teach youngsters to dislike exercise. By failing physical fitness tests our children are losing self-esteem. Walking gives every child a sense of accomplishment (Sweetgall & Neeves 1987, p. 2)

Not only can regular walking give children gain a sense of accomplishment, it may be able to help children accomplish more in school. A British government survey of teachers revealed that 9 in 10 believe that children who walk to school arrive more alert and better able to concentrate, 87 percent believed that walking to school gives children a chance to wake up fully before they reach the classroom, and 60 percent felt that children who walked to school "settled down" better once in the classroom (Mouchel 2003). However, the general hypothesis that physical fitness is positively associated with academic performance remains a controversial one (Lindner 2002).

2.3 The Family and the Home-School Journey

As is documented as a "lesson" in the RCM Report on the Sage Pilot Project (Resource Conservation Manitoba 2003), the commuting choice is not always the child's to make (p. 23). The success of a A&SRTS program can therefore not depend solely on the cooperation of children; rather it is the parents of those children who must become willing participants in the program; the family as a whole must be considered. But how is their interest and cooperation to be gained? What is required is to first understand some of the broader concerns of the contemporary family, and the role of the home-school journey in those concerns.

2.3.1 Programmed Lives

Most baby-boomers experienced a childhood in which after-school hours and weekend were spent in unsupervised play out-of-doors, and summers were "endless", requiring only imagination, initiative and friends to fill the hours with play. Middle-aged people usually recall that on nice days they were expected to leave the house in the morning, come back for lunch and then go out again until dinner – and then perhaps to stay out again until dusk.

Such childhoods are now rare. Economic and social changes have altered the nature of family life in a number of significant ways. The “ideal” family, imprinted on postwar families in the 1950s, is for most an economically impossible one. Both parents must work to maintain the family’s lifestyle, and yet the social and policy environment has failed to adjust to this reality (Kornbluh 2003). Child care remains hugely expensive and notoriously difficult to find, while school hours remain attuned to an outdated schedule of 8:30 – 3:30 – leaving parents to find care or activities for their children after school. Children are being slotted into ever more extra-curricular activities and lessons:

Young Madeleine has just finished kindergarten, but her daily grind is still the same. Monday through Friday she’s up early for the morning pep rally at day camp...on the bus with her is 10-year-old Darius. This week, he’s at soccer camp, the next two weeks are golf and baseball. Oh, and in August he’ll be at computer camp, and of course he’ll have swim classes from 4 to 6 (Hahn 2003).

The flurry of activities inevitably has a major impact on the home-to-school journey, as a multitude of needs and destinations must be accommodated through intricate scheduling, route planning and, inevitably, driving. Children are delivered to hockey practice early in the morning and hence to school; and afterwards to lessons and soccer games. Behind all of these activities is, of course the ubiquitous “soccer mom” and her minivan. According to Jane Holtz Kay, this is putting a particular and tremendous strain on women, whom, she notes,

[are] dropping off the kids at the day care center, putting in a full day’s work, caring for grandma and grandpa, and running errands. So, of course, is dad, but not as many multiples, since women drivers are putting in twice as many miles as the norm. In less than ten years after 1983, women’s travel quadrupled...[Furthermore] women do not take the direct route; their path is littered with errands and drop-offs because of the fact that ‘working mothers are much more dependent on driving alone than comparable male parents’ (Kay 1997, p. 22-23).

Because of this, Kay points out that programs and policies intending to penalize car-dependence and promote alternatives often end up affecting women more than men (ibid). (That our social norms would actually wish to change the lot of the soccer mom does not seem to be imminent: a recent irony-laden dairy product ad campaign dedicated to celebrating the “soccer mom” offers the only grand prize that was apparently conceivable to the sponsors -- a minivan [Parmalat 2003]). Between demands of work, school, activities and other commitments, many North American families have become “juggler families”, and this phenomenon is causing a great deal of stress:

...family life has become fragmented. People are pressured by occupational and community demands for their time. Pagers, cellular phones, and email have all contributed to the merging the boundaries between family and other commitments. Thus time for family is jeopardized...If working hours are staggered, the family may not eat together. Chores have to be done after work. If

children have after-school activities they have to be coordinated with the parents' already busy schedules. Then there are meetings – school, work and community meetings. So hardly any time is left for communication and shared leisure (Berns 2001 p. 101).

