

## Children's travel as pedestrians: an international survey of policy and practice

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A survey of OECD member countries was carried out to provide high level data on a consistent basis to identify and account for current patterns of child road safety. This paper reports the findings relating to children, aged 0-14 years, as pedestrians. Key survey elements included analyses of fatality data, relationships between socio-economic, demographic factors and fatality rates, and a questionnaire based survey.

League tables based on average child pedestrian fatality rates were constructed for each OECD member country participating in our questionnaire enabling identification of the top five countries with the lowest pedestrian fatality rate as Sweden, The Netherlands, Finland, Germany, and Denmark.

Few countries had quantitative information about children's travel and its absence means that assessments are difficult about children's safety and the relative risks they face, especially as pedestrians. There are large variations in the amount of walking between countries and growing car use is becoming an issue in one third of OECD countries.

The main findings from the questionnaire survey were that the majority of countries did not have information on high risk groups but of those that did, the cross cutting themes of socio-economic and ethnic minority groups, young children and urban areas were identified.

Three characteristics distinguish top countries in the League table from those doing less well: a strong approach to the introduction of infrastructure measures for pedestrian safety, including low speed limits in residential areas; conducting road safety campaigns at least once a year; and having legislation which assumes driver responsibility in an accident involving a child pedestrian.

Having compulsory road safety education for children aged 6-9 years was a characteristic shared by most countries, as was the promotion of child pedestrian education and training initiatives and the commissioning of research. However there is lower research activity in less well performing countries.

### 1. Background

Walking is an important means of transport for children and young people. The exercise is good for health and walking allows the older ones independent mobility, but unfortunately it has come at a cost. In 2003, 2381 children and young people aged 15 and under were killed or seriously injured as pedestrians on the roads of Great Britain and of these 74 were killed. This represents 58 percent of all deaths or serious injuries in this age group resulting from road traffic accidents (Department for Transport, 2004a).

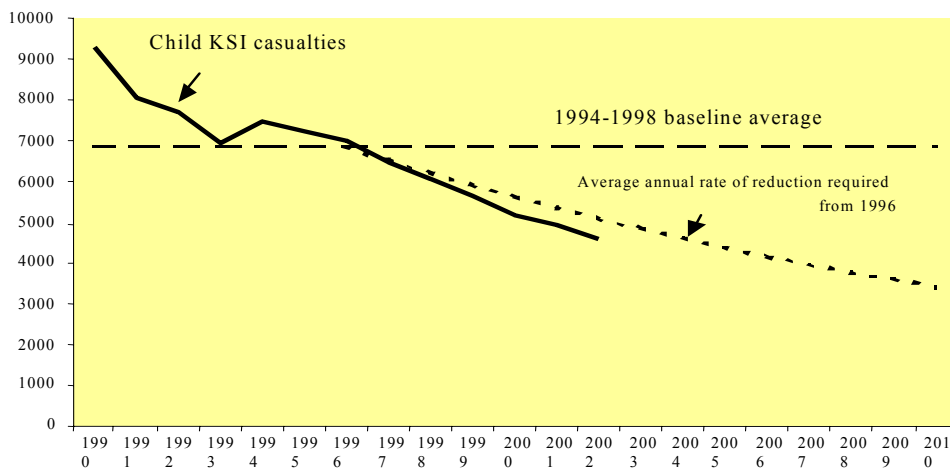
Against a background of an average of over 4000 deaths and serious injuries per year involving child pedestrians over the period 1994-1998, the then Department of the Environment, Transport, and the Regions (DETR) set road safety targets to be achieved by 2010. Amongst them was one for children which was:

To reduce the number of children killed or seriously injured in traffic accidents by 50 percent by 2010 compared to the average for 1994-1998 (DETR, 2000).

In addition the Government's Public Service Agreement (PSA) for the DfT states that road safety strategy targets should tackle the significantly higher incidence of road traffic injury among disadvantaged communities.

