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Children's Road Traffic Safety: An International Survey of Policy and Practice

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Although this report was commissioned by the Department, the findings and recommendations are those of the authors and do not necessarily represent the views of the DfT

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EXECUTIVE SUMMARY

Introduction

Children's Road Traffic Safety: An International Survey of Policy and Practice was commissioned by the UK's Department for Transport (DfT) to complement the report from the Organisation for Economic Co-operation and Development's (OECD) Child Traffic Safety Expert Group.

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, and identifies current best practices and counter-measures in place to improve child road safety. There were three key survey elements: an analysis of International Road Traffic and Accident Data (IRTAD) fatality data, an analysis of the relationship between socio-economic and demographic indicators and fatality rates, and a questionnaire based survey.

The focus of the analysis is on children aged 0-14. This contrasts with the definition of a child as someone under the age of 18 as set out in the United Nations Convention on the Rights of the Child. This decision was made because in most national road traffic accident databases children are defined as younger than 15 years old.

It is hoped that the reports from the OECD Expert Group and the survey will have a role in advocating road safety and serve as a guide to good practice for policymakers and practitioners.

Study data

IRTAD data

The report includes league tables based on average fatality rates for each country (that contributes to IRTAD) by mode. Trends over 10- or 20-year periods in child traffic fatalities for each country were also constructed. The trends are shown for all fatalities, fatalities by age (0-5, 6-9, 10-14), fatalities by mode (car passenger, pedestrian and bicyclists) over 20- and/or 10-year trends, subject to data availability.

National socio-economic and demographic indicator data

In addition to the questionnaire based survey, an analysis of the relationships between child road traffic fatality rates and national indicators of wealth and income inequalities, social structure and urbanization was undertaken.

These indicators were derived from a number of different sources (OECD, UN,

CIA). These factors were included because levels of deprivation, urbanization and population density have been associated with high levels of risk in some countries.

Survey data

The questionnaire survey was conducted among high-level officials from national government transport and public road administrations in each OECD country. Full or partial responses were received from 21 of the 30 OECD countries representing a response rate of 70%.

The survey comprised a series of five questionnaires entitled:

- Children as pedestrians
- Children as bicyclists
- Children as vehicle occupants
- Children's travel
- Policy on child traffic safety

Questionnaires on pedestrians, bicyclists and vehicle occupants comprised sections seeking information on fatality data, those most at risk and intervention approaches encompassing the environment, education, training, publicity and legislation. A key aspect of the analysis was to provide an overview of the extent and range of intervention measures within each country at a municipal or local authority level. Each country also had an opportunity to cite current initiatives and research projects or programmes. The policy questionnaire sought information on strategic approaches to safety including implementation plans and the agencies involved in delivery. The travel questionnaire sought information on children's mobility by mode in terms of distance travelled and number of journeys by age.

Presentation of data

IRTAD data

The IRTAD data are presented graphically in league tables for average fatality rates and pictorially for individual country trends.

National socio-economic and demographic indicator data

Correlations between individual indicators and fatality rates are represented graphically.

Survey data

The survey data are presented in a visual and graphic way to help identify patterns in responses. Each country's response to a question is shown against its position in the league table. The survey findings were then analysed to identify the response characteristics of the top performers that distinguish them as a group from the group of countries performing less well according to criteria described fully in the report. This qualitative analysis was conducted on league tables by mode and for the travel and policy questionnaire this was based on the overall child road traffic fatality rate.

Findings

IRTAD analysis

Trends in fatalities by age and mode show improvements in the rate per 100,000 children fatally injured in road traffic accidents across the OECD countries for which we have data. However, we know that the exposure of children as pedestrians, bicyclists and passengers across the countries is not homogeneous and this complicates the task of interpretation. The economic prosperity of countries is strongly related to car ownership and use and this in turn often leads to a reduction in the amount walked and bicycled. This effect may not be continued because several countries, notably The Netherlands, Sweden, Denmark, Finland, Germany, Switzerland and the UK, have been, or are starting to, actively encourage walking and discourage non-essential car trips in the interest of the environment and children's independent mobility.

National socio-economic and demographic indicators

National economic and demographic indicators were gathered (where available) for all OECD countries whether or not they had contributed to the survey. No clear strong relationships were found between macro socio-economic and demographic indicators and overall fatality rate. Although all of the correlations are relatively weak the strongest ones (showing a moderately strong correlation) are those associated with wealth and economic inequality. There being a negative correlation between Gross Domestic Product (GDP) and child road traffic fatality rate and a positive correlation between income inequality and child road traffic fatality rate.

Children's travel and exposure to risk

Data on children's travel patterns

Collecting data on children's travel patterns was a shared characteristic of the top five performers, namely Sweden, the UK, Norway, The Netherlands and Germany, but most countries collected travel data for children.

An analysis of exposure was undertaken for those countries that could supply

comparable travel data, namely Germany, Hungary, The Netherlands, New Zealand, Norway, Sweden, Switzerland, the UK and the USA. The analysis focuses on the 10-14 age group as this was the group for which comparable data were consistently available.

A key finding of the analysis of travel data was the large variation in the travel patterns of 10-14 year olds in different countries. For the percentage of kilometres travelled by mode, the range of values for walking were between 1% (the USA) and 9% (Hungary), for bicycling it was between less than 1% (Hungary) and 31% (The Netherlands), for car travel it ranged between 34% (Hungary) and 84% (the USA), and for public transport values ranged between 2% (the USA) and 61% (Hungary). In most countries (except Hungary) the car accounts for at least half of all distance travelled by 10-14 year olds.

In addition, as children get older whilst there is not necessarily a consistent increase in the amount of travel that they undertake, they are likely to undertake more independent travel which is reflected in the increased use of bicycling and public transport in the older age groups.

To look at risk associated with walking, bicycling and travelling by car, the fatality rates per head of population for children aged between 10-14 were divided by each exposure variable (kilometres travelled and number of trips) to assess fatality rate per kilometre travelled, or per trip made. This analysis shows that looking at fatality rates per kilometre travelled, or per trip made) alters the assessment of 'good' and 'less good' performance.

In particular, for walking and car use it seems to suggest that the countries could be separated into two groups representing good and less good performers, rather than a graduated league (although the league is not entirely misleading as an ordering mechanism).

For bicycling, the situation is very different. Inclusion of exposure entirely alters which countries can be classed as 'good' and 'less good'. In particular, countries with low levels of bicycling are generally relatively unsafe for bicycling.

Accompaniment

Adult accompaniment of all children aged 0-5 was a shared characteristic of the overall top five performers, namely Sweden, the UK, Norway, The Netherlands and Germany, but this did not distinguish them from the majority of countries performing less well because nearly all countries reported that all children between 0-5 were accompanied by an adult.

