Introduction

Undoubtedly, the vision "Zero Road Toll" presents a tremendous challenge. This challenge extends to the land-use and transport planning fraternity and to regulatory and law enforcement agencies alike. Attainment of such vision over the next few decades implies, at the very least, a need for a coordinated series of strategies that target all road users, but especially the most vulnerable sections of the community known to carry higher risks of involvement in traffic accidents. School children have long been recognised as one of the groups most at risk of involvement in traffic accidents resulting in death or serious injury – especially accidents involving pedestrians and cyclists.

Understanding the factors that influence children's travel patterns is an essential first step in devising appropriate strategies to ensure their safety on the road, and the road environs. This paper contributes to that understanding by examining an important and recurring aspect of children's travel – notably their journeys to school.

Children's travel to school is already a focus of attention of many different programs and strategies. Some of these programs and strategies are developed and administered by public agencies and other arms of government, others by community groups, and still others by voluntary organizations. The perspectives of these programs and strategies are quite different, with each tending to focus on a different facet of school travel. Objectives, too, vary widely from ones explicitly concerned with road safety to others concerned with personal security, and still others related to travel demand management and behavioural change agendas, for which the motives are more closely related to environmental and social considerations.

This paper looks at recent trends in school travel patterns and outlines a number of factors which appear to influence the increasing use of private cars for transporting children to school. It does so by, first, identifying some important issues in children's travel, by drawing upon existing research findings from both Australia and overseas. This review is supplemented with an analysis of children's present day travel patterns in Melbourne from the perspective of parents/carers who accompany children to school. The analysis is based upon recent information from the Victorian Activity and Travel Survey (VATS) conducted by the Transport Research Centre (Transport Research Centre, 1998). Consideration is also given to a range of programs and strategies already in place, which attempt to address children's travel to school. The paper concludes that the best way of moving forward essentially involves two steps. The first is a need to more fully understand the factors that shape children's travel patterns. Such factors would seem to be increasingly related to broader societal forces, including changing lifestyles and community perceptions of the levels of personal security in present day society, although increasing travel distances to schools also play a role. Secondly, a mechanism is needed for achieving closer integration and coordination of the range of programs and strategies currently in place that address children's travel, particularly with respect to school travel. The best way of achieving this may well be through broadening of existing safety programs to embrace wider environmental and social objectives.

Status quo of children's travel

Increasing reliance upon the car for personal travel by society generally is also reflected in children's travel patterns. In the past two decades, there has been a marked increase in car use for children's travel, in particular for school journeys. A report by the School Travel Advisory Group (STAG) (1999) in the UK cited that the proportion of journeys by car to schools has nearly doubled from 16% to 29% in the last decade.

In Melbourne, the major mode of travel by children of all ages is as a car passenger. It accounted for 81% of all trips made by children aged between 5 and 9 and 62% of all trips made by children aged between 10 and 14 years. The corresponding figure for older children (between 15 and 19 years old) is over 40% (VATS, 1999). In Sydney, a comparison between 1991 and 1997 showed a 5% increase in children's trips as private vehicle passengers and a corresponding 5% drop in walk trips (Transport Data Centre, 1999).

The pattern of children's travel, while in itself a result of the interplay between existing social, geographic, economic and environmental factors, conditions the behaviour of the next generation and influences the travel of society in the future. In this paper the focus is on school children's travel within the broader context of societal trends.

School travel is important for a number of reasons. First, school journeys usually take place at peak times and have the same destination every day. Regular journey patterns are often easier to target with road safety programs or travel demand management strategies since large numbers of people travelling to the same place at the same time increase not only the efficiency with which safety programs can be delivered, but also the potential for shared services (such as car pooling and improved public transport services). Secondly, school pupils provide a well-defined target audience over which it is possible to exert some influence via the school. Finally, school escort trips journeys account for a large proportion of travel by households. Within the Melbourne Statistical Division (MSD), home-based chauffeuring trips comprise 8% of total trips made by all people every day, according to the 1999 Victorian Travel and Activity Survey (VATS). However, in the morning peak in the period between 8.30 and 9 am, trips accompanying children to schools constitute 21% of the total trips made by all people across the MSD. Some 84% of these are made by car. In other words, children being *driven* to schools account for about 17% of all trips by all people in the MSD in the half hour period between 8.30 and 9 am (VATS, 1999).