The portrait of a generation of families so caught up in getting from one activity to another that they hardly connect anymore is based not only on anecdotal evidence, this view is supported by empirical data as well. In Robert Putnam's groundbreaking book *Bowling Alone* he reveals how polling data demonstrates the loosening of family bonds:

The fraction of married Americans who say...that "our whole family usually eats dinner together" has declined from about 50 percent to 34 percent [and] virtually all forms of family togetherness have become less common over the last quarter of the twentieth century...vacationing together fell from 53 percent to 38 percent, watching TV together from 54 percent to 41 percent, attending religious services together from 38 percent to 31 percent, and "just sitting and talking" together from 53 percent to 43 percent (Putnam 2000 100-101).

Following these trends, it would seem that the family as an institution is bound to simply dissolve. There are, however, some small signs of change. A political advocacy group called the New America Foundation's Work & Family Program which is working to bring about reforms to child care and other social policies (including workplace flexibility) so that families can be supported, not penalized, and have more time to spend together (New America Foundation 2003). The manifesto of this movement [which includes other social policy areas] is *The Radical Center* [Halstead & Lind 2002]). Yet the condition of the family – the demands on their time, their almost frenzied car-dependence, and the decline of familial traditions that support family life – nonetheless represent a serious impediment to A&SRTS programs.

So far, what we have been discussing is more the domain of the middle and upper classes, who can afford not only lessons for their kids, but minivans with which to take them there. But what of the poor family who can afford neither?

2.3.2 Poverty and Carlessness

Studies show that lower-income people (usually of colour) suffer disproportionately from a "spatial mismatch" – the physical segregation of their homes from employment opportunities. Chances for improving access to employment is therefore strongly correlated with car ownership (Raphael & Stoll 2000). Conversely, a lack of car ownership is frequently used as an indicator for lower living standards, and by extension, poorer health (Goldblatt 1990; Davey-Smith & Egger 1992). Yet there is a minor paradox in this inequity: health policies and programs are now promoting walking as a means of improving health. What are the health outcomes for people who must walk everywhere?

In the process of interviewing 30 low-income mothers on child-rearing issues in England, Lisa Bostock (2001) realized that a recurring theme in the responses from her subjects was the role of transportation in their everyday lives. What she found was that “for some segments of the population, walking is compulsory and a source of both physical fatigue and psycho-social stress” (Bostock 2001, p. 11). Her subjects complained of the exhausting routine of having to walk with whining, tired and complaining children through decrepit neighbourhoods. What Bostock describes is compounded by the dreariness and danger of the degraded physical environment, the lack of shops and services in poorer areas, isolation from other family members, and the fact that such areas, despite having the lowest rates of car ownership nonetheless have the highest rates of child pedestrian injury. Assumptions that the poor rely on public transit was not borne out by reality, as it was considered a luxury (ibid.).

While the picture she produces is indeed a disturbing one, a number of criticisms occur immediately. The first is that because the study she was conducting was not designed to elicit responses about transportation needs in general, and especially not about walking in particular, her conclusions are based on what essentially amounts to happenstance. It is therefore a rather dubious exercise to draw such negative conclusions about walking, especially considering her small sample size (thirty subjects). The second is that the problems in these people’s lives are at least as much owed to a serious interplay of social, structural and physical factors (the lack of shops and services; isolation from family; expensive public transit) as they are to carelessness (the author does acknowledge how these are all “joined problems” [p. 17]). As such, statements to the effect that “walking may be health-damaging” (p. 12) and “carelessness...also appears to impede the development of supportive social relationships” (p. 16) don’t really appear justified. What seems to have eluded the author was the need to advocate for other remedies – one of which might have well included something akin to the A&SRTS program – one that offered these women the company and support of other adults in the neighbourhood on these daily walks.

We have seen that the issue of low-income families and walking in general have been examined. What of the home-to-school journey itself? Because a lack of car ownership is associated with low socio-economic status, “those children from less well-off families are being disadvantaged by this increased dependence on the car for school transport” (Bradshaw 1995, p. 16). For children in poor families, though, the choice is often nothing less than between a bus fare to school and eating. When the end of the month approaches and family budgets become too thin, it is not unusual for some classrooms to be one-third empty, while other students report that it is not uncommon for their less-advantaged peers to drop out because they couldn’t afford a bus pass (Holstege 2001).