Adult accompaniment of many children aged 6-9 was a shared characteristic of the top five performers, namely Sweden, the UK, Norway, The Netherlands and

Germany, and this distinguished them from the majority of countries performing less well.

Measuring exposure

Measuring exposure is critical to understanding safety and risk. A number of recommendations are made with regard to good practice for measuring exposure to risk.

Snapshot surveys, at least every five years, are preferable to the less frequent, more comprehensive surveys.

Combining with adult travel surveys (often using household travel diaries) may be the most efficient way of getting information about children's travel habits.

Having data for people aged 0-18 that can be analysed separately from other adult travel data is useful. Where resources are limited, focusing on the older end of this age range (6 years +) may be most useful. For comparison with IRTAD, it is useful to record information about 15-18 year olds separately from data about the other age groups.

Distinguishing between travel to school (or other educational establishments) and travel for other purposes is the easiest distinction to make in terms of trip purpose.

In terms of modal breakdown, the simplest distinctions are between 'car', 'bicycle', 'walk', 'public transport' and 'other', although different countries may have special types of transport that they want to focus on (for example, school buses).

In terms of travel units, travel kilometres is currently the most popular measure to use and therefore the measure most likely to currently facilitate international comparisons. However, a strong case can be made that countries should also measure trip numbers and travel times.

Ideally, an international standard should be developed for the detail of recording travel information—for example, what counts as 'a journey'. Meanwhile, countries should be clearer about the definitions that they use in their surveys, and ensure that data about non-standard categories of travel can be analysed separately.

Sample sizes used by different countries for measuring travel by 0-14 year olds are typically between 1500 and 4500 children. However, larger numbers may be needed to provide reliable information about travel by infrequently used modes.

Children's travel initiatives

Most children's travel initiatives focused on the school journey and its safety.

Children as pedestrians

The top five performers in the child pedestrian fatality league are Sweden, The Netherlands, Finland, Germany and Denmark.

Pedestrians: identifying risk

The identification of high-risk groups of pedestrians was not a shared characteristic of the top five performers and therefore did not distinguish them from other countries performing less well.

Fewer than half of participating countries said that they had identified high-risk groups of pedestrians. A number of cross-cutting themes emerged; these were the high risks associated with low socio-economic and ethnic minority groups (The Netherlands, New Zealand, the USA, the UK), boys (The Netherlands, New Zealand, the UK), young children (Finland, New Zealand, Poland, the USA, the UK) and urban areas (New Zealand, the USA, the UK, Poland).

Pedestrians: infrastructure safety measures

Participants were requested to indicate which infrastructure measures they provided for pedestrians in their country and to provide a judgement of how many municipalities or local authorities had adopted them. The range of measures included speed reduction measures such as road humps, low speed limits and signalised and non-signalised pedestrian crossings.

A wide range and extensive implementation of infrastructure safety measures for pedestrians was a shared characteristic of the top five performers, namely Denmark, Finland, Germany, The Netherlands and Sweden, and this distinguished them from the majority of countries performing less well.

As a group the majority of top five performers reported that they had a ***range*** of speed reduction measures including environmental modifications (such as road humps), low speed limits (30-40kph) and signalised and non-signalised pedestrian crossings in ***most*** municipalities or local authority areas. In particular, the top five performers also reported to have speed reduction measures and low speed limits outside many schools. The measure used by most countries was school warning signs. Overall, the extent of safety measures outside schools was notably limited across all participating countries.

The provision of outside play areas such parks or play grounds in ***most*** residential areas was a shared characteristic of four of the top five performers, namely Denmark, Finland, Germany and Sweden, and this distinguished them from other countries performing less well. Most participating countries (17) reported that they provided play areas for children in ***most*** or ***many*** areas.

Pedestrians: education and training

The promotion of child pedestrian education and training initiatives nationally or in most states was a shared characteristic of four of the top five performers, namely Denmark, Finland, Germany, and The Netherlands, but this did not distinguish them from other countries performing less well because most also shared this approach. The top performer, Sweden, reported that child pedestrian road safety education or training was not promoted at a national level. Sweden in the last few years has moved away from the general concept that the child, as a vulnerable road user, must be educated and trained to cope with the traffic environment to the concept that the traffic environment must be adapted to protect the child and therefore has made a conscious decision not to promote education and training for children as vulnerable road users. However, whilst this situation is true for very young children, older children are likely to be educated about risk in a general sense and therefore educational approaches still continue in Sweden.

Most (15) participating countries reported that there are education and training initiatives nationally or in most areas. Most countries (14) reported promoting initiatives that involved teaching skills at the roadside and promoting materials and advice for parents (15). Fewer countries (7) promoted pre-school traffic clubs.

Having compulsory road safety education for children aged between 6-9 years nationally or in most states was a shared characteristic of four of the top five performers, namely Denmark, Finland, Germany and The Netherlands, but this did not distinguish them from other countries performing less well because most shared this approach.

Most (14) participating countries reported that child pedestrian safety education was compulsory nationally or in most states. This was most evident for the 6-9 age group, followed by 10-14 year old group (9), and then the 0-5 age group (7). A minority of countries including Sweden, Canada, Australia, New Zealand and the UK had no compulsory road safety education.

Pedestrians: national and regional publicity

Countries were asked whether or not they had run any national publicity campaigns aimed at child pedestrians in the last five years and, if so, how often had they been carried out.

Conducting national road safety campaigns once a year or more was a shared characteristic of three of the top five performers, namely Denmark, Finland and The Netherlands, and this distinguished them from other countries performing less well. However, two of the top five performers, Sweden and Germany, had not run any national campaigns in the last five years.

Overall only half (10) of the countries had supported national publicity in the last five years.

Conducting regional publicity campaigns for child pedestrians was a shared characteristic of four of the top five performers, namely Denmark, Finland, Germany and The Netherlands, but this did not distinguish them from other countries performing less well because most shared this approach.

More participating countries (15) reported that they had conducted regional publicity in the last five years. However, there were four countries who had not conducted any national or regional publicity campaigns and these were Sweden, Hungary, the Czech Republic and Turkey.

Pedestrians: legislation and behaviour

The presence of legislation that assumes driver responsibility in an accident involving a child pedestrian was a shared characteristic of three of the top five performers, and distinguished them from other countries performing less well. Overall, only seven participating countries had this legislation. The top performers who had this legislation were Sweden, The Netherlands and Germany. The other countries that had this legislation were France, Iceland, Switzerland and South Korea.

Hardly any participating countries had legislation specifically directed at the behaviour of child pedestrians. Of those countries that reported legislation (Finland and Poland), these laws were directed at the use of reflective materials, applied to all pedestrians and were not strongly enforced.

Pedestrians: research

Research commissioning activity in the last five years was a shared characteristic of four of the top five performers, namely Denmark, Finland, Germany and The Netherlands, but this did not distinguish them from other countries performing less well because most shared this approach.