Issues in children's travel

This section examines the key factors influencing the increasing car travel by children, by drawing upon existing research findings from both Australian and overseas, and by examining children's present day travel patterns in Melbourne from the perspective of parents/carers who accompany children to school.

Concerns over traffic safety and personal security

The most commonly recognised issues underlying the increased use of the private car for minors' travel relate to concerns over traffic safety and personal security.

In part, concerns over traffic safety have been supported by statistics on accident rates involving children and young people, particularly when they are walking or cycling. As indicated in Rose (2000), during the period between 1990 and 1996, primary and secondary school-age children accounted for about 30% of pedestrian accidents in Victoria. For children aged 4-12 years-old in Victoria, about 65% of pedestrian accidents occurred immediately before or after school opening time, while for older children aged 13-18 years-old, the comparable figure is 49%. In the UK, accidental injury has remained the leading cause of death for children aged between one and 15 years of age since the 1950s. Nearly a fifth of child road accident casualties occur on the journey to or from school, and this proportion increases for secondary school-aged children (STAG, 1999).

Two inferences may be drawn from these statistics. The first is that children as pedestrians have trouble coping with traffic and are particularly vulnerable to injury or death by car. Previous research, such as Tranter (1995) and Ampt (1995), has supported this. The second inference is that the high proportion of such accidents occurring near schools reflects the high volume of traffic related to cars dropping off/picking up children. In another words, the likelihood of accidents may be reduced to a considerable extent if fewer parents elected to drive their children to schools.

What is happening now is quite paradoxical. While parents attempt to ensure the safety of their children on journeys to school by driving them there, the ensuing traffic creates localised traffic hazards near schools, making it even less safe for children who choose to walk or cycle. As a result, the real and sometimes perceived risk involved in walking and cycling to school may turn more people away from doing so, contributing to the increasing use of private cars for transporting children to school. Clearly, to break this vicious cycle, programs that only address the traffic-related issues around the school are not sufficient (Godfrey *et al*., 1998).

Some authors have argued that the perceived traffic risk is much higher than what occurs in reality, based on the low fatality rates observed in practice. For example, Hillman (1997) has pointed out that in the UK the fatality rate was one in every 25 million kilometres cycled. However it is questionable to use very aggregated statistics to address an issue that has a very specific local effect. In fact, other statistics, such as those cited in the STAG report clearly demonstrate that children have a disproportionately high risk when it comes to road accidents.

Whether well-founded or based on misconception, parental fears of personal safety or security also play a significant role in curtailing children's independent travel activity (Morris & Richardson, 1996; Hillman, 1997). Understandably, parents could be expected to place a greater weight on a risk that has more severe consequences. It has been reported that parents view the consequence of abduction or assault as being vastly more hideous than the consequence of the more common car accident (Godfrey *et al*., 1998). In this latter study, even though the probability of a car accident was much higher, concern over personal security was the most popular reason given by parents for driving their kids to school on a regular basis. The authors pointed to the wide coverage given in the local and regional media to child abductions and molestations as the reason behind this perception, therefore raising a question of balancing between providing necessary information and causing unnecessary alarm.

Elsewhere, it has also been noted that parents of different localities place different emphasis upon traffic safety and personal security. Cited in Morris & Richardson

(1996), the Australian Living Standards Survey (ALSS) conducted in 1992-93 found that between 60% and 75% of the parents among families in four study areas in Melbourne consistently noted that fear of attack on the street was the main concern for safety. However, this was overshadowed by the fear of crossing roads as a result of high traffic volumes in inner Melbourne, where 80% of all parents noted this problem.

On a related issue of safety of using the public transport system, the ALSS (1993) also showed parents tend to express significantly higher concern than their children about safety of coming home on public transport at night.