If driving or busing to school isn’t possible, then walking or cycling may not be either, even if the distance isn’t an issue. Many poorer children live in environments that are so degraded and beset by violence that to walk through them unaccompanied would invite injury or death. The situation in American inner-city ghettos is especially bleak, where interpersonal aggression coupled with organized gang-related violence has made

carjackings, muggings, and drive-by shootings all to commonplace. In an environment characterized by boarded-up houses, burnt-out garbage bins, a powerful undercurrent of a “code of the street” (Anderson 1997) and the ever-present threat of violence, children in poor urban areas are continually at risk.

While Canadian cities in general have far lower rates of violent crime than their American counterparts, Winnipeg has gained a reputation as the “murder capital of Canada”. Unfortunately, recent events have done nothing to dispel this reputation, and indeed, have demonstrated a disturbing increase in the rate of violent youth crime. During the spring and summer of 2003 reports of teen beatings and shootings began to appear with frightening frequency.

Of the 14 homicides in Winnipeg this year, eight have involved young people -- the common thread being victims and accused have been males between the ages of 13 and 24. Two were shot dead, one was stabbed, one was hit by a thrown shovel and four were beaten to death (Owen 2003).

While a detailed discussion of the causes and remedies for youth violence is beyond the scope of this paper, it is sufficient – and necessary – to stress that some neighbourhoods are simply scary, dangerous places in which young children should not be walking alone. As such, there could well be a significant role for A&SRTS programs to play in helping to mediate against this danger. This reality also suggests that very different approaches need to be taken when applying A&SRTS programs in underprivileged areas.

2.3.3 Motivations for Driving to School

Relative financial wherewithal aside, parents may be compelled to drive their children for many different reasons, and gaining an appreciation for these motivations can contribute to the planning of successful A&SRTS programs.

An American survey conducted in 2002 asked for reasons for driving their children to school. These included:

- School too far away (66 percent)
 - Too much traffic and no safe route (17 percent)
 - Fear of abduction (16 percent)
 - Lack of convenience (15 percent)
 - Crime in the neighborhood (6 percent)
 - Children don't want to walk (6 percent)
 - School has a policy against children walking to school (1 percent)
- (Salvesen & Hervey 2003).

The locational factor is by far and away the most important; this will be dealt with in **Section 4**).

In her 1995 British study, Ruth Bradshaw sought to identify those reasons most important to parents for driving their children to school. Those cited by her participants included: the length of the journey to school; linking with the journey to work; road safety concerns; concerns about personal safety; the parental choice of school (which may not be close to home); and peer group pressure. Interestingly, only a third to two-fifths of the respondents made the home-school trip only for that reason – most were on their way to work or other errands. As would be expected safety was one of the most important reasons, cited by almost 40% of car drivers. However, more than 40 percent chose the car simply because it was more convenient. This led the author to suggest that

[a]ny attempt to encourage a transfer of mode must acknowledge the connection between the school journey and the journey to work. If the number of children driven to school is to be reduced it is necessary to look first at adult travel patterns and persuade parents to travel by public transport instead of car. Under present circumstances the potential for changing the modal split of journeys to and from school is poor (Bradshaw 1995, p. 19).

While Bradshaw sought to identify the specific reasons for driving, Black, Collins & Snell (2000) looked instead to statements of personal values as they relate to the home-school journey. This approach, they reasoned, would be more able to discern behavioural complexities. A Likert scale of attitudes was developed which expressed a range of value statements from one extreme to another. A total of 31 statements were put to the participants, and their responses were classified into three categories: individual responsibility and impact (example: “nothing I do makes any difference to the environment one way or another”); environmental awareness (“I feel a moral duty to minimize pollution”), and car-centredness (“nothing would make me give up my car”). Then regression analysis was done on the results to determine which of the three categories would be most likely to be influenced by changes in policy. Of the three, the “car-centredness” value category appeared to be the most “elastic” in terms of being affected by changes in policy, while environmental awareness and changes to individual responsibility were less so (the value statements included in this study are reproduced in the Appendix). They add that while the home-school journey has been identified as a relatively easy way to promote car-trip reductions,

[t]he existence of a number of psycho-social obstacles and intrahousehold trip dependencies renders even this trip purpose much more complex to address than might appear at first glance (Black, Collins & Snell 2000, p. 1138).