However, there was less research activity in the poorer performing countries. Overall, 14 participating countries reported that they had commissioned research. The single areas most commissioned were education (7) and engineering (5). Other types of research commissioned were related to school route safety and accident data analysis. Of the top five performers only Sweden reported that no research on pedestrian safety had been commissioned in the last five years. The other countries that did not report any research activity on child pedestrian safety were the Czech Republic, Hungary, Turkey and Switzerland.

Pedestrians: initiatives

There was a range of child pedestrian initiatives mentioned by different countries. The initiatives are described under the following generic headings:

- School journey safety
- Education
- Vehicle engineering and pedestrian safety
- Advocacy
- Environment
- Pedestrian training
- Education and enforcement
- Driver education and publicity
- Data

Children as bicyclists

It is very difficult to interpret survey findings for bicyclists because for most countries the levels of bicycling activity are very low.

It is clear that for those countries that provided exposure information the inclusion of exposure entirely alters which countries can be classed as 'good' and 'less good'. In particular, whilst The Netherlands appears to perform poorly on the basis of population based fatality rates when exposure is taken into account, they are one of the best performers. Moreover, when exposure is taken into account, countries with low levels of bicycling are generally relatively less safe for bicyclists. Whilst the ordering mechanism based on population rates is used in Chapter 8, exposure rates are also shown for those countries that were able to provide travel data. In interpreting these findings care has been taken not to emphasise differences between good and less good performers.

Bicyclists: identifying risk

Less than half of participating countries said that they had identified high-risk groups of bicyclists. A number of cross-cutting themes emerged; these were the high risks associated with low socio-economic group (New Zealand, the UK and the USA) and ethnic minority groups (The Netherlands, New Zealand, the USA, the UK), boys (especially aged 10-14) (Sweden, Norway, the USA, Finland, New Zealand, the UK, The Netherlands) and young children (Finland, New Zealand, the USA, the UK).

Bicyclists: infrastructure safety measures

Participants were requested to indicate which infrastructure measures they provided for bicyclists in their country and to provide a judgement of how many municipalities or local authorities had adopted them.

The range of measures included bicycle lanes separated from other vehicle traffic, bicycle lanes not separated from other traffic, special measures for bicyclists such as advanced stop lines and priority at traffic lights.

Just over half (10) of participating countries said that they had bicycle lanes separate from other traffic in most or many areas. Just under half reported bicycle lanes shared with other vehicles in ***most*** or ***many*** areas and few countries reported having special measures for bicyclists such as advanced stop lines or priority at traffic lights.

It can be seen that the inclusion exposure information shows that The Netherlands, whilst having the highest population based fatality rate, has one of the lowest exposure based fatality rates and is one of the few countries that provides an extensive infrastructure for bicyclists.

Bicyclists: education and training

Just over half of participating countries (10) reported that there are education and training initiatives ***nationally*** or in ***most*** states.

A minority of countries including Sweden, Turkey and Switzerland reported that they did not promote any bicyclist safety education or training initiatives.

Just over half (10) of participating countries reported that child bicyclist safety education was compulsory nationally/most or some states. This activity was more frequently reported for the 6+ age group.

Bicyclists: national and regional publicity

Just over half (10) of participating countries had run national publicity in the past five years, though two federal countries reported conducting regional publicity. Overall, 12 countries had conducted regional publicity campaigns.

Bicyclists: legislation and behaviour

Nine countries had bicycle helmet wearing legislation nationally or in some states. The enforcement of this helmet wearing law was mostly described as weak or variable.

Notably, Norway and Sweden report high national rates of helmet wearing without legislation, reporting rates of 63% and 80% respectively. Higher helmet wearing rates were reported for children under the age of 12 with rates dropping off substantially for teenagers with the exception of New Zealand, who have compulsory helmet wearing, where high rates for all children aged between 5-18 were reported. Interestingly, most countries that reported reasonably high helmet wearing rates including Norway, Sweden, New Zealand and Finland were the only countries that reported that ***most*** or ***many*** schools had policies on wearing bicycle helmets.

Seven participating countries had other legislation directed at the behaviour of child bicyclists. These laws were aimed at the age that children could bicycle on the road, licensing and competence.

Bicyclists: research

Overall, 10 participating countries reported that they had commissioned research, the single areas most commissioned were education (7) and behaviour and legislation (6). For other research the main areas commissioned were related to accident data analysis, protection systems (bicycle helmets) and surveys of attitudes and behaviour.

Bicyclists: initiatives

There was a range of child bicyclist initiatives mentioned by different countries. The initiatives are described under the following generic headings:

- Bicycle helmet wearing and legislation
- Education
- Bicycling on the school journey
- Helmet promotion
- Advocacy
- Bicycle training
- Data

Children as vehicle occupants

The top five performers in the child vehicle occupant fatality league are Switzerland, the UK, The Netherlands, Sweden and Norway.

Vehicle occupants: identifying risk

The identification of high-risk groups of vehicle occupants was a shared characteristic of three of the top five performers, namely the UK, The Netherlands and Sweden, but this did not distinguish them from other countries performing less well. Under half (9) of participating countries said that they had identified high-risk groups of vehicle occupants. A number of cross-cutting themes emerged; these were the high risks associated with low socio-economic and ethnic minority groups (New Zealand, Sweden, the UK, the USA) and rural areas (Iceland, Finland, the UK).

Vehicle occupants: education and training

The promotion of child car passenger education and training initiatives nationally or in most states was a shared characteristic of four of the top five performers, namely The Netherlands, Norway, Sweden and the UK, but this did not distinguish them from other countries performing less well because most shared this approach. Interestingly, whilst Sweden did not report any education or training initiatives for vulnerable road users they did report education and training initiatives for children as vehicle occupants. Switzerland, the top performer, did not report any national education or training initiatives aimed at child car passenger safety.

Most participating countries (14) reported that there are education and training initiatives nationally or in most areas.

Having compulsory car passenger safety education for children was not a shared characteristic of the top five performers. Just over half (11) of participating countries reported that child car passenger safety education was compulsory nationally or in most states. This activity was more frequently reported for the 6+ age group.

Vehicle occupants: national and regional publicity

Conducting national road safety campaigns in the last five years was a shared characteristic of three of the top five performers and was reported by The Netherlands, Norway and the UK but this did not distinguish them from other countries performing less well. Most (16) of participating countries had run national publicity in the past five years, though two participating federal countries reported conducting regional publicity. Conducting regional campaigns was not a shared characteristic of the top five performers. Over half (12) of participating countries reported that they had run regional campaigns in the last five years.

Vehicle occupants: legislation and behaviour

All countries had some form of seat belt legislation for vehicle occupants travelling in private vehicles.

