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Children's active travel and independent mobility in four countries.

Development, social contributing trends and measures

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1 Introduction

Research from many countries shows that an increasing number of children are taken to school and leisure activities by car. During the past 10-15 years, there has been a significant increase in car use on trips to and from school. Studies from Britain, Scandinavia and Italy show the same trend, not just among the youngest children in the first and second grades, but also among those in the upper grades (Bradshaw, 2001; Fyhri, 2002; Jensen et al., 2004; Mackett, 2002; Mackett et al., 2005; Prezza et al., 2001). A decrease in children's independent mobility has also been found for their leisure activities, which, to a large extent, are organized and take place outside their immediate neighbourhood (Hjorthol and Fyhri, 2009; Valentine and McKendrick, 1997).

This trend is undesirable for a number of reasons. For children, being physically active is very important for their health and well-being (Torsheim et al., 2004). Several studies have suggested that a reduction in physical activity (including daily travel) contributes to increased weight and obesity among children (Cooper et al., 2003; Evenson et al., 2003; Fox, 2004; Salmon et al., 2005). Increased use of the car as the most 'natural' travel mode for children results in less independence for them (Fotel and Thomsen 2004). Related to this, is the claim that children who always are driven to activities do not get to know their neighbourhoods properly and hence are less experienced in way-finding tasks (Preiss, 1989). Brown et al. (2008) identified further aspects of the benefits of independent mobility summarized from other European research, such as the development of motor skills, increases in additional physical activity, and the influence on cognitive development, by helping children to increase their way-finding abilities. Independent mobility, primarily walking and cycling, also helps children to make contact with other children and has a role in the development of emotional bonds between children and the natural environment (Brown et al. op. cit). On the other hand getting out of the home, possibly by car, is often better for children's physical activity than staying at home. Mackett et al (2005a) studied the activity of 200 children in different situations. They found that the home was the place where children tended to be least active. The same study showed that those who walked to events not only used more calories in travelling, but used more when they arrived than those who were taken by car.

Even though the concern about the motorization of children's mobility involves all daily out-of-home activities, traffic measures to increase children's independent travel have generally been related to the journey to school (Mackett, 2003; Jensen, 2008). Because of this, children's mobility related to leisure activities has received less attention. As will be shown later in this paper, knowledge about this aspect of children's mobility is sparse and scattered, which implies a limited basis for policy actions.

The concentration on the journey to school for policy-measures means less attention has been paid to other policy fields that might have an impact on children's active travel and independent mobility, e.g. centralization of schools, which often means longer journeys. More students in private schools compared to public schools and freedom of choice of school can often result in longer journeys to schools. Land use and transport policies, urban developmental policy, family policies and politics of equality can also have an impact on children's daily mobility. When discussing measures, it is also important to be aware of these fields. In addition to policy areas, there are also social trends that, directly or indirectly, have effects on children's independent mobility, and contribute to the forming of the social framework of everyday life. Knowledge about these trends will be a help in understanding children's mobility and will give a better basis for the selection of measurements to improve the conditions for active travel and independent mobility among children. In this paper we use walking and cycling as a proxy for independent mobility where more specific data are not available. Since statistics on children's mobility do not always provide information about

accompanying. In addition the possibility for walking and cycling safely is an important condition for children's independent mobility.

The purpose of this paper is to contribute to a better understanding of children's mobility and the social framework of daily mobility in families with children, and to examine the measures that are used to increase active and independent mobility in different countries. We also aim to discuss how these measures can be improved.

In doing so, three topics are presented and discussed. Firstly, we want to compare the development of children's independent mobility in Denmark, Finland, Great Britain and Norway to examine the trends in these countries and look for similarities and differences. Accessible data are used, which implies that not all of them are directly comparable, but they are used as indicators of development. Secondly, social trends that contribute to the formation of the social context of everyday life for children and their families are presented and discussed. Thirdly, we show how the different countries try to meet the challenges of children's mobility by looking at measures at national and local levels.

Finally, we aim to discuss differences in children's independent mobility in the light of variations in social structures, differences in institutional frameworks and in institutional and legal measures to give a better basis for implementing measurements for the increase of independence in children's mobility. Before presenting these three topics, the methods adopted in this paper are introduced.

2 Methods

This paper is one of the results of a joint project involving researchers from four countries: Denmark, Finland, Great Britain and Norway and funded by the Norwegian Research Council. The project has included three research themes: (i) Mobility and activity in daily life; social trends and development. (ii) Analysis of children's activity and travel patterns in different contexts (iii) Review and discussion of 'good-practice' initiatives to reduce children's car use.

The project has employed a 'mixed methods design', which is reflected in this paper including analysis of primary and secondary data and analysis of policy documents.

One of the most important data sources in this paper are the National Travel Surveys (NTS) which are carried out in all four countries. The NTS give socio-demographic information about the respondent and his/her household, such as level of education, income, occupation, number of children and their age, etc., travel activity on a particular day (registration day), work trips and other work-related questions, access to a car(s) and quality of public transport. The surveys also provide information about the frequency of use of different modes of transport (both cars and other modes). The NTS is large cross-sectional surveys representing the whole population of the four countries (cf Table 1). On a general level the surveys provide comparable data, even if there are some variations in data collection methods in these four countries. The sources for these data are Jensen and Hummer (2002) for Denmark,

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o\Tietokannan_perussisalto_HL T04_05.doc Virpi Pastinen 02/01/2006 for Finland, for Norway we have own access to data files from the National Travel Surveys, and for Great Britain, the National Travel Survey published annually by the UK Department for Transport (2009).

In addition to the NTS, other types of available data and surveys have been utilized for the purpose of this paper. This is research partly carried out by the authors, partly carried out by other researchers. Not all of these data are directly comparable between the countries, which we also have commented upon.