One of these psycho-social factors is a subtle one, and one that might only be best understood by the elderly, who raised families during earlier decades in the 20th Century. As we have seen, safety is an important motivator, both in terms of traffic and personal safety. However, according to some observers, there is also a more subtle factor at work: All diligent parents experience conflict between the desire to launch their children into the big wide world and the urge to protect them. Once, childhood mortality rates and the threat of terminal illness at any age fostered a fatalistic attitude. The modern expectation that everyone will live long and healthy lives, that hazard can

be eliminated from everyday life, that anonymous technicians are working to protect us all, undermine our ability to make a sober assessment of risk and danger (Field 1998).

When families commonly had 10 children, and most of them were out working in the fields or else walking for miles to school each day, the risk of death or injury in the course of daily living would have been more accepted; now, with most families failing to replace themselves, that one child is so precious and irreplaceable that to risk that child's safety would be unthinkable. Who, indeed, can argue against such sentiment? In the face of a world filled with threats unknown to earlier generations, the choice to launch one's child into the world or not is a difficult one.

This fear extends to the construction of schools themselves. Whereas schools in earlier decades used to be built several stories tall, they are now built out, sprawling over acres of land, because, as one architect put it, "we don't believe in three-story schools. Kids can fall down the stairs, so they're considered a liability" (quoted in Beaumont & Pianca 2002, p. 16).

Which brings us, finally, to the school itself, which appears to be one of the most powerful influences on whether or not students are able to walk to classes. Because of recent trends in school building construction, the choice to drive or walk may not be a matter of values, reasons, or even convenience. Rather, their child's school may be so far away that no other choice is possible.

2.4 Schools and the Home-School Journey: "Why Can't Johnny Walk to School?"

The vision of the charming multi-story brick school building at the end of the walk, with crowded bicycle racks and the flagpole out front near the street is fading. It is being replaced by "big box" monstrosities surrounded by 80-acres of asphalt, treeless fields and multi-lane expressways.

What began with a series of policy, regulatory and economic decisions has become both a crisis of urban heritage and community cohesion. Through a process of rationalization, and bolstered by perverse incentives, school boards in major cities all over North America are closing smaller, centrally-located schools and amalgamating student bodies into so-called "megashools". These schools, in order to accommodate their enormous student bodies and the cars required to deliver them, are being built on the only land able to support their size: in suburban – and sometimes exurban – locations, utterly beyond the reach of both walkers and public transit. According to Salvesen & Hervey (2003), the reasons for this trend are as follows:

- state school facility guidelines – which are only recommendations – are perceived by school boards as minimum requirements. These guidelines encourage the use of sprawling designs in car-dependent locations;

- there is a consensus that the construction of one large facility is more cost-effective than the maintenance of several smaller ones;
- in the case of older buildings there are concerns that renovations will be more expensive than building new, although evidence shows this is not the case (and estimates for such work are often artificially inflated);
- concerns over the need to maintain diverse student bodies requires large catchment areas, as small “neighbourhood” schools may be racially heterogenous (Salvesen & Hervey 2003, p. 1).

Burdened by these assumptions, school boards are making locational decisions that logically lead to the construction of enormous car-dependent facilities. These decisions are also in part supported by the Arizona-based Council for Education Facility Planners International (CEFPI), which sets standards for construction in the U.S., Canada and overseas (see <http://www.cefpi.org>). Standards are based on formulas: 10 acres plus 1 additional acre per 100 students for an elementary school; 26 acres for a 600-student middle school, and 40 acres for a 1,000 student high school (ibid., 6). Using these figures, a high school that might have been satisfactorily contained on a 45 acre site might now require 70 to 90 acres – or about 14 to 18 city blocks; clearly difficult to impossible to construct in a typical dense, older urban area (ibid.,7). Constance Beaumont and Elizabeth Pianca, in their 2002 Report *Why Can't Johnny Walk to School?* also examine this phenomenon. They find that the inevitable consequence of sprawling locations is that spatial needs are exacerbated by parking requirements:

Since sites that large can generally be found only in outlying areas, which are too remote for students to walk or reach by public transit, schools often require a vast expanse of asphalt for parking. Santa Fe, N.M. requires parking spaces for 50 percent of the high school student body. At 300 square feet per parking space, a student lot for 1,000 cars would need 300,000 square feet, or about seven acres of land for blacktop. Teacher and staff parking requires still more asphalt. In Charleston, S.C., schools serving 3,000 students are being built with nearly ten acres of parking (Beaumont & Pianca 2002, p. 15-16).