Most countries provide national data on seat belt wearing rates. High seat belt wearing rates (around 90% or higher) in the front and rear of private vehicles was a shared characteristic of the all top five performers and this distinguished them from the majority of countries performing less well. A number of general patterns emerged. Lower rates of seat belt use were reported in the back of the car compared to the front and among children aged over five compared to children under 5. A number of countries reported very low wearing rates these were Hungary, South Korea (who reported a wearing rate of 4% children sitting in the back of cars), Poland and Portugal who report rates of less than 50% overall.

Most countries describe the enforcement of seat belt wearing as weak or variable. Only one of the top performers, Norway, reported strong enforcement.

The presence of legislation for seat belt wearing on school buses was a shared characteristic of three of the top five performers, namely Sweden, Switzerland and The Netherlands, and distinguished them from the majority of countries performing less well.

Vehicle occupants: research

Research commissioning activity related to child car passenger safety was not a shared characteristic of the top five performers.

Overall over half (14) of participating countries reported that they had commissioned research. The single area most commissioned was behaviour and legislation (10).

Vehicle occupants: initiatives

There was a range of child car passenger initiatives mentioned by different countries. The initiatives are described under the following generic headings:

- Education
- Loan schemes for child safety seats etc
- Standards and testing
- Education and enforcement
- Child seat fitting inspection
- Accident data and advocacy

Policy on children's traffic safety

The following analysis is based on overall child traffic fatality rate. The top five performers are Sweden, the UK, Norway, The Netherlands and Germany.

Ministries responsible for children's traffic safety

Having shared responsibility for children's traffic safety by two or more ministries with a responsibility for child traffic safety was a shared characteristic of four of the overall top five performers, namely Germany, The Netherlands, Norway and Sweden, but this did not distinguish them from other countries performing less well because most shared this approach.

The most frequently mentioned ministries were those for transport and the environment, health and social affairs, education, and justice.

Agencies responsible for implementing children's traffic safety

Implementing children's traffic safety through a number of agencies including police, schools, local authorities, voluntary agencies and non-government organisations (NGOs) was a shared characteristic of the overall top performers, but this did not distinguish them from other countries performing less well.

Overall, the main agencies involved in implementing child safety policies and projects were schools, local authorities and the police. Health departments and charitable organisations were least mentioned.

National plans

Having national plans for reducing children traffic accidents for more than 10 years was a shared characteristic of the overall top five performers, namely Sweden, the UK, Norway and Germany, but this did not distinguish them from other countries performing less well because most shared this approach. Having separate casualty reduction targets for the children was not a shared characteristic of the top five performers – of these only the UK had set such targets.

For the 13 participating countries that had a national plan to improve road safety the following measures were included:

- Speed reduction measures (12 countries)
- Infrastructure measures (12 countries)
- Publicity aimed at children (11 countries)
- Low speed limits (10 countries)
- Education (10 countries)
- Publicity aimed at drivers (10 countries)
- Safety equipment (9 countries)
- Practical training (8 countries)

Having implementation plans comprising measures targeted at speed reduction measures, low speed limits, infrastructure, publicity aimed at both the children and drivers, and safety equipment were shared characteristics of four of the overall top five performers, namely Sweden, the UK, Norway and Germany.

Planning guidance for children's traffic safety

Having advisory environmental planning guidance for the safety, security and freedom of movement of children was a shared characteristic of four of the overall top five performers, namely Sweden, the UK, Norway and The Netherlands, and this distinguished them from other countries performing less well.

Involvement of children in the planning process

Children are rarely involved in the planning process.

Policies on increasing walking and bicycling

Having policies on increasing walking and bicycling among children was a shared characteristic of all of the overall top five performers, but this did not distinguish them from other countries performing less well because most shared this approach. 13 countries reported having such policies. The key reasons given for these policies were to reducing car travel and improve health.

Policy on children's traffic safety: initiatives

There was a range of child traffic safety policy initiatives mentioned by different countries. The initiatives are described under the following generic headings:

- School journey safety
- Consulting children on traffic safety
- Strategy
- Environment
- Inequalities
- Legislation

Conclusions

This study represents a systematic attempt to examine factors that may have a role in explaining differences in child road traffic fatality rates between countries such as differences in exposure, a country's demographic and socio-economic indicators, road safety policy and practice, legislation and research. A particular strength of the study is the inclusion of exposure data that shows that it is essential to take into

account the amount of walking, bicycling and travelling in cars to really understand whether countries can be classified as good or poor. This is particularly true for bicycling where countries with low levels of bicycling exposure emerge as relatively unsafe for bicycling.

The study only provides a snapshot of current practice and policy and does not capture how these have evolved. It also clear that it is unlikely that no single policy or intervention will significantly reduce road injuries instead of packages of policies and interventions of a comprehensive nature may be more likely to have an impact on safety.

However, there are a number of characteristics that seem to distinguish the top performers from countries performing less well.

In relation to children as ***pedestrians,*** top performers:

- have speed reduction measures (including environmental modification and low speed limits) and signalised crossings in ***most*** local authorities or municipalities
- have these measures outside ***many*** schools
- have outside play areas such as parks or playgrounds in ***most*** residential areas
- conduct national publicity campaigns aimed at child pedestrian safety
- have legislation that assumes driver responsibility for accidents involving child pedestrians in residential areas.

In relation to children as ***bicyclists***, our conclusions are limited, for reasons given earlier in the discussion related to exposure to bicycling.

In relation to children as ***vehicle occupants***, top performers:

- achieve high seat belt wearing rates (around 90% or higher) in the front or rear of private vehicles
- know who are the high risk groups
- have compulsory seat belt wearing on school buses.

In relation to children's travel, top performers have the following characteristic:

- many children aged 6-9 are accompanied by adults whilst travelling.