There also appears to be some link between the fear of crime and the level of traffic on residential streets. Quite contrary to popular conception, the fear of crime among people in a heavily trafficked street was almost three times as high as in a lightly trafficked street (Appleyard, 1981). Clearly, a "busy" street from a traffic point of view may mean an isolated and anonymous world in which people remain strangers to each other behind their wheels. As Tranter (1995) suggested:

> The widespread and increasing use and availability of the private motor vehicle have contributed to an increasingly individualist world, where an undercurrent of insecurity frequently prevails.

Clearly, measures need to be developed to address real safety issues as well as people's perception of traffic safety and security. As will be discussed later, these measures need to be adopted in an integrated way.

Increasing travel distances

Increasing distances travelled to school is probably the second main reason why people drive their children to schools.

The STAG report (1999) cited that the average length of the journey to school in the UK had increased by 18% from 1.1 miles in 1985/86 to 1.3 miles in 1995/97 for children aged 5-10, and for children aged 11-16 by 35% from 2.3 miles to 3.1 miles in the same period.

Part of the reason for increasing travel distances is the increasing dispersion of facilities, caused by continuing urban sprawl, and deliberate policies to amalgamate schools. However, another contributing factor is the wider choice exerted by parents in the quest for the best education for their children. Local schools are often overlooked in preference for more distant alternatives. The fact that many women are now in paid work may also lessen the importance of proximity to home as a factor influencing the choice of school, since work journeys are often combined with dropping off and picking up from school.

According to the report on "Travel to work, school and shops" by the Australian Bureau of Statistics (ABS, 1994), in 1994, about 58.4% of children attending primary/secondary schools in the MSD region of Victoria lived within a distance of less than 2 km from the school, and about 82% of all school children lived within 5 km from the school. However, this situation can now be expected to have changed as a result of schools being closed down over the last decade. In Victoria, a total of 413 state primary and secondary schools have closed since the beginning of 1990's. But over the same time, the number of children under 15 has remained relatively stable

(Cervini, 2000). Just within the Metropolitan Melbourne, a total of 75 government schools have been closed or merged between the period of 1993 and 2000. During the same period, the number of non-government schools increased by 13, making a total reduction of 62 schools within the MSD region (Department of Education, 2000). As a result, state schools are now much bigger than they were, with more families travelling a greater distance to school than they would have perhaps ten years ago.

In the study by Godfrey *et al*. (1998), distance to school was the second most cited factor for parents who drove their kids to school on a regular basis. It was found that once students lived more than 1.5 miles (2.4 km) away from the school, it was very unlikely that they would walk to school. Based on this finding, it is not surprising that the proportion of chauffeuring trips has increased substantially as a result of increasing travel distances to schools.

Tranter (1995) has pointed out that the provision of a denser network of local facilities, such as schools, shops and recreational facilities, is one of the most crucial aspects in the creation of an environment that is friendly to children. In recent years, re-urbanisation of central cities has been occurring across Australia (Colebatch, 2000; Zigomanis, 2000). In Melbourne this has been accompanied by deliberate strategies aimed at urban consolidation and rejuvenation of central Melbourne.

Although the State Government of Victoria supports urban consolidation in its policy direction (Energy Victoria *et al*., 1996), a study by Buxton and Tieman (2000) found that recent medium density housing developments in Melbourne did not give enough consideration to the proximity of public transport. Building in car-dependence in urban re-development undermines the potential to employ urban consolidation as a tool in travel demand management. As such, the opportunity to induce behavioural change towards more sustainable travel choices by people living in medium density residential environment is put at risk.

The above suggests that the provision of a good public transport system (and other alternative modes) should become part of a package of urban development at the outset to effect and foster behavioural shift to counter reliance on the car. Encouragingly, in the recent discussions as part of Metropolitan Transport Forum, local government bodies have expressed a strong support for providing public transport for any new suburbs (Rose, 2000).

Women's changing roles

In assessing children's travel patterns, it is necessary to investigate parents/carers' choices of modes as they tend to make the decisions for their children, particularly younger children. Within this context, this section deals with children's school trips as a part of the overall travel and activity patterns of parents/carers.

According to the 1999 VATS data, about 85% of all trips to primary schools made by children of primary school age are accompanied by an adult/sibling/carer. Where parents/carers accompany children to primary schools, driving to school accounts for 87.5% of such trips, and a further 9.9% are made by walking (Table 1).