With a brand new, sprawling school built in the countryside, and with connections and – naturally, roads – built to service it, housing and other services are inevitably extended towards and beyond it. In this way, “the public school system...is the most influential planning entity, either public or private, promoting the prototypical sprawl pattern of American cities...(they are) advance scouts for urban sprawl” (ibid, p. 18).

Arguments for the cost-effectiveness of enormous suburban locations are diminished when one examines the costs that schools must bear in terms of transportation. As an example, Beaumont & Pianca (2002) point out that the state of Maine saw its school busing costs soar from \$8.7 million to over \$54 million between 1970 and 1995. That traffic jams have become routine outside of schools is well-known; one Ontario school reports that some 2,000 cars go by every day (Clair 2003). While the construction of new schools can be seen to contribute to suburban expansion, it also important to consider the context of urban form itself.

2.5 The City and the Home-to-School Journey

Although a general discussion of urban growth and sprawl is beyond the scope of this paper, it is worth pointing out that some urban patterns are simply more “walkable” than others. The one that has characterized most development in the past 50 years – single-family homes set on curvilinear streets in subdivisions of residential development cut off from other land uses by major arterial roadways – is now well-recognized for its hostility to the pedestrian. Wide and meandering streets encourage faster motor vehicle speeds than do straight, narrow, intersecting ones. Furthermore, while streets within a given neighbourhood may be quiet enough to walk through, they often lack sidewalks; yet because residential densities are so low that dependable public transit isn’t economically viable, people aren’t expected to walk anywhere anyways -- automobile ownership is required. Garages dominate the fronts of houses to such an extent that family life in the houses tends to be oriented towards the backyard, and street-facing windows are rare – meaning that pedestrians will walk by unobserved. In any case, single-family zoning results in daytime populations that are so scant that at times the neighbourhood may seem deserted. Wayfinding in such neighbourhoods is difficult: blocks as such don’t exist, streets don’t connect well, and lanes generally aren’t numbered but rather named in a non-intuitive fashion – quite often patterned after the name of the subdivision itself (Silvercrest Way; Silverview Drive; Silvervalley Road). Perhaps most importantly, zoning and restrictive covenants keeps all housing looking relatively alike and the same height; as a result there are few real landmarks. And because such neighbourhoods contain only houses there usually aren’t any destinations towards which one can walk (the notable exception of course may be the school, which is often found in suburban neighbourhoods). (For further discussion on these themes see Jacobs 1961; Kunstler 1993 and 1996; Hall & Porterfield 2001)

In contrast to this pattern is that which dominated cities before World War Two. It is characterized by narrow streets set on grids, with frequent intersections featuring traffic controls; a mix of housing (multi- and single-family), shops and businesses sharing the same neighbourhood; and 24-hour street activity, especially during the day. Garages if they exist are in rear lanes, and the fronts of houses often feature porches, enabling pedestrians and residents to communicate if they so wish. Wayfinding is easy: streets are numbered or named intuitively, blocks are short, and landmarks may be visible from a distance. Most importantly, there are no regulations stipulating architectural conformity, so each block will have unique structures. Residential densities are higher, so public transit is more feasible. Sidewalks are not only everywhere, they are often extremely wide and, in the most lively neighbourhoods, filled with “street life”: sidewalk cafes, pedestrians, merchants – even performers. A school of planning thought known as “the New Urbanism” has emerged in the last ten years that has codified this pattern, and throughout North America this pattern is making a comeback. See (Congress of the New Urbanism 2003).

The differences these urban patterns can make on the walking environment are profound. When it comes to facilitating walking to school – especially if it means travelling from

one district to another -- the urban pattern may mitigate against this. Railyards, highways and heavy traffic may make walking unpleasant or dangerous.

In order to measure the suitability of a district for walking, urban designers sometimes utilize a tool known as a "walkability index". According to Bradshaw (1993), "walkability" has four basic characteristics:

- A "foot-friendly" man-made, physical micro-environment: wide, level sidewalks, small intersections, narrow streets, lots of litter containers, good lighting, and an absence of obstructions.
- A full range of useful, active destinations within walking distance: shops, services, employment, professional offices, recreation, libraries, etc.
- A natural environment that moderates the extremes of weather - wind, rain, sunlight - while providing the refreshment of the absence of man's overuse. It has no excessive noise, air pollution, or the dirt, stains, and grime of motor traffic.
- A local culture that is social and diverse. This increases contact between people and the conditions for social and economic commerce (Bradshaw 1993)