A third data source is policy documents measures concerning children's daily mobility in the four countries, on both national and local levels. These documents have been analysed and compared.

3 Children's mobility in four countries

3.1 The journey to and from school

All four countries carry out national travel surveys, some continuously, and some with fixed time intervals. Table 1 shows the characteristics of the different surveys.

Table 1 in about here

As Table 1 indicates, there are differences in both the age of the respondents and in the time frame of the surveys, but the questions about daily trips in the various surveys are comparable. Great Britain has the best data describing the development of children's mobility. In addition to these data sources, there have been special surveys (mostly travel to school) at national and local levels in the various countries. These data will be used to present similarities and differences in children's mode choice in the four countries.

Table 2 in about here

As Table 2 indicates, there are national differences. The number of children taken by car is higher in Great Britain than in the Nordic countries and children in Denmark use their bicycle to school more frequently than in the other countries. Typically, it seems that children in Great Britain either walk or are taken by car, whereas Scandinavian children use a wider range of transport modes; about one of five use public transport, which includes the school bus. The bus can be seen as a more 'active' transportation mode than the car, since it usually includes walking to and from the bus stop. Since the age group in GB is younger than in the other countries, this may explain some of the differences in car use, but probably only part of it.

Table 3 shows travel mode to and from school for children at secondary school level in the four countries. The table confirms the differences that could be seen for the younger children. About half of the children in Denmark in this age group use their bicycle to and from school, while as many as 24 percent of the children

are taken to school by car in Great Britain. In Norway a large number of the children use public transport (including special school buses). Thus, it seems that the high amount of car use among younger children in the UK is not just a result of differences in age by school start, but is a genuine difference, and that this difference exists also for older children. Several studies have shown that amount of car use decreases substantially with increasing age (Fyhri and Hjorthol 2009, Jensen 2008)

Table 3 in about here

3.2 Trends and patterns of change

A study from 2004 (Fyhri, 2006) showed that 25 percent of children in Norway were taken to school by car, including nearly 40 percent of the youngest children and 16 percent of those in the 6th grade (11 years). In Norway, the use of car increased from 4 to 11 percent for the age group 12-15 from 1992 to 2005.

In Denmark, the share of children 6 – 15 year old taken to school by car doubled, possibly tripled, from 1978 to 2000 (Jensen and Hummer, 2002:71). The share of children 6-10 year old walking to school fell with almost 40 percent in the same period. During leisure time, the 11-15 year olds have tripled their car trips and diminished their level of cycling by about 30 percent in the period 1978-2000 (Jensen, 2008:483).

In Finland the use of car increased from 16 percent among children aged 6-12 in 1998-99 to 20 percent in 2004-05 (the National Travel Survey of Finland 2004-2005, figures downloaded cf 2).

In 1985, 10 percent of children in the age group 11-16 years in the UK were taken to school by car, while by 2008 the proportion had increased to 21 percent (Department for Transport, 2009). The figures from the British National Travel Survey give more detailed information about the development of mode use on trips to and from school, as shown in Tables 4 and 5.

Table 4 in about here

For the youngest children, aged 5-10, there has been an increase in car use from 22 to 48 percent from 1985 to 2008 (Table 4). For the group aged 11-16 years there was an increase from 10 to 21 percent in the same period (Table 5). The increase in car use results in a corresponding decline in independent mobility in the form of walking and cycling. The use of public transport has changed little in the period.

Table 5 in about here

3.3 Distance to school

Both in Great Britain and in Norway the distance to school has increased in recent decades. In Great Britain, the distance increased both for children aged 5-10 and children aged 11-16 (Table 6).

Table 6 in about here

In Norway the average distance to school increased from 3.6 km in 1992 to 4.9 km in 2001 for children aged 13-15 (The Norwegian National Travel survey).

In Finland there are also indications of increased distances to school. There are no data concerning the average distances to school, but it is known that the proportion of elementary school children living closer than 500 m from school was 29.8 percent in 2000 and it decreased to 28.3 percent in 2008 (Elyse, 2009). This is mainly due to schools being concentrated into larger units. Between 2003 and 2007 the proportion of children attending small schools (< 50 pupils) decreased by 27 percent and the proportion of large school attendants (> 500 pupils) increased by 22 percent (Kumpulainen, 2008).

Similarly, in Denmark the tendency has been that that public schools are merged into bigger units, creating longer transport distances, and changes in transport mode. In Denmark among 10-16 years old with less than 1.5 kilometer to school, 73 percent go by foot or by bike (Jensen and Hummer, 2002:69).

Parallel to this there has also been an increase in the number of children in private schools, in Denmark (Danmarks lærerforening 2010), Norway (SSB 2010) and England (Department for Children, Family and Schools, 2008). The governments in these countries have seen 'choice' as a policy objective, including for schools. As car ownership has increased, the size of the set of schools that parents perceive as accessible has increased, and more parents have been able to exercise the choice of 'best' school by choosing schools that are further away.

3.4 Accompaniment

Several studies of the reasons for accompanying children to school have identified traffic or 'stranger danger' as important factors (Hillman et al. 1990;

Joshi and Maclean 1995; Joshi et al. 1999; Valentine 1997). The motives, however, seems to vary between countries, as will be shown in this section. Since the surveys are carried out using different methods and some of them at different years, the comparison has to be done with care.

The British National Travel Survey (NTS) has, in recent years, added more explicit questions about accompaniment to school. Table 7 shows an increase in number of children being accompanied, both in the younger and the older groups. They also ask about the reasons for doing so, as shown in Table 8.