The 2003 figures indicate that already there has been a reduction of some 43 percent in the number of child pedestrians killed or seriously injured compared with the baseline data. Figure 1 shows progress towards achieving the target based on data to 2002 (DfT, 2004b). However, there is no room for complacency. Over the period 1996 –2000 the UK<sup>1</sup> had a relatively good record for child safety compared with other countries. This can be seen in Figure 2 where the UK is in third position out of 26 OECD countries who have comparable data on the IRTAD<sup>2</sup> database. However our record for child pedestrian safety was poor compared with many of the OECD countries. Indeed the UK was 17<sup>th</sup> out of the 26 countries as can be seen in Figure 3. More recent data shows that there has been a measure of improvement with the pedestrian fatality rate per 100 000 child population in 1997 standing at 1.21 and by 2002 it had reduced to 0.7. The gap is closing but the rate is still higher than the Netherlands whose rate in 2002 was 0.4 (DfT, 2004b).

**Figure 1: Children killed or seriously injured, 1990-2002: progress against target from baseline midpoint**



Source DfT (2004b)

## 2 Survey of child traffic safety policy and practice among OECD countries

To assist and complement it in its role as chair of the OECD Expert Group on Child Traffic Safety, the DfT commissioned an international survey of policy and practice. The aim of the survey is to provide basic high-level data, on a consistent basis, from OECD member countries that identifies and accounts for current patterns of child road safety.

There were three key elements to the study:

- Analysis of fatality data from the IRTAD database.
- Analysis of the relationship between socio-economic and demographic indicators, and fatality rates.
- Questionnaire based survey of senior officials

Whilst the OECD study looks at child fatalities across the modes of walking, bicycling and as car occupants, this paper deals only with the findings regarding children as pedestrians.

<sup>1</sup> National statistics published by DfT are for Great Britain which comprises England, Scotland, and Wales. Many international organisations use UK statistics which is Great Britain plus Northern Ireland. The OECD uses UK figures.

<sup>2</sup> IRTAD, International Road Traffic Accident Database.

Christie (1995) has identified a number of risk factors that are associated with increased risk of child pedestrian injury.

- *Household and individual risk factors* include: child psychiatric problems, gender, ethnic background, parental medical and psychiatric problems, lone parenting, maternal education, maternal age, number of people in the household and number of children in the household, and household type.
- *Social and environmental factors* include: speed of traffic, housing type and density, kerb parking, density of the road network, traffic volume, and lack of safe crossing places and safe play areas.

The study described here seeks to identify areas of transport, social, and economic policy which might explain differences in fatality rates between countries and give pointers to the UK Government as to how to improve road safety for children, especially as pedestrians.

### **2.1 IRTAD data**

A league table was constructed for child pedestrians based on a three year average fatality rate for each country taken over the period 1996-2000. Trends in pedestrian fatality over ten years were also constructed and are given in full in Christie, Towner, Cairns and Ward (2004a). Figure 3 shows the league table for child (0-14 years) pedestrian fatality rates. The top five performers are Sweden, The Netherlands, Italy, Finland, and Germany.

### **2.2 Socio-economic and demographic indicators**

Research indicates that in Britain, socio-economic and demographic factors are strongly related to child road traffic accident rates. Relationships were sought between international child fatality rates and a basket of international indicators such as gross domestic product, percentage of lone parent families, child poverty index, percentage urban population, and cars per capita. The correlations were relatively weak with the strongest links associated with wealth and economic inequality in each country.

### **2.3 The questionnaire survey**

The pedestrian survey was conducted among the 30 countries of the OECD. A complete or partial response was obtained from 20 countries giving a response rate of 67 percent. Questions covered topics such as:

- Have you identified and high-risk groups of child pedestrians
- How many schools have safety measures outside
- How many local authorities have traffic calming, low speed limits in residential zones, pedestrian crossings
- How many authorities provide play areas in residential areas
- Is road safety education and training promoted, and is it compulsory
- Have you run child national or regional pedestrian safety campaigns in the last five years
- Is the driver assumed to be responsible for an accident in which a child pedestrian is injured
- Has your country commissioned research on child pedestrian safety in the last five years.

A summary of the main findings are:

The majority of countries did not have information on high-risk groups. For countries that had identified high risk groups a number of cross cutting themes emerged these were the high risks associated with low socio-economic and ethnic minority groups, young children and urban areas.

The top performers have a strong approach to infrastructure measures for pedestrian safety and this distinguished them from countries performing less well.

The promotion of child pedestrian education and training initiatives nationally or in most states was a shared approach of most countries.