Table 1   Mode share of trips made by parents/carers who accompany children to primary schools in Melbourne

Mode	Percent
Walking	9.9%
Driving	87.5%
Car passenger	2.3%
Tram	0.3%
Total	**100%**

Source: 1999 Victorian Activity and Travel Survey.

For those parents who have kids of primary school ages (between 5 and 11 years old), their chauffeuring trips are further analysed according to their employment and gender status. The results are shown in Table 2.

Table 2   Percent of chauffeuring trips to and from primary schools by car by parents with primary school kids

Gender and Employment Status	Home-to-home	Linked afterwards	Linked before	Linked at both ends	Percent of School Chauffeuring by car
Men					
Full-time	2%	5%	1%	1%	10%
Part-time	0%	1%	0%	0%	1%
Not employed	3%	1%	0%	0%	5%
Total by Men	*5%*	*7%*	*2%*	*1%*	*16%*
Women					
Full-time	2%	4%	3%	2%	11%
Part-time	16%	13%	8%	7%	44%
Not employed	16%	6%	5%	2%	29%
Total by Women	*34%*	*23%*	*16%*	*11%*	*84%*
Total	**39%**	**31%**	**18%**	**12%**	**100%**
Total Linked trips					**61%**

Source: 1999 Victorian Activity and Travel Survey

Significantly, sixty one percent of the chauffeuring trips to and from primary school made by car are linked trips. This means that other activities rather than going home are performed after dropping-off/picking-up children at school (linked afterwards) or before (linked before) or linked before and after (linked at both ends). Only 39% of chauffeured school trips are made directly from home to home via school, including 16% made by mothers who are part-time employed and 16% made by mothers who are not working (Table 2).

Mothers in total make up 84% of the drivers who drive their kids to primary school. Of those, mothers in part-time jobs (44%) outweigh those without a job (29%). This does not necessarily imply that mothers who are not in the paid workforce make fewer trips accompanying their children to school compared with those who work part-time. But, given that women working part-time account for 38% of all accompanied trips to primary school and women not working account for 37% of such trips, it would seem that mothers without the pressure of paid work tend to rely less on cars to accompany their kids to schools.

The foregoing discussions suggest that the rise in children's journeys to school by car is very closely related to women's increasing participation in workforce. The fact that most of these chauffeuring trips are linked trips suggests that the choice of the mode

for the journey to school is not simply determined by the journey to school, but more probably by an array of activities that need to be performed before or after the school journey. As travel patterns become more complex and more activities need to be performed within a certain space and time, private cars become a convincing personal solution at the household level to help fulfil these demands.

Clearly, strategies to combat this facet of children's increasing car travel are probably the most elusive or challenging as they are very much dependent upon the individual household's decision-making and life style choices.

It is significant, nevertheless, that almost 40 percent of car trips made to school by parents with primary school children are simple home-to-home chains. Almost half of these are made by parents who are not employed in the paid workforce, suggesting that there may be further scope to induce behavioural changes towards more sustainable travel choices among this population group. Limiting factors in this regard may include constraints imposed by very young children (for whom walking may be difficult) and actual travel distance.

Even so, mothers who do not participate in paid work also tend to link school travel with other activities (which may involve dropping off other children to activities such as pre-school, shopping, social activities, as well as chauffeuring school children to after-school activities). Children these days engage in a wide number of extra-curricular activities, which in themselves may be another limiting factor in the choice of travel mode used, particularly after school. As Dowling and Gollner (1997) have noted the concept of "good mothering" that has evolved in the nineties involves taking children to many additional activities. Clearly, more detailed information is needed to know just what scope there is for inducing behavioural changes. More disaggregated analyses based on VATS would help to shed some light on the picture, although it is likely that some supplementary survey work would also be needed in specific case study applications. The work undertaken recently in the UK by Jones and Bradshaw (2000) provides an excellent model in this regard.