Table 7 in about here

For the youngest group the most important reason to accompany the children is traffic danger, but nearly 30 percent of the parents point out fear of assault/molestation as a reason. For children from 11 to 13 years, traffic danger was also stated as the most important reason, while convenience and distance to school come as the next most frequent. It is claimed that in order to be a ‘good responsible parent’, most parents would stress certain worries (Valentine and McKendrik, 1997). It is a general trend in the ‘risk society’ to monitor and keep your child under surveillance (Fotel and Thomsen 2004).

Table 8 in about here

A nationwide Norwegian study about children’s physical activities and daily travel from 2005 included a question about why the child (6-12 years) was taken

to school by car. The results are shown in Table 9. 'The same route as to parent's workplace' was mentioned most often and nearly three times as frequently as traffic danger.

Table 9 in about here

A study from Denmark shows that worries about traffic was the most important reason for parents to accompany their children (Fotel, 2007: 157). The next was worrying about other adults (molestation). In Finland, results vary mainly with where people live. The Finnish national housing study (Strandell, 2005) reveals that city parents perceive traffic as more dangerous than parents living in other types of areas do. 42 percent of city dwellers and less than 25 percent of the inhabitants of other areas perceive traffic too dangerous for a 7-year-old child moving independently.

As stated above, these surveys are not directly comparable, as both the sample sizes and questions are different. But the results from the four countries point at differences that probably can be connected to the physical environment, the traffic situations, attitudes and cultural variations in child rearing.

While the largest concerns of British and Danish parents of younger children are traffic danger and the fear of assault or molestation, the main reasons Norwegian parents mention for taking their children by car is because it is on the same route as to one of the parents' work. The Norwegian parents are also

concerned with the traffic, but it is not mentioned as often as reasons related to convenience. As we see among the Finnish parents, there is a significant difference between urban and rural parents concerning traffic danger, which probable is true also for the other countries.

3.5 Leisure travel

Compared with school trips, there is much less information about trips related to leisure activities and longitudinal data is scarce.

Based on calculations using data from the National Travel Survey (Department for Transport, 2009), in Great Britain, the modal split of children's non-school trips show a percentage of car use of 64 in 2008, which has increased from 56 percent in 1996/98.

In Finland, The National Travel Survey shows that the percentage of children, 6-12 years, taken by car to their leisure activities in 2004-2005 was 45 percent, compared to 42 percent in 1998-1999 (The National Travel Survey of Finland 2004-2005).

In Norway (2005) the car use for leisure varied from 48 percent to 73 percent. For example, 63 percent of the children are taken by car to their sports activities (Fyhri and Hjorthol 2006).

These figures illustrate two trends; increased car ownership and more organized leisure activities outside the immediate neighbourhood, which will be discussed in the next section.

4 The social framework for everyday activities in families with children

The development of children's daily mobility presented in Section 2 indicates changes in the social conditions that contribute to a decrease in children's active and independent mobility and that have produced a more 'mobility demanding' society. In this section we shall discuss some of these conditions and trends. The discussion here will concentrate on key social factors that influence the development of children's mobility.

4.1 Employment rates

The increase in paid employment for women means that in most families both parents are working. In Norway for example, more than 80 percent of mothers with children 5+ years of age are in paid work (Kitterød, 2005). Their pre-school-age children therefore need to be transported to day care centres or care facilities, and children in the lower grades usually need to be escorted to school. Table 10 show the development of the employment rate for men and women in the four countries, which illustrates an increase in equality between the genders.

Table 10 in about here

The employment rate (defined in this way) among women varies between 66 and 75 percent, and there has been an increase between 1997 and 2008 (Table 10). The rate among women is somewhat higher in the Nordic countries than in the UK. The employment rate for men is higher than for women but the growth over

time is greater for women. Overall, the figures indicate a high employment rate among both mothers and fathers.

However, the major increase in employment among women took place earlier. In Norway for instance, the female employment increased from 45 percent in 1972 to 62 percent in 1991, which changed the conditions for everyday life for many families. It was also in the 1970s that the concept 'Life-cycle squeeze' appeared (Oppenheimer, 1974), and time problems in family life became a topic both for public discussion and research in the social sciences.

Time problems in families can be solved in many ways. Reducing working hours is one way to cope with a time pressure situation. In all of these countries part-time employment is a much more common among women than among men.

Another way is trying to reduce travel time, either by not travelling or by using a high speed transport mode like the car (which however, can be slow in e.g. the rush hour).

4.2 Car ownership

Compared to other household categories, families with children tend to have very good access to car(s). In Denmark 80 percent of families with children own at least one car (Statistics Denmark; 2005). In Finland 97 percent of families with two parents and 61 percent of those with one parent own a car (Partanen, 2009). In England 90 percent of household with dependent children own at least one car

(Office for National Statistics, 2010). In other English households the percentage is 73.

In Norway 97 percent of households with children have at least one car, with a lower percentage for those who do not have children (Norwegian National Travel Survey 2005). As these figures indicate, the level of car ownership is high in families with children with some variations: lowest in Denmark, highest in Norway.

A common opinion among families with children is that the car is a matter of necessity. Without the car, it is claimed that there is not enough time to carry out the daily activities (Freudendal-Pedersen, 2007, Hjorthol, 2006). Many families have adjusted their everyday lives to the existence of the automobile. When the day care centre and the parent's job are in different parts of the city, the use of public transport can be cumbersome. The routine nature of daily life is based on habitual use of the car. A literature review of children's independent mobility and active transportation (AT) found that car ownership (in addition to greater distance, and increasing household income) is consistently associated with lower rates of AT among children aged 5-18 (Pont et al., 2009).

4.3 Participation in organized activities

The level of participation in organized leisure activities for children is interesting with respect to their daily mobility. Unfortunately, we have little information about this topic in all of the countries.