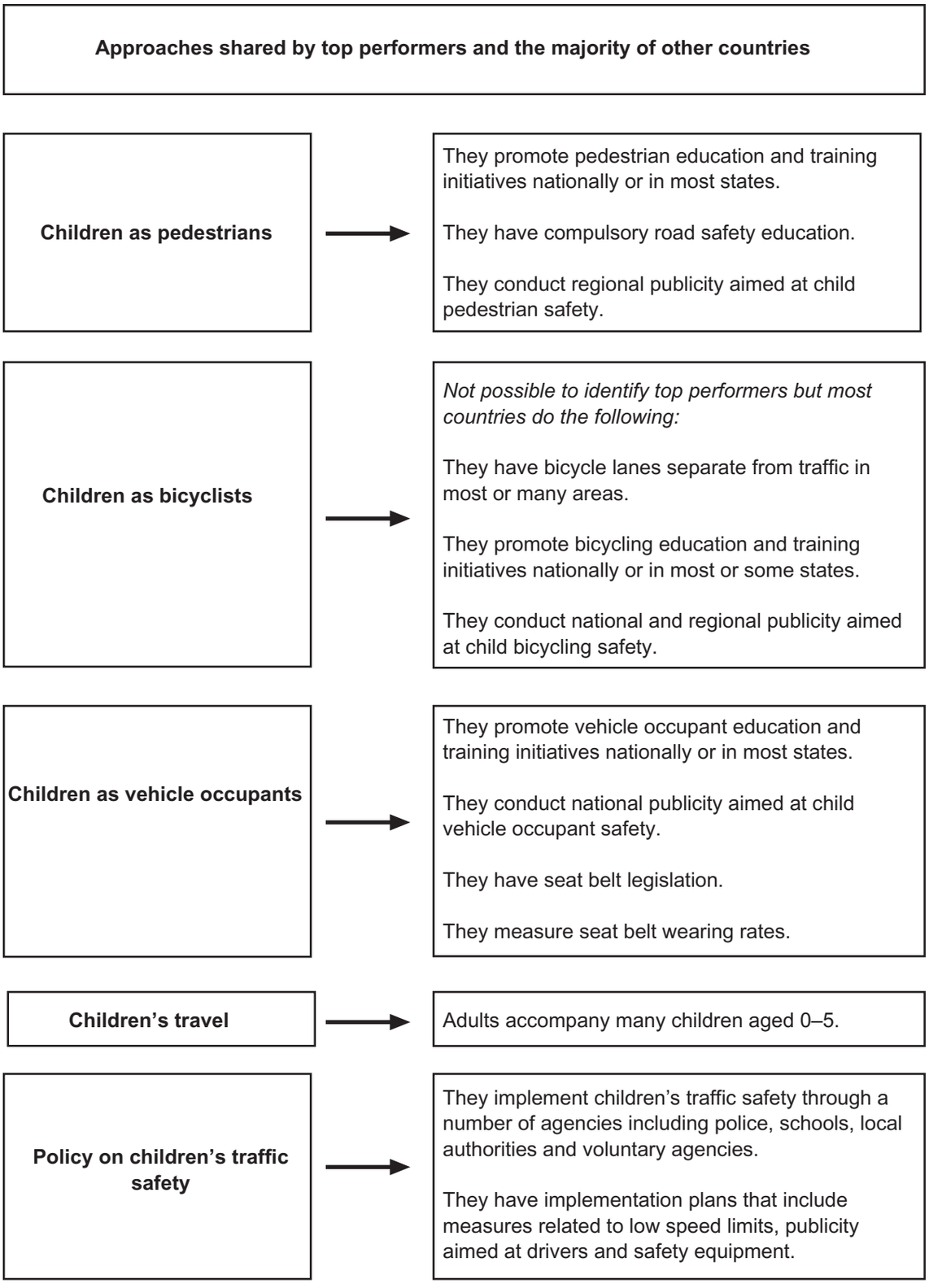
In relation to policy on children's traffic safety, top performers have the following characteristic:

- have advisory environmental planning guidance for the safety, security and freedom of movement of children.

It is hoped that the study will provide a focus of international action especially in relation to sharing good practice and developing standardised methods of collecting data. This study could serve as a tool for baseline measures to monitor the impact of evolving policy and practice across OECD countries, to extend our understanding of the processes that lead to improving children's road safety.

Summaries of the distinguishing and shared characteristics of the top performing countries are shown in the diagrams overleaf.

Top performers (based on population rate)	What makes them different?
Children as pedestrians Sweden, The Netherlands, Finland, Germany and Denmark.	They have speed reduction measures (including environmental modification and low speed limits) and signalised crossings in ***most*** local authorities or municipalities They also have these measures outside ***many*** schools. They have outside play areas such as parks or playgrounds in ***most*** residential areas They conduct national publicity campaigns aimed at child pedestrian safety. They have legislation that assumes driver responsibility for accidents involving child pedestrians in residential areas.
Children as bicyclists	Not possible to identify top performers.
Children as vehicle occupants Switzerland, UK, The Netherlands, Sweden and Norway.	They achieve high seat belt wearing rates (around 90% or higher) in the front and rear of private vehicles. They know who are the high risk groups. They have compulsory seat belt wearing on school buses.
Children's travel	Adults accompany many children aged 6–9.
Policy on children's traffic safety	They have advisory environmental planning guidance for the safety, security and freedom of movement of children.


Approaches shared by top performers and the majority of other countries
Children as pedestrians
They promote pedestrian education and training initiatives nationally or in most states.
They have compulsory road safety education.
They conduct regional publicity aimed at child pedestrian safety.
Children as bicyclists
Not possible to identify top performers but most countries do the following:
They have bicycle lanes separate from traffic in most or many areas.
They promote bicycling education and training initiatives nationally or in most or some states.
They conduct national and regional publicity aimed at child bicycling safety.
Children as vehicle occupants
They promote vehicle occupant education and training initiatives nationally or in most states.
They conduct national publicity aimed at child vehicle occupant safety.
They have seat belt legislation.
They measure seat belt wearing rates.
Children's travel
Adults accompany many children aged 0–5.
Policy on children's traffic safety
They implement children's traffic safety through a number of agencies including police, schools, local authorities and voluntary agencies.
They have implementation plans that include measures related to low speed limits, publicity aimed at drivers and safety equipment.

1. INTRODUCTION

The UNICEF Innocenti Report (2001) showed that traffic accidents are a leading cause of death in the Organisation for Economic Co-operation and Development (OECD) region,[1] accounting for 41% of all child deaths by injury type with many more children experiencing injury and disability (UNICEF 2001).

Over the past two decades cultural, economic and environmental changes have affected children's travel patterns. Children are making an increasing proportion of their journeys as car passengers, rather than by bicycle or on foot. During this period there has been a significant increase in health conditions such as obesity associated with the lack of physical exercise.

To address these health issues many OECD countries have adopted policies to encourage walking and bicycling. These policies will only succeed if the safety of these activities is addressed.

The focus of the analysis is on children aged 0-14 years. This contrasts with the definition of a child as someone under the age of 18 as set out in the United Nations Convention on the Rights of the Child. This decision was made because in most national road traffic accident databases children are defined as being less than 15 years old.