Impact of increasing car-dependency in children's travel patterns

Increasingly car dependency is a major problem confronting most countries of the Western world. On the one hand, mobility has increased dramatically over the last 10 years as income and car ownership levels have risen. On the other hand, the dispersed land use pattern and more complex activity patterns that have followed seem to make us rely increasingly on cars. This paradoxical situation of increasing mobility but decreasing accessibility has been identified as a major threat to sustainable urban development (European Union, 2000).

Indeed, from economic, environmental and social perspectives, there are significant ill effects associated with increasing car-dependency. Based on past trends, the Australian Bureau of Transport Economics (1999) has predicted that the total car traffic on existing networks could increase by 30 to 40 percent, and the associated costs related to infrastructure provision and congestion would be around $30 billion per year by 2015.

Congestion is only one of many negative impacts of car-dependent societies. Air and noise pollution, severance of the natural landscape caused by road networks, high consumption of energy per capita, decreasing levels of fitness among the population, higher accident risks, a decreasing sense of community and so on, are some of the

negative environmental and social impacts. At the same time, reduced patronage of public transport contributes to declining levels of services for those who rely heavily on the availability of public transport for their personal mobility.

In addition, as mentioned earlier, greater reliance upon the car for transporting children to school in itself contributes greatly to localised traffic hazards around schools.

Nevertheless, children's increasing travel by car is not simply an issue of traffic congestion arising around schools. It has also been suggested that increased car use by children can hinder their personal, intellectual and psychological development (Moore, 1986; Tranter, 1995). Children's independent mobility, their "active exploration" of neighbourhood rather than mobility in cars, has its own place and importance in children's overall development. As proposed in Tranter (1995) and Hillman *et al.* (1990), children's independent mobility can be measured in the levels at which minors are allowed to:

- Travel to school and other places alone;
- Cross major roads alone;
- Use buses alone;
- Cross major road alone;
- Go out after dark;
- Use cycles on main roads

Hillman *et al*. (1990) conducted a comparative study into children's independent mobility in the United Kingdom between the years 1971 and 1990. In the period, the percentage of nine-year-olds who were allowed to catch buses alone had shrunk from over fifty per cent to eight per cent.

The reduction in children's individual mobility is also happening across other activities, beyond travel to and from schools. For example, it is observed that children of primary school age are now almost always accompanied, even when not in the car (Ampt, 1995).

The above phenomenon has its economic and social costs. A recent estimate of the economic cost of parents transporting children in the UK was between £10-20 billion (Hillman *et al*., 1990). When taken to its extreme, transporting children to and from school can prevent a parent (most often the mother) from taking on employment, thus increasing costs of reduced opportunity.

Children's health also suffers from increasing travel as car passengers. Lack of regular exercise can cause illness, stress, fatigue, heart problems and obesity (Hillman, 1997). Childhood is the ideal time to adopt regular exercise: active adults are far more likely to have been active children. However, in the Western world, policies aimed at increasing fitness levels have been concentrated on encouraging sporting activities. Hillman (1997) argues that this policy direction is misguided, as issues of motivation, cost and availability can serve to limit access to sporting activities for children. Cycling and walking, on the other hand, provide more realistic means whereby children (and adults) can keep fit.

Current strategies and programs relating to school travel

Policy responses to issues related to children's travel, particularly, with respect to school travel, have so far largely focused on improving traffic safety. Such efforts

include general initiatives undertaken by local councils, as well as more localised solutions through "Safe Routes to School" (SRTS) programs. However, there are a number of other programs and strategies in place that address school journeys from other perspectives. This section will briefly review these strategies.

Role of local government

Local municipalities play an important role in safety of school transport, through the provision and supervision of designated school crossings and, the imposition and policing of parking restrictions around schools.

School crossing supervisors- fondly known as 'lollipop' men and women – play an important role in road safety by helping to protect young children crossing busy roads and streets to get to school. Funding for this program is provided jointly in Victoria – by local councils and the State Government. As an example, the Shire of Yarra Ranges, an outer suburban council covering the Dandenong Ranges on the outskirts of Melbourne, has one of the largest supervised school crossing programs in the State, with some 109 crossings supervised by 151 supervisors. The total cost of this program in this municipality is currently \$526,000 p.a., of which the State Government (through VicRoads) contributes \$230,000 (Morison, pers. comm. 2001). State Government funding is subject to annual submissions made by councils on the basis of warrants, which are assessed according to certain criteria of need.