Having compulsory road safety education for children aged between 6-9 years nationally or in most states was a shared characteristic of the top performers but this did not distinguish them from other countries performing less well because most of these shared this approach.

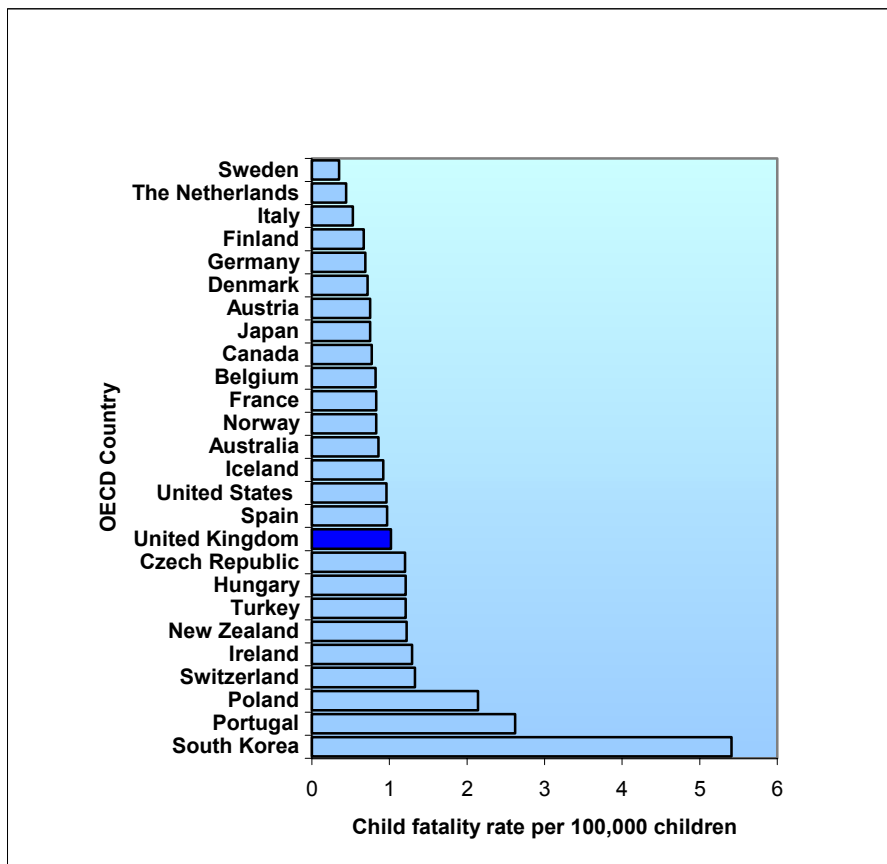


Figure 2: Child fatality rate based on at least 3 years data 1996-2000

Source:IRTAD

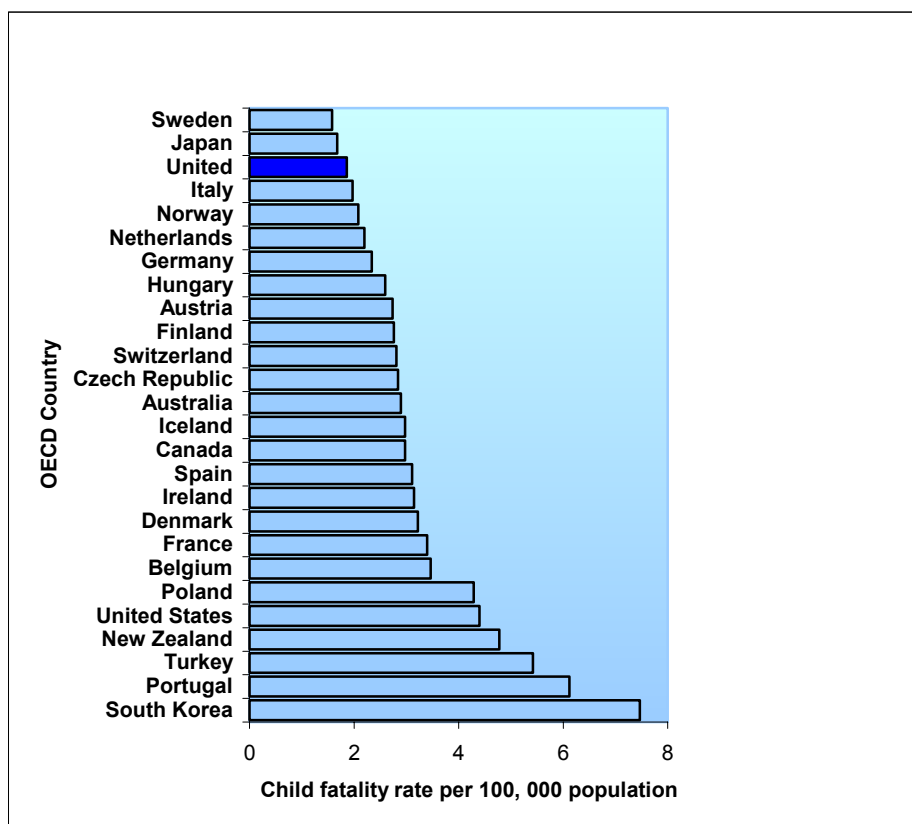


Figure 3: Child pedestrian fatality rate based on at least 3 years data between 1996-2000

Source:IRTAD

Conducting national road safety campaigns once a year or more was a shared characteristic of the top performers and this distinguished them from other countries performing less well. Most countries conducted regional publicity.