There are clear differences between OECD countries in the annual deaths among children aged 1 to 14 years caused by transport accidents. Rates in the country at the bottom of the league table, Korea, are over five times that in the leading country, Sweden (see Figure 1).[2] The range of legislation on injury prevention in a country may indicate its political will to address the burden of injury caused by accidents,

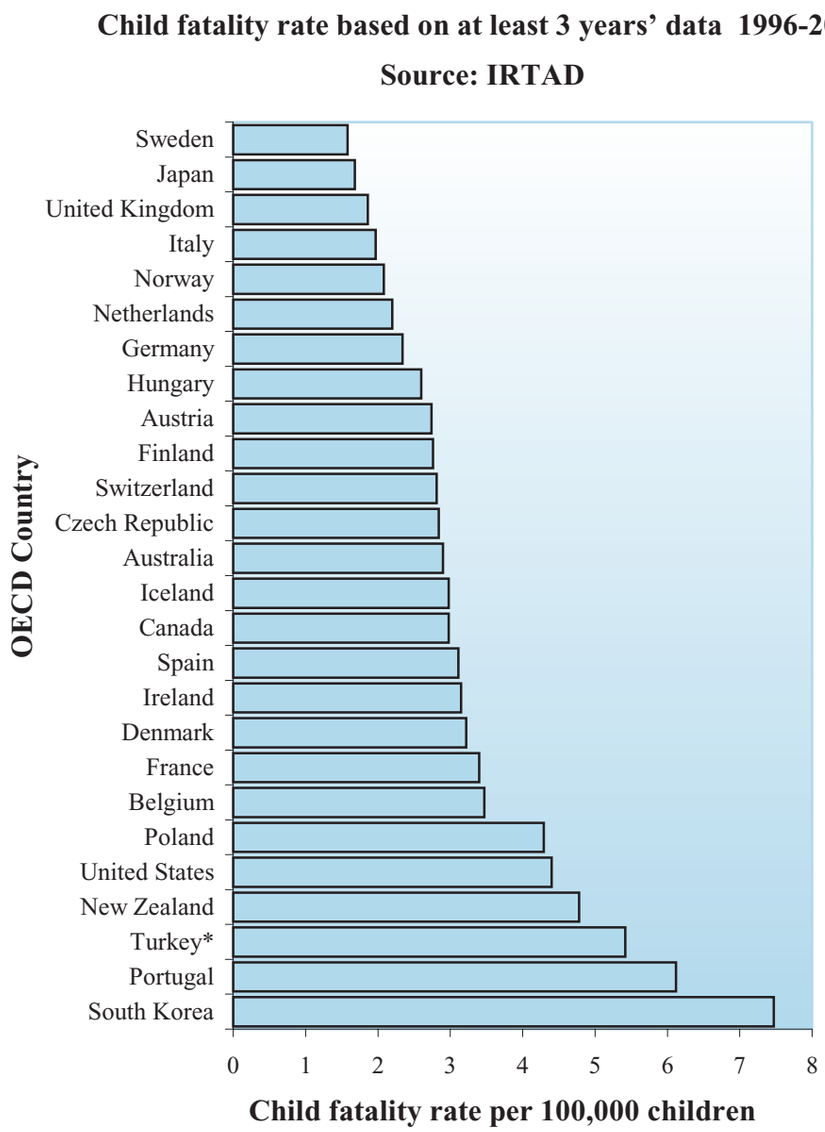
1 The 30 nations of the OECD are:

Australia	Hungary	Poland
Austria	Iceland	Portugal
Belgium	Ireland	South Korea
Canada	Italy	Slovak Republic
Czech Republic	Japan	Spain
Denmark	Luxembourg	Sweden
Finland	Mexico	Switzerland
France	The Netherlands	Turkey
Germany	New Zealand	United Kingdom
Greece	Norway	United States of America

2 This report uses country-specific data given summarized or in separate form for which the corresponding bases are available. Consequently, Greece, Mexico, Luxembourg and the Slovak Republic have not been included in this figure. The data for Turkey was obtained from the survey as each mode specific questionnaire requested fatality information for the year 2000. At the time the analyses of the league tables were undertaken the data for Greece was not available but it became available in time for the calculation of the trend graphs see Chapter 3.

but it is not the complete explanation of the rating of countries in the UNICEF report league table (Towner and Towner 2002). International research on child traffic accidents has shown that factors related to differences in the quality and quantity of a child's exposure in the road environment (Hillman *et al*. 1990; Bly *et al*. 1999) may explain the variation in accident rates. There are also intra-national differences in risk that relate to factors such as low socio-economic status and family structure (Christie 1995) which may also have a role in explaining the relative differences between countries. Hence, further information on factors relating to the population and social structure, travel patterns and behaviour is needed to help understand the differences in road traffic death rates between countries.

Figure 1: Child (0-14) fatality league



* Based on 2000 data only obtained from survey.

1.1. Aims

The aim of this survey is

- to provide basic data, on a consistent basis, from OECD member countries that identifies and accounts for current patterns of child road safety, and identifies current best practices and counter-measures in place to improve child road safety. It is intended to provide a valuable source of data on child road safety and to contribute to the final report of the OECD's Road Transport Research Programme study on child road safety.

1.2. Objectives

i) To identify, and record, on a consistent basis, road safety and other related policies, practices, legislation and research that impact upon children in OECD member countries. This is intended to supplement the International Road Traffic Accident Database (IRTAD) data on child road fatality patterns so that it will be possible to gain an insight into the risks children are exposed to in traffic and to identify which groups of children and in which circumstances they are at greatest risk. It is also intended to supplement research reviews being undertaken by the expert group.

ii) To account for the child road safety record of OECD member countries through a comparative analysis of these policies, practices, legislation and research.

iii) To identify good practice in policies, practices, legislation and research by analyses of the survey and other data sources

iv) To identify any gaps in existing knowledge and research, and to recommend priorities for action.

1.3. Key definitions

Key terms used in this report are summarised below including a brief rationale of why they were chosen.

1.3.1. Definition of a child

A child is a person aged between 0-14 years. This decision was made because in most national road traffic accident databases children are defined as less than 15 years old.

1.3.2. The OECD

The OECD is the Organization for Economic Co-operation and Development. It grew out of the Organisation for European Economic Co-operation (OEEC) which was formed to administer American and Canadian aid under the Marshall Plan for

the reconstruction of Europe after World War II. The OECD took over from the OEEC in 1961. It is an international forum that aims to:

- discuss, develop and refine economic and social policies
- compare experiences
- seek answers to common problems
- co-ordinate domestic and international policies to help members and non-members deal with an increasingly globalised world.

(The OECD's website is at http://www.oecd.org/). The OECD Secretariat is based in Paris, France.

1.3.3. IRTAD

IRTAD is the International Road Traffic Accident Database. The Federal Highway Research Institute (BASt) in Germany established an international road traffic and accident database in the mid eighties. Since 1990 the database is operated within the framework of the OECD Road Transport Research Programme and now includes data from all OECD countries with BASt acting as database host and administrator.

1.3.4. Fatality rates

The only reliable category for international comparisons of injury is fatal injury, as most countries use the standard UN/ECE definition: "Any person who was killed outright or who died within 30 days as a result of the accident". A few countries have a different standard and a correction factor has been developed to adapt these data to the 30 days definition.

Different countries have different standards and levels of recording of non-fatal accidents and casualties. For example, in Austria the definition of a seriously injured person is someone who is hospitalised and not able to work for at least 24 days. In some countries, for example, the UK, the casualty can be defined as seriously injured without being hospitalised.

IRTAD has introduced the variable "hospitalised" in an attempt to allow meaningful comparison of severely injured casualties but few countries send this data to be included on the database. Therefore, as there is no accepted international definition of serious injury this category cannot be used in the analyses reported here.