Some such indices are quite simple, such as that produced by the U.S. National Highway Traffic Safety Administration (2003) which asks users simple questions ("was it easy to cross the street?") to which users respond with a likert scale. Others seek to rate factors such as density, or the chance of meeting someone you know (see Bradshaw 1993). Other indices are oriented to a particular city, or else for a specific development (such as a transit station). In the case of Winnipeg, where even a cursory glance at a city map reveals demarcations between older, grid-style neighbourhoods and their latter-day curvilinear counterparts, there are districts that will be much more conducive to the promotion of walking than others. It would therefore behoove A&SRTS programs to incorporate the use of walkability indices in their planning processes.

3.0 Policy Contexts

With the growing popularity of SR2S programs, and the awareness they have raised, the movement has matured from simply one of disconnected community-based efforts, to the establishment of state, provincial and even national legislation aimed at supporting, facilitating and promoting walking to school.

According to the report of New York's Transportation Alternatives, *The 2002 Summary of Safe Routes to School Programs in the United States*, SR2S programs may be classified in four ways:

Engineering model

The Engineering model focuses on changes to the pedestrian and bicycle environment to promote safety, such as crosswalks, expanded sidewalks, traffic calming, and bicycle lanes and paths.

Enforcement

The Enforcement model uses police enforcement of traffic laws around schools to change driver behavior that may endanger schoolchildren, such as speeding and reckless driving. Enforcement programs are often implemented as short-term fixes after a child pedestrian fatality.

Encouragement/Education

The Encouragement/Education models work with schoolchildren and their parents directly to foster interest and enthusiasm about walking to school, as well as promoting safe bicycling and walking behavior. Some Encouragement/Education programs also use the community outreach process to identify facilities needs.

Dedicated Resource model

The Dedicated Resource model is based on legislation that directs significant funding to Safe Routes to School programs at the local level. The California legislature passed a bill in 1999 that required \$20 million of a \$160 billion state transportation budget to go to pedestrian and bicycle safety projects. Funding requests from local governments exceeded \$130 million, demonstrating the need for greater resources for safe routes (Transportation Alternatives 2002, p. 2).

The report promotes using these classifications so that SR2S proponents can think methodically about "what they are doing and why they are doing it" (*ibid.*, p. 7). Some programs are primarily one type of model but borrow elements from others. The latter category, that of dedicated resources, is now being pursued by more jurisdictions, especially in the United States.

The first and most impressive example of such support came in 1999 in California, where legislation dedicated one third of the federal Surface Transportation Safety resources – some \$20 to \$25 million per year – to local Safe Routes to School programs. Funding is

derived from a “set-aside” of Federal State and Community Highway “Hazard Elimination/Safety” funds, (otherwise known as “Federal 402” funds), which are administered by the National Highway Safety Administration in the Department of Transportation. The use of these funds is limited to the improvement of street and sidewalk environments near schools; education and enforcement is not a part of its mandate (Transportation Alternatives 2002; Payne 2002).

Another state that created dedicated legislation was Texas, which, with the 2001 passage of the Safe Routes to School Matthew Brown Act, directed its state department of transportation to create a SR2S program, the elements of which would include installation of new crosswalks and bike lanes; construction and replacement of sidewalks; identification of safety hazards and construction of wide outside lanes to be used as bike routes. Like California, Texas funds this program from re-allocated Federal 402 dollars (National Coalition for Promoting Physical Activity Website). However, “soft” infrastructure – like walking school buses – are, again, not a focus of this legislation.

Oregon and Washington have also established statewide, dedicated SR2S mandates. Oregon’s (unfunded) mandate stipulates that cities and counties must work with schools to identify barriers that keep children from walking to school, while Washington’s mandate is to fund capital improvements around schools to improve the pedestrian environment (*ibid.*, p. 41 & 48). At least eight other states have instituted Safe Routes to School programs with varying funding commitments: Delaware, Florida, Maryland, Oregon, Pennsylvania, Rhode Island, Texas, and Washington (Appleyard 2003).

What is interesting about these state policies is that, first of all, they are oriented overwhelmingly towards the improvement of physical infrastructure. While this is undeniably important, they neglect the importance of “soft” infrastructure, such as enforcement, education, program coordinators and administration. The second is that so many of these state-mandated programs have no actual funding sources attached to them. In the cases of California and Texas, though, the provision of funds was creatively taken from previously existing federal dollars dedicated to highway safety. Only Washington State has found the resources -- \$5 million – from its own state budget.