The presence of legislation that assumes driver responsibility in an accident involving a child pedestrian was a shared characteristic of the top performers and this distinguished them from other countries performing less well. Few countries had legislation directed at child pedestrian behaviour.

Most countries had commissioned research on child pedestrian safety in the last five years. However, there was less research activity in the poorer performing countries.

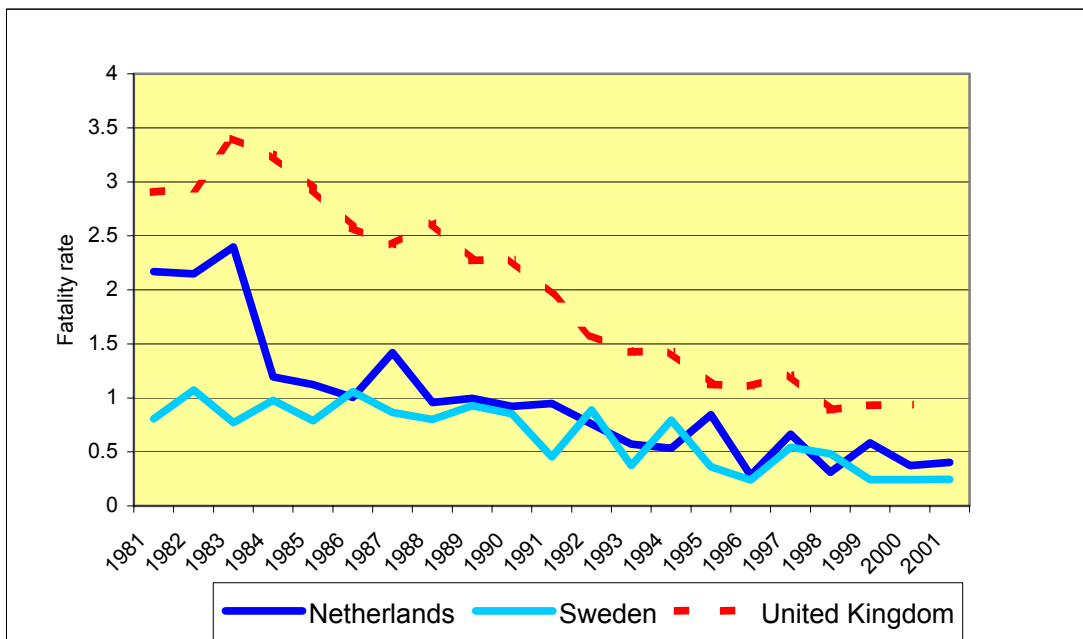
Many countries support a range of child pedestrian safety initiatives.