Fatality rates are expressed per 100,000 child population for the relevant age groups.

1.3.5. Exposure and risk

Exposure, as used in this report, relates to the amount of travel a child undertakes in the road traffic environment. Not all children are equally likely to be involved in an injury accident and the likelihood is different for travelling by different modes. Where data are available on the amount of travel by children travelling by different modes an assessment may be made of fatality rate per unit of exposure.

Exposure may be measured in terms of distance travelled, time spent travelling, or number of trips. In this report the measures of exposure used are distance travelled and per trip.

In this report fatality rates are expressed per kilometre travelled or per trip whether by foot, bicycle or as a car passenger. It provides a way of comparing fatality rates for children of different age groups travelling by different modes of transport such as walking, bicycling and as car occupants.

1.3.6. Top performers

A top performer is defined here as one of the top five participating countries; that is one of the five countries with the lowest fatality rates overall and for each mode.

1.3.7. Shared and distinguishing characteristics of top performers

The terms “shared characteristic” and “distinguishing characteristic” are operationally defined in the following ways.

A “shared characteristic” is one that is shared by at least three of the five top performers in any of the league tables.

A “distinguishing characteristic” is one that is a shared characteristic of the top performers and is ***not*** shared by the majority (over half) of the remaining countries that are performing less well.

2. METHOD

Chapter coverage

The study design

Analysis of IRTAD data

Questionnaire survey

Questionnaire development

Survey pilot

Survey administration

Analysis of the relationship between child traffic fatality rate and national socio-economic and demographic indicator data

Good practice

2.1. The study design

The study has four main parts:

1) Analysis of IRTAD data
2) An analysis of the relationship between child traffic fatality rate and national socio-economic and demographic indicator data
3) A questionnaire survey among OECD country representatives
4) Identification of good practice

2.2. Analysis of IRTAD data

In addition to the survey an analysis of IRTAD data was undertaken. This was largely to enable mode specific fatality tables to be derived. Not all OECD countries contribute to IRTAD. The OECD member countries that participate in IRTAD are: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, New Zealand, Norway, Poland, Portugal, South Korea, Spain, Sweden, Switzerland, The Netherlands, Turkey, United Kingdom, USA. Therefore, only Mexico and the Slovak Republic do not contribute to IRTAD. Information for Greece was not available at the time of constructing the mode specific league tables but data were available to construct the trends (see Chapter 3).

IRTAD participation is also open to non-OECD countries. Slovenia (a non-OECD country) joined IRTAD in 2002. Not all of the OECD countries have been contributing to IRTAD for the same periods of time.

Data on trends in child traffic fatalities for each country were also constructed. Trends in accident rates over a 10- or 20-year period (subject to data availability) can help to identify those periods in which rapid progress was made in particular countries. This information will be used to help identify countries where there have been significant reductions in casualties as part of the selection criteria for identifying good practice. Trend data by country are shown in Chapter 3. The trends are shown for all fatalities, fatalities by age, fatalities by mode, and fatalities by mode and age over 20- and/or 10-year trends, subject to data availability.

2.3. Analysis of the relationship between child traffic fatality rate and national socio-economic and demographic indicator data

The study also sought to get information on social, economic and environmental factors that may have an impact on accident rates such as number of cars, level of poverty and degree of urbanisation. It was difficult to find standard measures of social, economic and environmental factors for all countries. The sources of information used to provide some of this data originated from the OECD, UN and CIA websites. The following measures were extracted from these sources:

- GDP per capita
- Gini coefficient
- Percentage of lone parent families
- Child poverty index
- Percentage urban population
- Population density
- Cars per capita

2.4. Questionnaire survey

2.4.1. Questionnaire development

The survey comprised a series of five questionnaires entitled:

- Children as pedestrians
- Children as bicyclists
- Children as vehicle occupants

- Policy on child traffic safety
- Children's travel

The number, scope and contents of the questionnaires were a result of discussions by the four members of the project team and the two project officers from the UK Department for Transport (DfT). A similar format was adopted for questionnaires on children as pedestrians, bicyclists and vehicle occupants and all questionnaires included the OECD logo to give a corporate feel to the survey tools.

2.5. Survey pilot

The aim of the pilot was to receive feedback for each questionnaire from three countries. The countries were selected to represent the range of OECD countries (see Table 1 below):

Although not all countries responded, feedback was received for each questionnaire that enabled changes to be made to the original questionnaire.

Table 1: Countries involved in the pilot survey

Country	Questionnaire
Netherlands	Bicyclist
Poland	Bicyclist
Spain	Bicyclist
Finland	Pedestrian
Canada	Pedestrian
South Korea	Pedestrian
Switzerland	Policy
Japan	Policy
Czech Republic	Policy
Sweden	Travel
New Zealand	Travel
France	Travel
Germany	Vehicle occupants
USA	Vehicle occupants
Greece	Vehicle occupants

2.6. Survey administration

The survey questionnaires were sent to senior officials in each OECD member country to obtain high-level indicators of each country's approach to children's traffic safety. Contact details for senior officials were provided by the OECD secretariat. The survey was conducted by email and paper copies were also sent to each respondent. Several follow up emails were made in order to ensure satisfactory response rates.

A database was formed using Microsoft ACCESS. All data were cross-checked against the original questionnaires.

2.7. Good practice

One of the aims of study is to identify good practice in achieving or improving the traffic safety of children as pedestrians, bicyclists or car passengers. It is likely that a country's success would not be due to a single initiative such as a publicity campaign or a training programme but be due to a range of different and often complementary initiatives introduced over time.

Given this, it is argued that a lot can be learned from countries that are the top performers in terms the processes of how and why they have achieved a good track record in terms of children's safety as pedestrians, bicyclists and car passengers. The survey can help in identifying areas where these countries have been particularly strong.

3. IRTAD ANALYSIS

Chapter coverage

Mode specific fatality rates

Fatality league: child pedestrians

Fatality league: child bicyclists

Fatality league: child car passengers

Distribution of fatalities by mode within countries

IRTAD trends

Chapter summary

This chapter presents fatality league tables for child pedestrians, bicyclists and vehicle occupants. The survey participants represent a good range of performers. The distribution of fatalities by mode varies across countries which probably reflects both differences in safety and exposure. For most participants vehicle occupants account for over half of all fatalities.

Trend data are presented for fatalities by mode and age group. These graphs show improvements in the rate per 100,000 children fatally injured in road traffic accidents across the OECD countries for which we have data.