In Denmark 68 percent of the children 7-15 years took part in organized sport activities in 2004. Most popular was football and swimming, then follows handball, badminton and gymnastics (Bille and Wulff, 2006:109).

In Norway (2005) about 75 percent of all children in the age group 6-12 years take part in some sort of organized sports activity, primarily football. In addition, 23 percent sing in a choir or play in a band, and 19 percent are member of other organisation for children (Hjorthol and Fyhri 2006).

In Finland the proportion of children who engage in sports activities was 91 percent among 3-18 year-olds in 2005-06. Football, cycling and skiing were the most popular sports in 2005-6. (National Physical Exercise Study 2005-6). The share of children practicing sports was 15 percent higher in 2005-6 compared to 1995. 46 % of 10-14 year-old children participate actively in music lessons (Hanifi, 2009). About 24 percent of 9-13-year-old children living in Helsinki engaged in an art related hobby in 2008 (Stenvall, 2009). Finally, 44 percent are members of an association or a club (Myllyniemi, 2009).

In Britain, children aged 8-15 spent an average of 29 minutes a week on sports and outdoor activities in 2000, compared with 94 minutes on hobbies and games and 61 minutes on social life and entertainment (Office of National Statistics, 2003) .

Many of these activities take place outside the immediate neighbourhood, and for that reason will be in need of transport, very often motorized due to the distance.

4.4 Access to mobile phones

Mobile telephony has introduced the ability to call or ‘text’ quickly to others to e.g. to change plans or make inquiries. This communication technology allows for a ‘micro-coordination’ of social interaction (Ling 2004). Townsend (2000) claims that freedom from punctuality is experienced with the mobile phone. He states: ‘Once one becomes accustomed to the flexibility of scheduling, the freedom from punctuality permitted by the ability to constantly updating other parties as to one’s status, it is nearly inconceivable to go back (op cit p. 94).

The proliferation of mobile phones has changed the way families organize their everyday life. A nationwide survey in Norway on use of the mobile telephone in the organization of daily life in families with children under 18 years, suggests that this device is important in everyday communication among family members (Hjorthol, 2008). This study showed that from the age of 10-11 years between 80 and 90 percent of the children had their own mobile phone. In this study, the use of transport mode to and from leisure activities for children varied by planning horizon. This survey found a significant correlation between the amount of time in advance the daily activity was planned, the use of mobile phone and the frequency of car-use (Hjorthol op. cit.).

Many children have their own mobile phone. A recent survey carried out for the European Commission in 2008 shows that a high percentage of children, also in the lower age groups have a mobile phone (Table 11).

Table 11 in about here

In Norway the percentage is about 90 percent among children aged 10-12 (Telenor, 2008), and has reached 100 percent at the age of 13-14 years.

Measures related to children's mobility

The presentation and discussion of social trends in Section 3 indicate a development towards an increasingly mobile society with the car in a core position. In Figure 1 these trends are summarized showing the contextual framework of children's (and their parents') daily lives.

Figure 1 in about here

These interdependent 'everyday realities' illustrate that the reasons for increased car-used cannot be ascribed to one individual factor alone. The pertinent question, however, is whether they are all reflected in policies and measurements in the four countries?

5.1 Policy measures at a national level

An assessment of the national policies concerning children's daily mobility reveals that children's car dependency in everyday transport is not a clear national policy issue in any of these countries, at least not for the transport authorities. These four countries all offer free public transport to (the nearest) school, depending on age and distance, and all countries have some sort of traffic

education in school. The most important issues in these educational programs are how to behave in the traffic environment, the traffic rules, and traffic safety.

Traffic safety is also the primary issue concerning children and transport at national levels. For example, in the Norwegian national transport plan for 2006-2015 (St meld no 24, 2003-2004) issues concerned with topics other than traffic safety are mentioned only once, which was a comment about the increase in escorting trips of children.

Children's independent, safe and sustainable mobility is also mentioned in the Finnish Transport policy guideline paper (2008), where children's mobility is mainly seen as a traffic safety issue and/or urban planning policy issue. The report lists future guidelines for transport policy until 2020. These include the improvements in public transport and traffic safety. In traffic safety work, special attention should be paid to the mobility of children, which requires better cooperation between the administrative sectors (Ministry of Transport and Communications, 2008).

Both in Great Britain and in Norway the national health authorities have initiated physical activity programs and campaigns for children related to the school trip, in Norway in co-operation with the Norwegian Public Roads Administration, the police and the Norwegian Council for Road Safety.

In Great Britain the national government gives grants and funding to schools that produce travel plans and initiate walking school buses. To our knowledge such measures do not exist in the other countries.

Whereas traffic safety organizations provide educational material for schools and kindergartens in the Scandinavian countries, this is a governmental responsibility in Great Britain, implemented by local authorities.

5.2 Local policy measures and measures initiated by schools, parents or other local groups

The municipalities and the regional authorities have the responsibilities for safe school journeys in these countries. There is a lack of systematic information about campaigns etc initiated by municipalities and regional authorities.

In Denmark 81 percent of the municipalities have special initiatives to improve the transport and safety of children attending schools. Only 19 percent of the municipalities have no initiatives, except from a campaign at the beginning the year (Jensen and Hummer, 2002)

Some measures that are initiated by local authorities in one country are conducted through schools, or governance networks involving both public and private actors, including the police, in another country (for example, walking buses).

One concrete measure that has been tried out in all of the four countries is ‘Walking school buses’. Walking school buses (WSB) are typically organized locally as systems where parents take turns in escorting a small group of children from their homes to school and back. This measure is thus based on the initiative and motivation of the parents. As such, it is a transient measure and will only last

as long as the parents have children that need to be escorted (and the children are willing to be escorted). This has been raised as a criticism of the measure, but it could be argued that as long as the measure is effective, this is not necessarily a problem. A related argument is that children of parents who do not volunteer to take part in the measure may suffer from being left out of the program, which would not be the case if this measure was not based on volunteerism.