### 3 The importance of taking exposure into account

Figure 4 shows trends for the UK in fatality rates for child pedestrians compared with The Netherlands and Sweden. Whilst pedestrian fatalities are decreasing for all countries, they are falling faster in the UK than in Sweden and The Netherlands. This has been confirmed by the addition of 2003 data described in Section 1. It is important to know why countries such as The Netherlands and Sweden are so successful in providing a safer culture and environment for child pedestrians. The responses to the questionnaire summarised in section 2.3 are helpful and important in pointing the way for the UK to improve but using population based fatality rates can mask important features. Most importantly population based rates do not take account of the amount of walking by children so their exposure to risk of injury cannot be quantified. The downward trends may be an artefact of exposure and not a real improvement in safety for child pedestrians. In most of the industrialised world the amount of car travel is increasing so if children are walking less they are exposed to risk less as pedestrians. It follows that their fatality rate per head of population would decline in line with the reduction in walking.

As part of the questionnaire survey officials in each country were asked for data on the amount children walk.

**Figure 4: Trends in child (0-14) pedestrian fatality rate per 100,000 child population: UK compared to top performers (survey respondents)**



Source Christie et al (2004b)

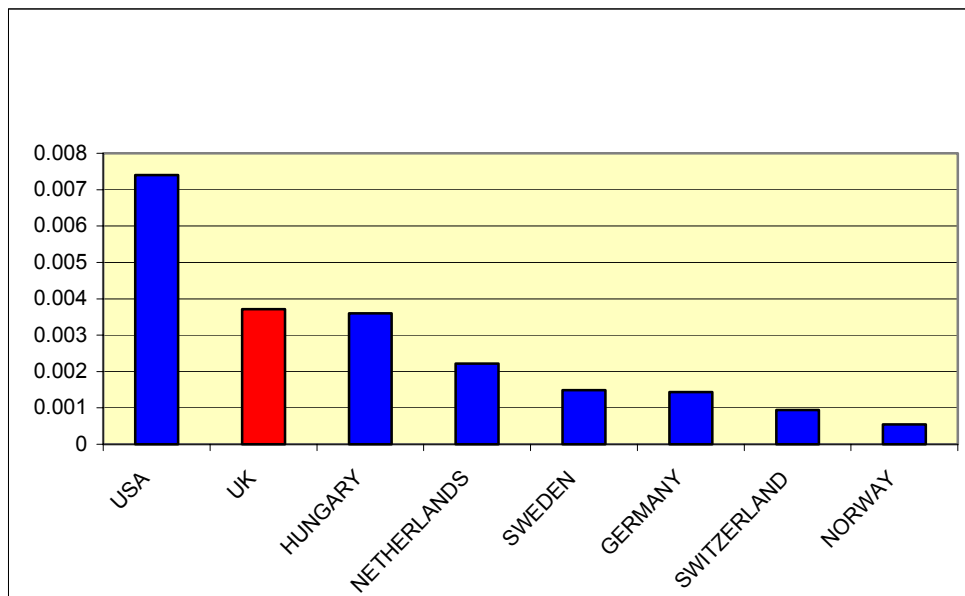
Figure 5 uses fatality data with exposure data from the countries that were able to supply it. The differences between this and Figure 3 are quite clear. The data shown are for children 10-14 years because reliable travel data for younger children is hardly available in any country. The message for the UK is that even when exposure is taken into account there is still a long way to go compared with The Netherlands, Sweden, Germany, Switzerland and Norway. One interesting feature is the extent to which the exposure based fatality rate for the USA is relatively higher than that based on population alone.

The main message to come from this part of the survey is that quantitative information about children's exposure is critical to making assessments about children's traffic safety yet very few countries collect it in anything like a systematic way. International comparisons are valuable in allowing countries to compare their records with others in order to see where progress is being made and to take the best practice from around the world.