Parking controls around schools are regulated by council by-laws, and policing of restrictions is undertaken on a periodic basis to help to enforce controls and ensure greater safety.

In addition, in specific localities, councils may have a more active role in promoting road safety through partnerships with the Sate Government in Safe Routes to School (SRTS) Programs.

Safe Routes to School Programs

Safe Routes to School is a broadly based program widely implemented on the European continent and Australia. Variations of SRTS programs have been implemented on the European continent during the past two decades, such as the Feet First Campaign, the SPOKES initiative, Walk to School Week, and Safer Routes to School (Bradshaw *et al.*, 1998). These programs are generally aimed at improving children's safety. Denmark, in an effort to address its highest rate of child mortality due to road accidents in Western Europe, first developed a Safer Routes to School Program in 1976 to improve safety for child cyclists and pedestrians (Bradshaw *et al.*, 1998). Under the Road Traffic Act established in 1976, police and local authorities are responsible for the safety of children on school journeys. This involved many improvements on the local roads, including slow-speed areas, road narrowings, traffic islands and separate foot and cycle paths (Bradshaw *et al.*, 1998). The program was highly successful, and in some localities the accident frequency was reduced by 85%. Denmark's experience with SRTS has provided an example for many other European countries to adapt their version of SRTS.

In the U.S.A there is generally less interest in SRTS initiatives and more concern with safety issues associated with bus transportation to and from schools (Rose, 2000). The more dispersed urban form and consequently the longer distances children have to

travel to schools in the American cities mean that walking and cycling are not a policy focus.

In the UK, Safe Routes to School projects were also tried in the 1980's. However, there was little implementation through local authorities' involvement until more recently in the mid 1990's (Bradshaw *et al*., 1998). The aim of the UK's SRTS was also broadened to " *encourage children currently being driven to school to walk or cycle as well as improving safety for those children already walking and cycling*" (Bradshaw *et al*., 1998). The SRT projects in the UK therefore usually encompass much more than the physical measures needed to provide safe cycling and walking routes. They typically also provide a great deal of educational and awareness raising activities. Clearly, this policy framework has recognised the close association between improving children's safety and the issue of reducing overall car-dependency in the journey to school.

It is only since 1995 that SRTS programs have gained much attention by local authorities in the UK, prompted by the success of the national demonstration project, run by Sustrans who were working in partnership with a few local councils to promote SRTS. However, as found by Bradshaw *et al.* (1998), lack of funding, time and other resources have held back many local authorities from implementing SRTS programs. Only 10% of authorities surveyed by Bradshaw *et al.* (1998) have implemented SRT projects on a permanent basis. The other common barrier to a full-scale implementation was cited as parental reluctance to release their children on their own for fear of traffic safety and personal security. On a brighter note, many British local authorities are introducing various other initiatives aimed at reducing car use for school journeys. Traffic management near schools (e.g. calming, junctions) is the most common related initiative being used by authorities to reduce car use for the school journey (Bradshaw *et al.*, 1998).

Despite the effort in SRTS programs so far and the policy inclusion of enabling independent mobility of children in the UK, there have not yet been widespread changes in the behavioural pattern for children's journeys to school. Successive National Travel Surveys in Britain record marked reductions in the distances walked and cycled (Hillman, 1997). This probably reflects the limited implementation of the SRTS programs as mentioned above.

Within Australia, the Safe Routes To School programs tend to be delivered by a state road authority in conjunction with local government, the school community and the police (Rose, 2000). In this regard, the Western Australian program is unique in that it is being delivered directly as a local government initiative rather than through a state government organization.

Rose (2000) identifies the following common features of the SRTS programs in Australia:

- Planning and establishing the program – choosing schools to participate; establishing links with the key stakeholders, etc.

- Investigating local issues – often done through a travel survey of each school.

- Developing and implementing an action plan – This generally involves the "four Es": Engineering, Education, Enforcement and Encouragement.

- Maintaining, monitoring and evaluating the program.