An assessment of WSB in Christchurch, New Zealand, did not discuss this problem, but focussed on the benefits (Kingham and Ussher 2007). They found that WSB contributed to better social connections, enhancement of children's health, time savings (parents not having to escort children to school every day), got children into the habit of walking and, in that way increased, their independence.

There is little information about the extent and diffusion of walking buses, how they work or evaluations of the scheme in these four countries. One rare example is the evaluation of walking buses as an intervention including the effects on physical activity (Mackett et al 2005b). Another example is a Norwegian study where walking school buses and walking companion schemes were included among several measures that were tested for their effect on independent mobility (Fyhri 2006).

6 Discussion and conclusions

The presentation and discussion of the development of children's everyday mobility in Denmark, Finland, Norway and UK show a similar trend overall. We see a reduction in independent mobility like walking and cycling to school and an increase in car use. The reasons the parents give for taking children to school by car are primarily motivated by traffic danger and fear of assaults (with some exceptions from Norwegian studies that indicate that convenience also play a part). It is also influenced by the increase in car ownership and the increase in female employment, which is a positive and desirable development. As illustrated and summarized by Figure 1, the trends and conditions are interdependent.

Traffic danger as a reason is a paradox, since most of the local traffic around the schools is often generated by the parents themselves. By taking their children by car, other parents may feel obliged to do the same to avoid the risk of their children of being involved in traffic accidents by letting them walk or cycle.

Even though the information comes from different types of surveys and is not directly comparable, the same pattern is found in all four countries; the amount of independent mobility is less for leisure related travel than for the school trips. It can be claimed that as lifestyles have become more urbanized children's leisure travel has become more motorized because organized activities can be far away and reachable only by car compared to earlier decades when leisure time was spent closer to homes and activities less organized. The positive aspect of this is the greater variety of choice parents and children have regarding leisure activities. As such children also benefit from automobility (Thomsen 2004). In families

without a car it might be a risk that children (and parents) are 'left behind' (Fotel 2007).

Although there are differences between these four countries the overall picture of children's mobility is very similar; the trend is towards less walking and cycling and more transport by (private) car. Not only the transport patterns show many similarities, but also the social changes forming the contextual framework for families' daily life are quite comparable.

The framework of everyday activities in families with children is characterised by a high degree of employment among the parents, both for fathers and mothers, although a relatively large percentage of mothers in these countries work part-time. There are indications of an active life also for children – illustrated by the high numbers of children taking part in organized leisure activities. Families with children are highly motorized, even if there are differences regarding one- and two parent household. The easy access to the car makes car use almost obvious. The mobile phone is a relatively new 'tool' for communication between family members and for assisting in organizing daily activities. The interplay between the mobile phone and easy access to the car seems to lessen the need for planning the daily activities and reinforce the car use.

When there are two working parents in a family, there are often periods of the day when things are more hectic, chaotic or time pressured than others. The most pressing time periods are in the morning, when all family members are getting ready to leave for work, school or day care, and in the early evening when there is time for a meal before leisure activities such as sports and music begin. Shortage

of time is a common reason given by parents for transporting their children to leisure activities by car (Hjorthol et al., 2005, 2006; Freudendal-Pedersen, 2007).

Even though the decrease in children's active and independent mobility is undesirable for many reasons, the policy measures to meet this challenge are limited and lack a comprehensive perspective. Our summary of these measures and schemes indicate that they are mainly connected to the journey to school, even if it is only part of children's mobility. Our review of the measures also denotes a lack of continuity of initiated schemes, and some of them are dependent on volunteers from schools or parents. In addition evaluations of schemes are rare or completely lacking. Our discussion of social trends contributing to the decrease in independent mobility shows that different policy fields are involved. A more holistic approach is needed to develop more comprehensive policies in order to change the trends affecting children's mobility.

The presentation and discussion in this paper also reveals a lack of data about the totality of children's mobility in most of these countries, especially longitudinal data. Surveys of children's mobility are needed to give basic knowledge to policy makers. Carrying out the same surveys in several countries in order to make comparisons, with repetitions at defined intervals to see whether the actual policies have effects would be particularly advantageous.

References:

- Bille, T. and Wulff, E. (2006) *Tal om børnekultur. En statistik om børn, kultur og fritid*. København: AKF (Amternes og kommunernes forskningsinstitut) og Børnekulturens netværk.
- Bradshaw, R. (2001) School Children's Travel. *Geography: Journal of the Geographical Association*, 86, 1, 77-78.
- Brown, B., Mackett, R., Gong, Y., Kitazawa, K., Paskins, J. 2008. Gender differences in children's pathways to independent mobility. *Children's Geographies*, 6, 4, 385-401.
- Cooper, A. R., Page, A. S., Foster, L.J., Qahwaji, D. (2003) Commuting to school. Are children who walk more physically active? *American Journal of Preventive Medicine*, 25, 4, 273-276.
- Danmarks lærerforening (2010)
<http://www.dlf.org/undervisning/skolestruktur/nøgletal>
- Department for Transport (2009) *National Travel Survey: 2008*; Transport Statistics Bulletin.
- Department for Children, Family and Schools (2008) The Composition of Schools in England, Statistical Bulletin,
<http://www.education.gov.uk/rsgateway/DB/SBU/b000796/index.shtml>.
- Elyse (2008) *Elinympäristön seurannan tietojärjestelmä*. Suomen ympäristökeskus / Geoinformatiikka ja alueidenkäyttöyksikkö.
www.ymparisto.fi/elyse