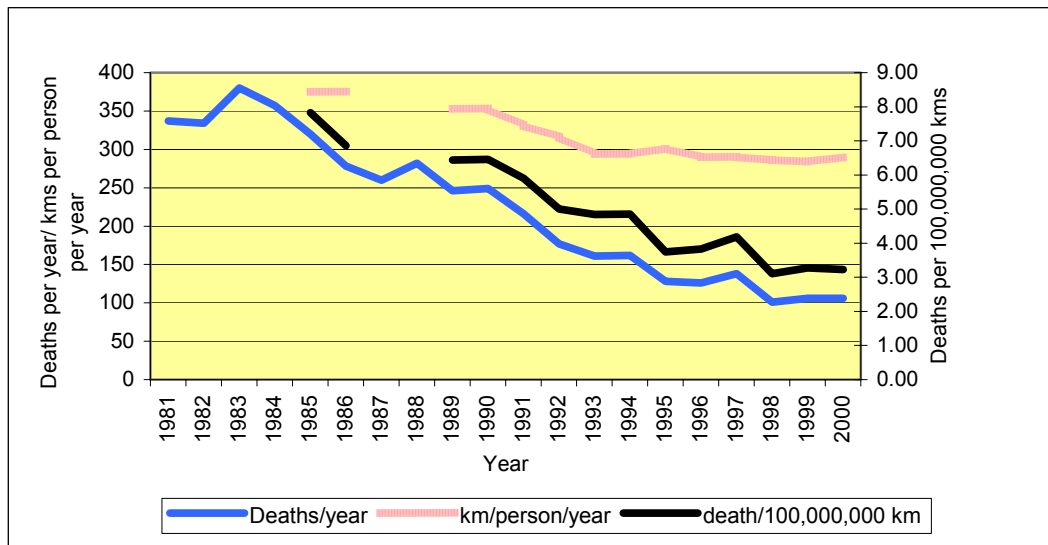
Figure 6: shows for the UK a set of trends for children aged 0-14 for the years 1981 to 2000. They are deaths per year, kilometers per person per year and child pedestrian deaths per 100,000,000 km per year.

Each of the three trends is downwards over the two decades indicating that children are walking less now than in 1981. However the number of kilometers walked does seem to have flattened out since about 1993 showing children's travel by this mode is not further declining. The exposure trend is in stark contrast to that for travel by car (not shown here but can be found in Christie et al 2004b) where the kilometers per person per year for these children has risen sharply. The trend shows that the number of deaths per unit of exposure has decreased from about 8 deaths per 100 million km in 1987 to about 3 in the year 2000. This suggests that there have been some real safety gains for child pedestrians over this period.

**Figure 5: Fatality rates per kilometre travelled for 10-14 year old pedestrians**



**Figure 6: 0-14 year old UK pedestrians**



Source Christie et al (2004b)

#### 4. Implications for UK policy and practice

To become more like the top performers, the UK needs to adopt a stronger more widespread approach toward pedestrian environmental infrastructure. The advantage of changing the environment is that although the initial short-term cost is high the results are longer term, sustainable and can be associated with significant casualty reductions. Modification of the environment is a costly process and resources and capability are required in order for this approach to be adopted. The top performing countries tend to be the more wealthy OECD countries. Cost and workforce capacity are major barriers to implementation in the UK. Policies to address lack of capacity to implement environmental modification must be sustained. There are also many international examples of innovative approaches to environmental planning and modification to improve safety and these approaches could be considered for the UK. Clearer guidelines are needed to highlight that implementing low speed limits near schools and identifying these areas as enforcement zones should be routine practice unless a case can be made why they should not be introduced.

The relatively poor performance for pedestrian safety may be related to socio-economic risk factors and to tackle these multi agency approaches are required. The UK must continue both targeted and population approaches to interventions. The UK is unique in setting a target to reduce the accident rate among the most disadvantaged members of the community. However, whilst there is a steep social gradient in the child pedestrian fatalities at present there is no routine monitoring of socio-economic status of all road traffic casualties. This should be a policy priority to ensure that data are available to assess whether inequalities targets are being met.

Little is known about the impact of legislation on driver responsibility for pedestrian accidents. More consideration is needed on the feasibility of introducing this legislation.

Encouraging safety practice through schools may help develop ownership of the problem and engender a safety aware culture. There could be more national support for promoting safe and sustainable travel to school by linking these themes with explicit and clear curriculum topics and by making safe travel to school an aspect of formal inspection.

Exposure based targets could be derived for children for different ages, gender and road user group. Exposure based targets seem especially important given the UK has policy targets for increasing the amount of walking and bicycling by children. The UK has travel data and casualty data which are good enough to enable such targets to be derived and monitored.

There are many examples of innovative advocacy and action research approaches involving children that could be readily transferred to the UK. More information about these approaches would be useful.

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