For the SR2S programs in the Canadian context, these examples provide some interesting inspiration. Provincial governments could easily adopt a similar approach to Oregon, which would simply direct city, county and regional governments to identify barriers to walking. In order to accomplish what California and Texas have accomplished, however, would mean identifying some federal funding source previously allocated for some other purpose – and there may well be Constitutional limitations on such a practice. Indeed, because Canada’s Constitution specifically restricts Ottawa’s interests to Inter-Provincial road and rail transport, air transportation and shipping, it is up to provinces and municipalities to address issues of such a local nature. What is required in the Canadian context is to emphasize Provincial funding sources, as well as those from quasi-governmental agencies, such as the Federation of Canadian Municipalities – for example, the Green Municipal Enabling Funds (see <http://www.fcm.ca/>).

4.0 Contexts and Impacts: Conclusions

One of the fundamental ideals of liberal democracy is the primacy of the individual. While this notion has resulted in great strides in personal freedoms, it has its downside. It is assumed, for instance, that parents are solely responsible for their own children; for some even the influence of the state in the public school system is an intolerable violation of their rights and beliefs, leading many to opt for home-schooling or the formation of charter schools. While politicians and posters can sentimentalize about how it 'takes a village to raise a child', the notion that we should allow our neighbours to have any involvement in our families is a far from accepted one. For one thing, we don't know or trust them. This familial independence extends into transportation. All families are supposed to own their own cars. Shuttling other people's children around in a minivan, while done routinely, is considered an imposition requiring reciprocation. Parents are supposed to pay for their own children's bus passes. And if that fails, parents should be walking their own children to school – who is going to trust a stranger with their children?

Some of the stresses placed on the family described in section 2.3 are so serious because of this independence: the contemporary North American family generally lives in a vacuum. Isolated from extended family in neighbourhoods where surrounding houses are filled with strangers, the family becomes the whole world, and dependent on itself. As a result families often implode under this stress (Kunstler 1996).

With ever-rising divorce rates and ongoing, high-profile incidents of youthful amorality and violence (Satcher 2003) it is small wonder that observers from all points on the political spectrum are concerned about the state of the family. Conservatives bemoan the loss of traditional values and condemn the corruptness of our permissive and secular society, while liberals are more apt to decry the lack of social service supports and the imperatives of the global economy. Yet causes of these trends are complex, and remedies will not be found in any one balm; a range of measures will be necessary – including those that are seemingly minor.

That is why A&SRTS programs can potentially be so important: they are small-scale but encompass a surprisingly wide range of concerns facing the contemporary family. They are at once a way to: get adults and children physically active; get families thinking about their transportation habits; allow parents and children to get to know their neighbours and rely upon them; relieve scheduling pressures of busy families; reduce the environmental impact of the home-school journey; and get families to think about their environment differently, as well as their own place in it. Finally, there is a more subtle yet potentially powerful reason why A&SRTS programs are beneficial: car-dependency can become established in early childhood, and teaching young people that walking can be a part of their normal lifestyles may pay huge dividends in the future, both for the children themselves and their communities.

5.0 Recommendations

Based on the foregoing review of the literature relating to health, family stresses, transportation issues and urban form, the author makes the following recommendations:

- Peer pressure to conform to car culture may be addressed to some extent by adopting a “community-based social marketing” approach (see www.cbsm.com): walking needs to be made normative, that is, to appear like everybody’s doing it.
- The finding that environmental cognition is enhanced through the extent of independent activity on the part of the child (rather than travel mode) presents a problem for a program premised on children being accompanied on walking journeys. However, the experience of groups walking could be enriched through the use of games or activities that draw attention to local landmarks and objects or else by engaging children in choosing between several possible (pre-determined) routes. Such activities could also be aimed at aiding children to know more about the place identity of their surroundings.
- A&SRTS programs could also explicitly be aimed at developing “street literacy”: parent volunteers could, for instance, introduce children to local personalities, such as store owners en route to school; quiz them on proper behavior or procedures (waiting for crosswalk lights) and how to respond to strangers. Such enrichment can even be as simple as learning where one can go for ice cream, find local nature, or make a phone call.
- Parent volunteers could also contribute to “ownership” of public space on the part of children by drawing particular attention to a special place en route (i.e., a park).
- The finding that safety education shows few dividends in terms of actual child safety should suggest that A&SRTS programs should be promoted over mere safety education. School officials and community groups should be made aware that young children should not be walking alone, but rather in groups supervised by adults.
- The reality of high injury and death rates on the part of child pedestrians can lead to a move on the part of school administrators to get children off the street and into private cars. A&SRTS programs should strive to aggressively counter this seemingly reasonable reaction.
- Walking to school can be shown to represent a significant proportion of a young person’s daily activity, and should not be overlooked when measuring overall activity levels. A&SRTS program coordinators should make a special effort to involve phys-ed teachers so that this link is recognized and promoted in the school.