- Evenson, K.R., Huston, S.L., McMillen, B.J., Bors, P., & Ward, D.S. (2003) Statewide prevalence and correlates of walking and bicycling to school. *Archives of Pediatrics & Adolescent Medicine*, 157, 9, 887-892
- Flash Eurobarometer (2008) *Towards a safer use of the Internet for children in the EU – a parents' perspective*. Annex tables and survey details. Flash EB series 248. Survey co-ordinated by Directorate General Communication. Hungary: The Gallup Organisation.
- Fotel, T. & Thomsen, T.U. (2004) 'The Surveillance of Children's Mobility', *Surveillance & Society*, 14, 535-554.
- Fotel, T. (2007) *Mobilitet i Børnehøjde. En mobilitetssociologisk analyse af praksis, velfærd og ulighed i børns hverdagsliv*. PhD thesis. Department of Society and Globalisation. Roskilde University.
- Fox, K. R. (2004) Childhood obesity and the role of physical activity. *Journal of the Royal Society for the Promotion of Health*, 124, 1, 34-39.
- Freudendal-Pedersen, M. (2007) *Mellom frihed og ufrihed - strukturelle fortællinger om mobilitet I hverdagslivet*. PhD avhandling. Roskilde: Roskilde Universitetscenter.
- Fyhri, A (2002) *Barns reiser til skolen. En spørreundersøkelse om reisevaner og trafiksikkerhet på skoleveien* TØI rapport 616. Oslo: Transportøkonomisk institutt.
- Fyhri, A. (2006) *Bruker barn beina? Evaluering av prosjektet Aktive skolebarn (2002-2005)*. TØI rapport 814. Oslo: Transportøkonomisk institutt.

- Fyhri, A. and Hjorthol, R. (2006) *Barns fysiske bomiljø, aktiviteter og daglige reiser*. TØI-report 869/2006. Oslo: Institute of Transport Economics.
- Fyhri, A. and Hjorthol, R. (2009) Children's independent mobility to school, friends and leisure activities. *Journal of Transport Geography*, 17, 377-384.
- Hanifi, R. 2009. *Musikken aktivisert harrastajat* [Music as a hobby]. In Liikkanen, M. (eds.) *Suomalainen vapaa-aika* [The Finnish free time]. Helsinki: Gaudeamus.
- Hillman, M., J. Adams og J. Whitelegg.(1990) *One false move ... : a study of children's independent mobility*. London, Policy Studies Institute.
- Hjorthol, R. (2006) *Bilens betydning for barns og unges aktivitetsmønstre*. (How the car affects the activity patterns of children and youth). TØI-report 834/2006. Oslo: Institute of Transport Economics.
- Hjorthol, R. (2008) The Mobile Phone as a Tool in Family Life: Impact on Planning of Everyday Activities and Car Use. *Transport Reviews*, vol 28, no 3, 303-320.
- Hjorthol, R. and Fyhri A. (2009) Do organized leisure activities for children encourage car use? *Transportation Research Part A*, 43, 209-218.
- Hjorthol, R., Jakobsen, M. H., Ling (2006) *På farten - i bilen - med mobilen. En studie av kommunikasjon og mobilitet i barnefamiliers dagligliv* TØI rapport 820, Telenor FoU R1. Oslo: Transportøkonomisk institutt.
- Hjorthol, R., Jakobsen, M. H., Ling, R., Nordbakke, S., Haddon, L. (2005) *Den mobile hverdag. En kvalitativ studie om bruk av bil og*

kommunikasjonsmedier i barnefamilier. TØI rapport 754, Telenor FoU R1.

Oslo: Transportøkonomisk institutt

http://www.stat.fi/ajk/tapahtumia/2009-03-11_jarmo_partanen.pdf 8.12.2009.

Jensen, A.-M., Ben-Arieh, A., Conti.C., Kutsar, D., Phádraig, M.N.G., Nielsen, H. W. (eds.) (2004) *Childrens's Welfare in Aging Europe*. Vol I and Vol II. Trondheim: Norwegian Centre for Child Research.

Jensen, S. U. (2008) How to obtain a healthy journey to school. *Transportation Research Part A*. 42: 475-486.

Jensen, S.U. and Hummer, C.H. (2002) Sikre Skoleveje. En undersøgelse af børns trafiksikkerhed og transportvaner. Rapport 3. Lyngby: Danmarks Transportforskning

Joshi, M. Sissons, MacLean M. (1995) Parental attitudes to children's journeys to school. *World Transport Policy & Practice*, vol. 1, no 4, 29-36.

Joshi, M.S., Maclean, M., & Carter, W. (1999) Children's journey to school: Spatial skills, knowledge and perceptions of the environment. *British Journal of Developmental Psychology*, 17, 125-139.

Kansallinen liikuntatutkimus (2005-6) [Finnish National Physical Exercise Study 2005-6] The Publication of Finnish Sports Federation, 4/06.

http://www.slu.fi/@Bin/119514/Kansallinenliikuntatutkimus_2005_2006lapsetjanuoret.pdf

Kitterød, R. (2005) *Han jobber, hun jobber, de jobber*. Report 2005/10. Oslo – Kongsvinger: Statistics Norway.