However, the different states have varying levels of commitment and different approaches to the program. Western Australia and Victoria are at the forefront with mature programs while New South Wales, South Australia and Queensland are gathering momentum. In Northern Territory, Australian Capital Territory and Tasmania, however, there are only limited initiatives (Rose, 2000).

In New South Wales, the program differs distinctly from that in other states in that it has taken on more of a behavioural approach to improving pedestrian travel to school and has excluded the engineering aspects of the program. Not only were engineering treatments not an explicit component of the New South Wales program, but also the involvement of other key stakeholders (e.g. local government and police) was not explicitly specified. Despite being offered to all schools, including country schools, the NSW's program was not thought to be very effective by schools that were involved.

Although engineering issues are central to many SRTS programs (except for programs in New South Wales), there are also differences in focus on the "four E's" principles. Victoria's program has a fairly traditional safety focus (VicRoads, 1994). In selecting schools to participate in the initiative, crash statistics are used and a certain amount of accidents/year/area is required for a school to be included in the initiative. This automatically excludes a lot of regional schools from participating in Safe Routes to School (Rose, 2000).

Other Programs Addressing Travel Safety and Personal Security

In Victoria, the police conduct a 'Safe Cycle Campaign" which is sponsored by VicRoads and is run through the schools and the wider community. This is aimed at increasing awareness of the risks involved in cycling and emphasises the role of community education in promoting safe cycling practices. Some schools also run their own "Bike Ed" programs, some of which are conducted by the Victoria Police, others by trained teachers at the respective schools, and others are outsourced to private providers and funded directly by parents. Coverage by such programs tends to be somewhat *ad hoc*, and depends in part upon the level of initiative taken by individual schools. In the case of privately run programs, the ability of the local community to pay for such activities is also an issue.

The Victorian Police are also involved with schools in programs which are directed towards improving personal security. "Policing in Schools" is one such program where police participate in classroom discussions, raising awareness about "stranger danger" and how to ask for help if frightened, as well as issues related to road safety and drug and alcohol use.

Efforts to provide a safer environment for children have also been undertaken by many local communities through the setting up of Safety House Programs. The first such scheme was established at Wooranna Park Primary School, Dandenong North in 1979. Since that time the Safety House Program has expanded into all other parts of Australia, parts of New Zealand, England and Wales.

The broad aims of the Safety House Programs are to provide community assistance to children should they feel unsafe while travelling to and from school. This is achieved through a network of Safety Houses, which provide a reliable means for children to

get help as quickly as possible, by identifying safe places that children may run to in local areas in order to get help in the face of danger, or perceived danger.

Currently in Victoria, the Safety House Program consists of 560 communities, 718 schools (the vast majority being primary schools) and 20,000 Safety Houses. The program encompasses the whole of the State with 37% of the Safety Houses in Victoria being located in rural areas. Apart from a small number of administrative staff, the Program is driven by volunteers who give up their time to be either a Safety House and/or committee member. In Victoria, the program receives a $30,000 grant from the Department of Justice, but is otherwise self-supporting though its own fundraising activities.

Recently in Victoria, the Safety House Program has been opened up for use by senior citizens, thereby broadening the benefits of the program. There are some signs, however, that the program may be less viable in some areas. With more parents driving their children to school nowadays and a larger proportion of households with both parents working, it is becoming more difficult to establish and maintain Safety House Programs.

For the most part these programs operate independently of the road safety initiatives undertaken by councils and VicRoads, although links may be made by individual schools.

Behavioural Change Programs

Clearly, strategies to combat children's increasing car travel involving linked activities are probably the most challenging. This is because they are likely to be very dependent upon the individual household's decision-making and life style choices. However, recent experiments in travel demand management have produced some encouraging results in influencing individual behavioural change. Schemes such as Travel Blending (Ampt and Rooney, 1998), SmogBusters (John and Wake, 1999) and Individualised Marketing (James *et al*., 1999) are such approaches that have focused on changes at the individual level to reduce the impact of the car and promote the use of non-car modes. As reported by Ampt (1999), the introduction of travel blending in a neighbourhood has not only increased the use of other modes (like bicycles and public transport), but much more importantly, it has helped participants to gain many personal benefits such as reduction in time and money spent on travelling, and improved health, through increased levels of physical exercise.