- While it is intuitively reasonable that walking to school can lead to higher physical fitness levels, there has been almost no research to support this. Future empirical studies should endeavour to document this link.
- Contemporary families are beset by tremendous time constraints. A&SRTS programs should “market” themselves as a means to relieve some of these pressures, by letting other parents take care of the trip to school now and then.
- Social observers are noting a marked decline in social cohesion and capital. A&SRTS programs can be marketed as a means of building community, involvement, and trust.
- The transportation needs of busy, middle- and upper middle-class families and their poorer counterparts may be quite different; A&SRTS programs should seek to learn what these are in poorer school districts, and may need to market themselves differently than they would in wealthier suburbs.
- Poorer, single families who rely on walking for almost all their transportation needs may benefit from a A&SRTS approach – to reduce isolation and fear by walking together through unsafe neighbourhoods.
- A&SRTS programs take on an even greater importance when the neighbourhood is viewed as unsafe in terms of crime. A&SRTS programs can thus work to protect children and make walking to school a safer option.
- When marketing A&SRTS programs to parents, coordinators should be aware not just of the reasons why parents choose to drive, but of the values they espouse. Research shows that values related to car-dependence may be the most easily influenced, whereas appeals to environmental awareness or individual responsibility are less so.
- The relatively overprotective response of many contemporary parents towards their children in light of publicized and imagined threats is difficult to counter. A&SRTS programs thus need to stress the “safe” portion of their acronym.
- Some urban patterns are inherently more suitable for walking than others. Older central areas may be far more pedestrian-friendly than their suburban counterparts. A&SRTS programs should utilize a “walkability index” for each school catchment area.

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Appendix: Value Statements Related to Driving to School

Adapted from:

Black, C., Collins, A. & Snell, M. (2001). Encouraging walking: The case of journey-to-school trips in compact urban areas. *Urban Studies* 38 (7), 1121-1141.

Classification 1:

Individual Responsibility and Impact

- Nothing I do makes any difference to the environment one way or another
- It is the government's responsibility to worry about the environment, not mine
- Given all the air pollution in the world, a short car trip to school makes no difference at all
- I am far too busy to worry about environmental issues
- The motorist always gets the blame for something: air pollution just happens to be the latest fad
- People spend too much time worrying about environmental pollution
- Pollution caused by cars is not a problem where I live
- If I don't use the roads someone else will
- People over-estimate risks from traffic – most people survive car accidents
- The government will act long before traffic problems get out of hand
- Protest is pointless – you will never get a government to change its policy unless it wants to

Classification 2:

Environmental Awareness

- Problems with car fumes are getting out of control
- I expect that at some future date this country will have severe pollution problems
- Before long, our health is really going to suffer from air pollution
- This country should take the lead on environmental issues
- There are so many cars now you could be hurt in an accident tomorrow
- Only the green activists keep society alert to pollution issues
- Car engines can be designed that will totally eliminate pollution
- I feel a moral duty to minimize pollution to preserve the planet from damage
- The world has far more cars than is sensible
- If road traffic is to be cut, the company cars must be the first to go
- It is morally acceptable to commit a small crime on a road construction site in order to protest against the greater crime of environmental destruction

Classification 3:

Car-centredness

- Many people have to use a car everyday, even if they would rather not
- Many people could not work if they did not have a car
- Nothing would make me give up my car
- Any worries parents may have about the environment take second place to getting their child to school safely, and that means in the car if they have one
- Having a car is part of having a good lifestyle
- A serious car accident could happen at any time – it is just another everyday risk
- If my job caused environmental problems, I'd rather be unemployed than carry on causing pollution
- No one would give up their car just because someone else was becoming worried about air pollution
- Most parents are worried that small children would be at risk from strangers if they were allowed to walk to school alone.

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