- Kingham, S. Ussher, S. (2007) An assessment of the benefits of the walking school bus in Christchurch, New Zealand, *Transportation Research Part A*, 41, pp 502-510.
- Kumpulainen, T. (2008) Koulutuksen määrälliset indikaattorit. Finnish National Board of education. Tampere: Esa Print Oy.
- Ling, R. (2004) *The mobile connection. The Cell Phone's Impact on Society*. Amsterdam et al.: Elsevier, Morgan Kaufmann Publishers.
- Mackett, R. L. (2002) Increasing car dependency of children. Should we be worried? *Municipal Engineer* 151, 1, 29-38.
- Mackett, R. L. (2003) The Effectiveness of Initiatives to Reduce children's Car Use. Paper written for presentation at the European Transport Conference, Strabourg, France, Oct. 2003.
- Mackett, R.L., Lucas, L., Paskins, J., Turbin, J. (2005a) The therapeutic value of children's everyday travel. *Transportation Research Part A*, 39, pp. 205-219.
- Mackett, R.L., Lucas, L., Paskins, J., Turbin, J. (2005b) *Walking buses in Hertfordshire: Impacts and lessons'* available from <http://www2.cege.ucl.ac.uk/cts/research/chcaruse/Walking%20bus%20report%20-%20UCL.pdf>
- Myllyniemi, S. (2009) Aika vapaalla. Nuorten vapaa-aikatutkimus. [Time Free. The Study of the Free time of Young People in Finland.]. Publication of the Finnish Youth Research Society, 92. Helsinki: Yliopistopaino.

- Office of National Statistics (2003) The United Kingdom 2000 Time Use Survey, available from <http://www.statistics.gov.uk/timeuse/>.
- Office for National Statistics (2010) Census for the UK 2001, available from <http://www.statistics.gov.uk/census2001/census2001.asp>
- Oppenheimer V. K. (1974) Life-cycle squeeze - interaction of men's occupational and family life-cycles. *Demography* 11, 2, 227-245.
- Partanen, J. (2009) Muuttuva väestörakenne ja tulevaisuuden kuluttajaryhmät. [The changing population structure and the future consumer groups].
- Pont, K., Ziviani, J., Wadley, D., Bennett, S., Abbott, R. (2009) Environmental correlates of children's active transportation: A systematic literature review. *Health and Place*, 15, 849-862.
- Preiss, D. (1989) Frauen – Kinder – Auto – Träume. I: Beckmans et al: *Welche Freiheit brauchen wir? Zur Psychologie der AutoMobilen Gesellschaft*. Berlin, Verlag der Elefanten Press.
- Prezza, M., Pilloni, S., Morabito, C., Sersante, C., Alparone, F. R., Guiliani, M. V. (2001) The influence of Psychosocial and Environmental Factors on Children's Independent Mobility and Relationship to Peer Frequentation. *Journal of Community and Applied Social Psychology*, 11, 435-450.
- Salmon, J., Timperio, A., Cleland, V., Venn, A. (2005) Trends in children's physical activity and weight status in high and low socio-economic status areas in Melbourne, Victoria, 1985-2001. *Australian and New Zealand Journal of Public Health* 29, 4, 337-342.

- SSB (2010) *Fakta om utdanning 2010 – nøkkeltall fra 2008*. Oslo, Statistics Norway.
- Statistics Denmark 2005 Transport (2005). Transport og Energiministeriet. København: Danmarks Statistik.
- Stenvall, E. 2009. Sellaist ihan tavallist arkee [Such an ordinary everyday life]. The Publication of City of Helsinki Urban Facts, 2/2009.
- Stortingsmelding nr 24 (2003-2004) *Nasjonal Transportplan 2006-2016*. Det kongelige samferdselsdepartement.
- Strandell, A. (2005) *Asukasbarometri 2004*. [The Residents' Barometer 2004. Residents' Survey on Residential Environments in Finland]. Ministry of Environment, Publication 746. Vantaa: Edita Publishing Ltd.
- Telenor 2008. *Familieundersøkelsen 2008*. Oslo: Telenor R&D.
- The Statistical databases of The Statistics Finland (2007).
http://www.stat.fi/tup/tilastotietokannat/index_en.html
- Thomsen, T. U. (2004) Children – Automobility's immobilized others. *Transport Reviews*, 24, 5, 515-532.
- Torsheim, T., O. Samdal, B. Wold og J. Hetland.(2004) *Helse og trivsel blant barn og unge : norske resultater fra studien "Helsevaner blant skoleelever : en WHO-studie i flere land"*. Bergen, Universitetet i Bergen, HEMIL-senteret.
- Townsend, A. (2000) Life in the real-time city: mobile telephones and urban metabolism, *Journal of Urban Technology*, 7., 2, 84-107.

Valentine, G. 1997. A safe place to grow up? Parenting, perceptions of children's safety and the rural idyll. *Journal of Rural Studies*, 13, (2) 137-148

Valentine, G., McKendrick, J. 1997. Childrens's outdoor play; exploring parental concerns about children's safety and the changing nature of childhood. *Geoforum*, 28, 219-235.

Table 1 Characteristics of national travel surveys in Denmark, Finland, Great Britain and Norway

	Denmark	Finland	Great Britain	Norway
Age of respondents	16-74 years (1992-97) 10-84 years (1998-02) 16-84 years (2002-03) 10-84 years	6 + years	All household members	From 13 years – no upper limit

	(2006-)			
Travel pur pos e	All	All	All	All
Years of surv eys	See over, and some from earlier years (not covering all days)	From 1974, every 6 th year – last in 2004/5	From 1965/66 Continuous from 1989	1985, 1992, 1998 2001, 2005, 2009/10

*Table 2 Transport mode on trips to and from school in Denmark, Finland,
Great Britain and Norway, children aged 6-10, Great Britain aged 5-10.
Percentage*

	Denmar k	Finland 6-12 years	GB 5 -10 years	Norway 6 - 12 years
Transport mode to school	2002 1)	2004- 05 2)	2002 3)	2002 4)
Walk	23	36	51	46
Bicycle	36	25	1	12

Public	17	20 *	6	
transport				
t				18*
Private car	23	20	41	22
Other	-		1	2
Total	99	101	100	100