Perhaps, one of the most important and crucial factors in gaining acceptance of "green" travel modes at the individual level is the realisation of health benefits and improved personal well-being. Benefits to the environment and to the community will follow as a result of such changes and will boost those individuals' sense of achievement of doing something positive for the environment and the community. Moreover, as John and Wake (1999) have noted, it is important not to underestimate these potential contribution to be played by children themselves in generating innovative solutions.

A way forward

The foregoing review of recent and current programs indicates that generally there are a number of common approaches in programs aimed at children's mobility. The first approach is distinct with its sole focus on traffic safety issues and the improvement of

them, through legislation, engineering, compulsory education and other measures, as can be seen in the European continent and most Australian states. A second approach can be regarded as one that is built upon the development of the first approach, but also explicitly includes increasing children's independent mobility as one of the objectives, as in the UK's SRTS programs. Still other approaches operate largely independently and focus on aspects related to increasing levels of personal safety and security in the community. Finally other approaches have been made with the aim of promoting more sustainable travel choices through the use of "green travel" modes. It is foreseeable that recognition of the broader social context for the rise of car-dependency in children's travel should make way for integrating aspects of all four approaches.

While programs dealing with traffic safety issues are important, improvements to traffic safety cannot rely only on traffic engineering measures, but should also include transport and urban planning dimensions.

As mentioned earlier, apart from concerns over traffic safety and personal security, the other main underlying cause for the increase in children's car-dependency is related to changing lifestyles, including the increasing participation of women in workforce and the changing role of women at home (i.e. part-time "taxi driver"). More complex domestic arrangements for women, who shoulder a major role in accompanying their family members (including children) to various activities, have been a key factor in promoting increased use of the car. In order to decouple children's travel in cars from women's travel decisions, it will be necessary to find different solutions for children's travel patterns which may involve increasing children's independent mobility.

But catering for the independent mobility of children is something that is easier said than done. This is especially so given parental concerns about safety and personal security of children travelling independently. Clearly, engineering treatments – involving the upgrading of footpaths, road narrowing, improved crossing points and traffic calming – will not be sufficient. Rather, strategies which provide for an increased adult presence on routes to schools are likely to be needed to gain community acceptance. For such strategies to be fully effective, they are likely to require strong partnerships between government, schools and the local community.

Further work is underway at the Transport Research Centre, involving the participation of neighbourhood schools to furnish detailed information on children's travel patterns and to trial selected alternative measures to reduce levels of car usage for school journeys. Proposed measures to be considered include single day promotions, such as "Walk Your Children to School Day", as well as ongoing measures such as two minutes parking or drop-off zones for car journeys and car pools, organised by or facilitated through contact lists provided by the schools themselves. Other more innovative solutions to be considered include supervised walking parties, with chaperones drawn from participating families or the wider community. Conceivably, the pool of potential helpers may well extend beyond the parent body, since there may be other people (such as early retirees) in the community who would welcome the opportunity to perform an important community role by providing a greater "adult presence" in the community. The range of measures will need to be tested to assess their practicality and the likely level of acceptance within

the community. Monitoring will also be required to assess ongoing effectiveness of programs that are put in place.

It is important also not to overlook the possibility of linking such strategies to other policy agendas. Recent damning reports about the poor state of women's health (Kelly, 2000) may also create an opportunity to couch safety programs and travel reduction strategies within an overall program promoting healthy lifestyles.

Of greatest importance, however, is the need to recognize the close association between improving children's safety and the issue of reducing overall car-dependency in the journey to school. Planning strategies which seek to increase children's independent mobility should be the important long-term objective. Promoting children's independent mobility cannot be separated from policies promoting sustainable urban development. Nor is it something which will be achieved overnight. A constructive interim measure to address issues relating to children's school travel would seem to be to adapt existing road safety initiatives to incorporate wider social and environmental objectives. This could well be achieved through closer integration of existing programs which may be best tackled at the level of individual schools. As such, the Education Department may well be best placed to take the lead role in an area which has been so far largely taken up by other jurisdictions.

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