* including school bus and taxi

1 Travel to school in 32 Danish municipalities (Jensen and Hummer 2002)

2) National travel survey, 2004-2005

3 National Travel Survey, 2006

4 National Survey School trips 2002 (Fyhri 2006)

Table 3 Transport mode on trips to and from school in Denmark (11-15),

Finland, Great Britain (11-16) and Norway (12-15). Percentage

	Denmar	Finland	GB	
	k	13-17	11-16	
	11-	years	years	
	15	2004-	2002	
	years	05		Norway
Transport	1998			12-15
mode to	-			years
school	2000			2001

Walk	22	21	38	50 (w+b)
Bicycle	49	26	2	
Public	20	36	34	
transport				
t *				43
Private car	9	13	24	7
Other	-	4	2	-
Total	100	100	100	100

* Included school bus

Table 4 Trips to and from school – children aged 5-10, Great Britain. Percent

	1985	1995	2008
	/8	/9	
	6	7	
Walk	67	54	48
Bicycle	1	-	2
Public	9	9	7
transport			
rt			
Car	22	37	43
Other	2	2	0

Source: The British National Travel Survey

Table 5 Trips to and from school – children aged 11-16, Great Britain. Percent

	1985/ 86	1995/9 7	2 (
			(
			;
Walk	52	42	4 (
Bicycle	6	2	2
Public transport	30	34	3 ,
Car	10	20	2 ;
Other	1	2	2

Source: The British National Travel Survey

Table 6 Distance to school 1985/85 and 2008. Great Britain. Km

Age group	1985/86	2008
5-10 years	1.8 km	2.6 km
11-16 years	3.7 km	5.4 km

Source: The British National Travel Survey

*Table 7 Number of children usually accompanied to school in 2002 and 2008
by age. Great Britain. Percent*

Age group	2002	2008
-----------	------	------

7-10 years	78	86
11-13 years	27	31

Source: The British National Travel Survey

Table 8 Reasons adults give for accompanying their children to school, respondents could give more than one answer, Great Britain 2008, percent

	Children aged 7- 10 years	Children aged 11- 13 years
Traffic danger	58	34
Fear of assault/molestation	29	23
Convenient to accompany child	21	30
School too far away	22	29
Child might not arrive on time	18	15
Child might get lost	19	7
Fear of bullying	6	6
Other	12	15

Source: British National Travel Survey

Table 9 Reasons to be taken by car, children aged 6-12 years. Norway 2006, percent

Reasons to be taken by car	Percent
Same route as to parents work	58
Dangerous traffic	21
Fastest/easy	18
Other siblings are taken by car	17
Saves time for the parents	15
Too far to walk/cycle	14
Saves time for the child	14
The child wants it	12
Have much to carry	12
Unsafe of other reasons	5
Friends are taken by car	2

Source: (Fyhri and Hjorthol, 2006)

Table 10 Employment rate including both full-time and part time for men and women in four countries in 1997 and 2008. Percent*

	Female		Male	
Country	1997	2008	1997	2008
Denmark	69.1	74.3	80.5	81.9
Finland	60.3	69.0	66.2	73.1

Norway1)	73.6(2000)	75.4	81.3(2000)	80.5(2000)
UK	63.1	65.8	76.6	77.3

Source: Eurostat * The employment rate is calculated by dividing the number of persons aged 15 to 64 in employment by the total population of the same age group. The indicator is based on the EU Labour Force Survey. The survey covers the entire population living in private households and excludes those in collective households such as boarding houses, halls of residence and hospitals. Employed population consists of those persons who during the reference week did any work for pay or profit for at least one hour, or were not working but had jobs from which they were temporarily absent.

<http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tsiem010&language=en>

1) Figures from 1997 are not available, instead figures from 2000 are used.

Table 11 “Does your child use his/her own mobile phone” – Denmark, Finland and United Kingdom by age groups. European survey. Percent

Country	6-10 years	11-14 years
Denmark	46.6	97.4
Finland	70.2	100.0
United Kingdom	24.3	87.4

Source: Flash Eurobarometer 2008

Trends in modern childhood

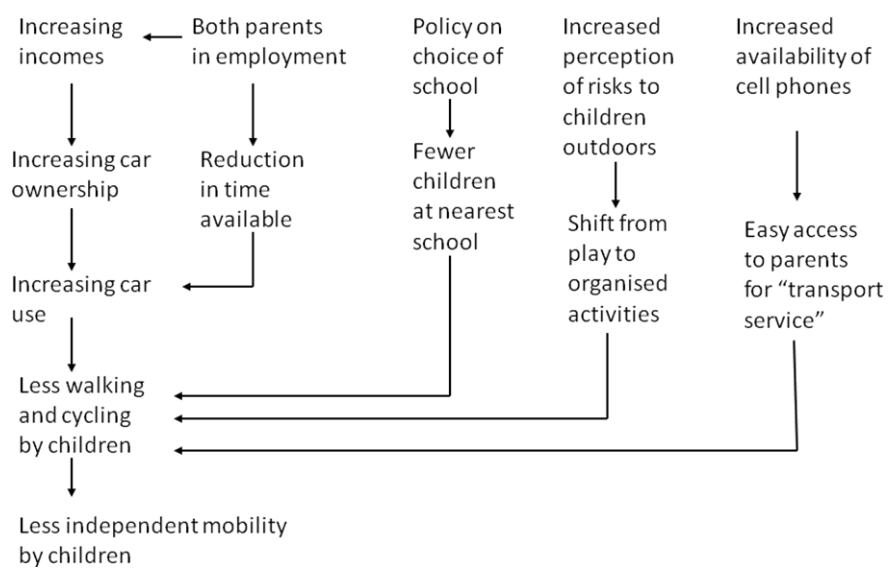


Figure 1 Trends in modern childhood.