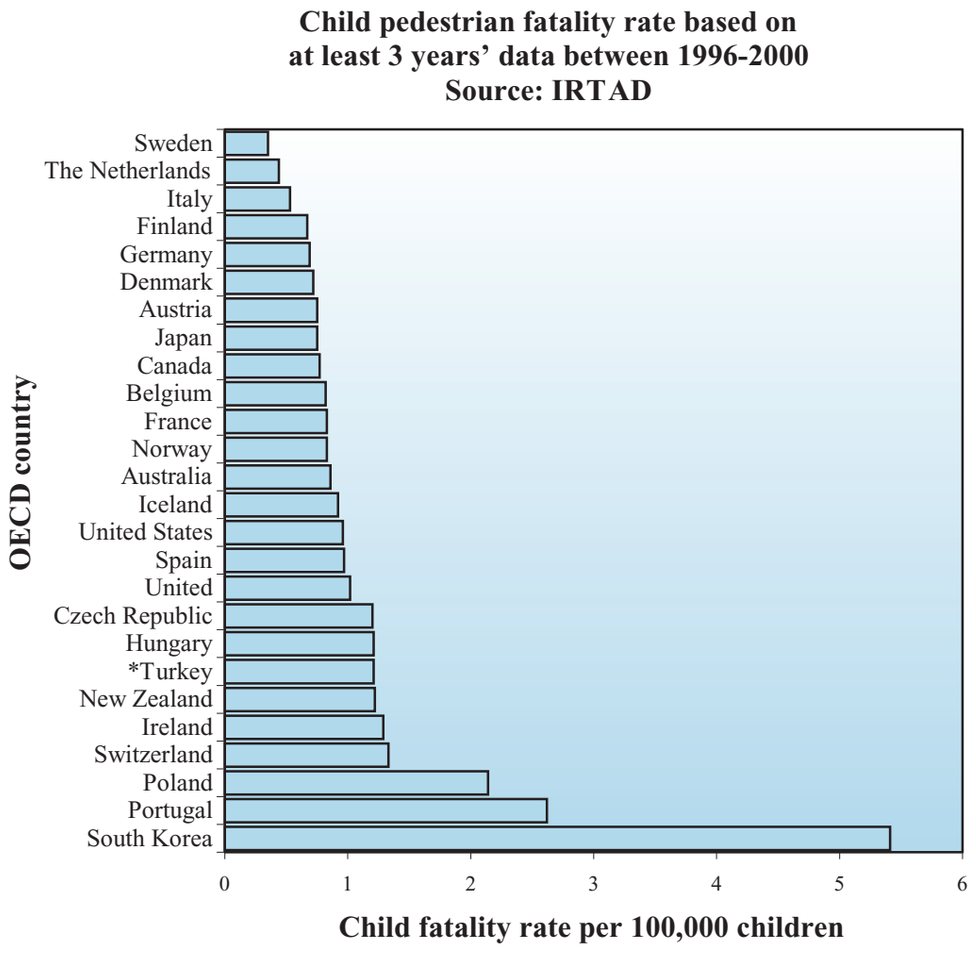
However, these trends are difficult to interpret because they do not take into account variations in the exposure of children as pedestrians, bicyclists and passengers in different countries.

Until such exposure information, or reliable proxies, are available, international comparisons will be difficult and the true rate of progress towards traffic safety for children be masked by other factors.

3.1. Mode specific fatality rates

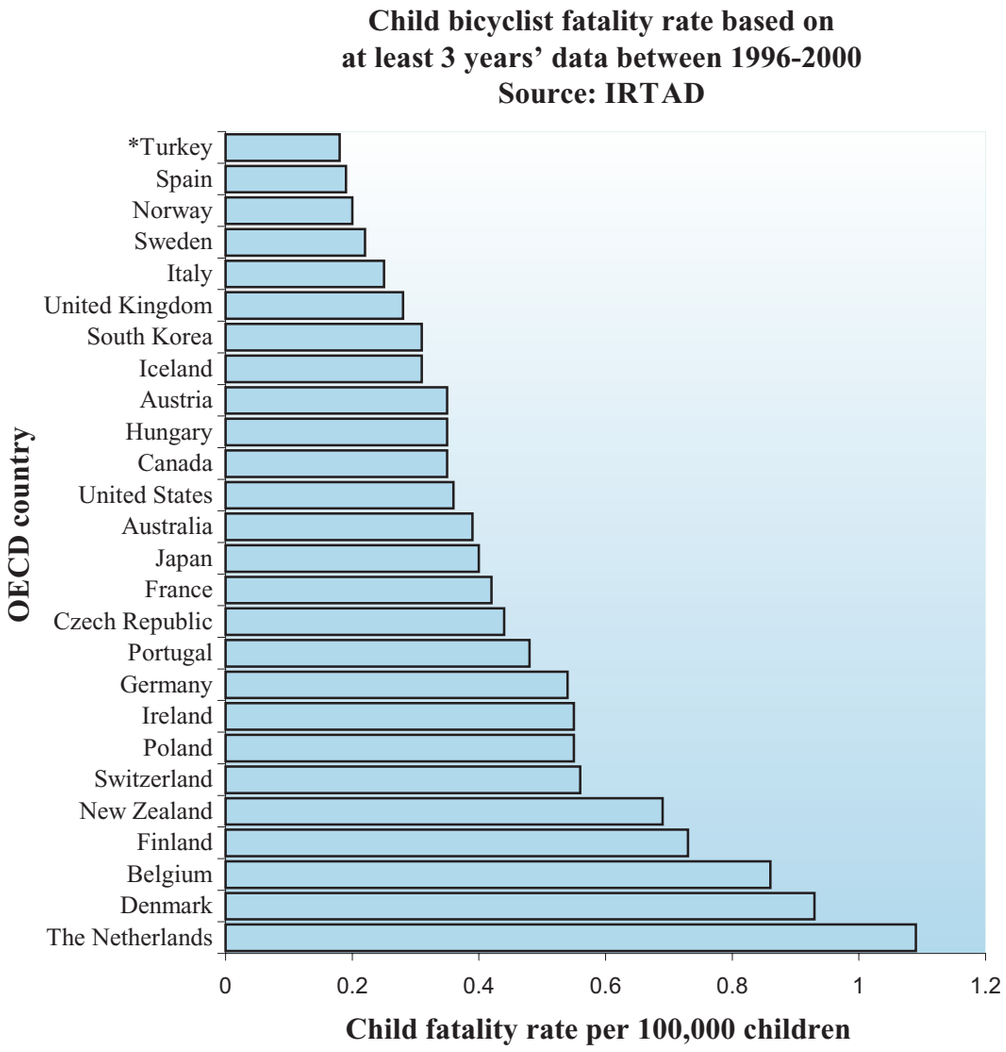
The mode specific fatality rates shown in Figures 2, 3 and 4 below are based on fatalities per 100,000 head of child population. The league tables are based on IRTAD fatality data from at least 3-years between 1996-2000 with the exception of Turkey where the rate is based on the year 2000 only. The data for Turkey was obtained from the survey as each mode specific questionnaire requested fatality information for the year 2000.

Figure 2: **Fatality league: child pedestrians**



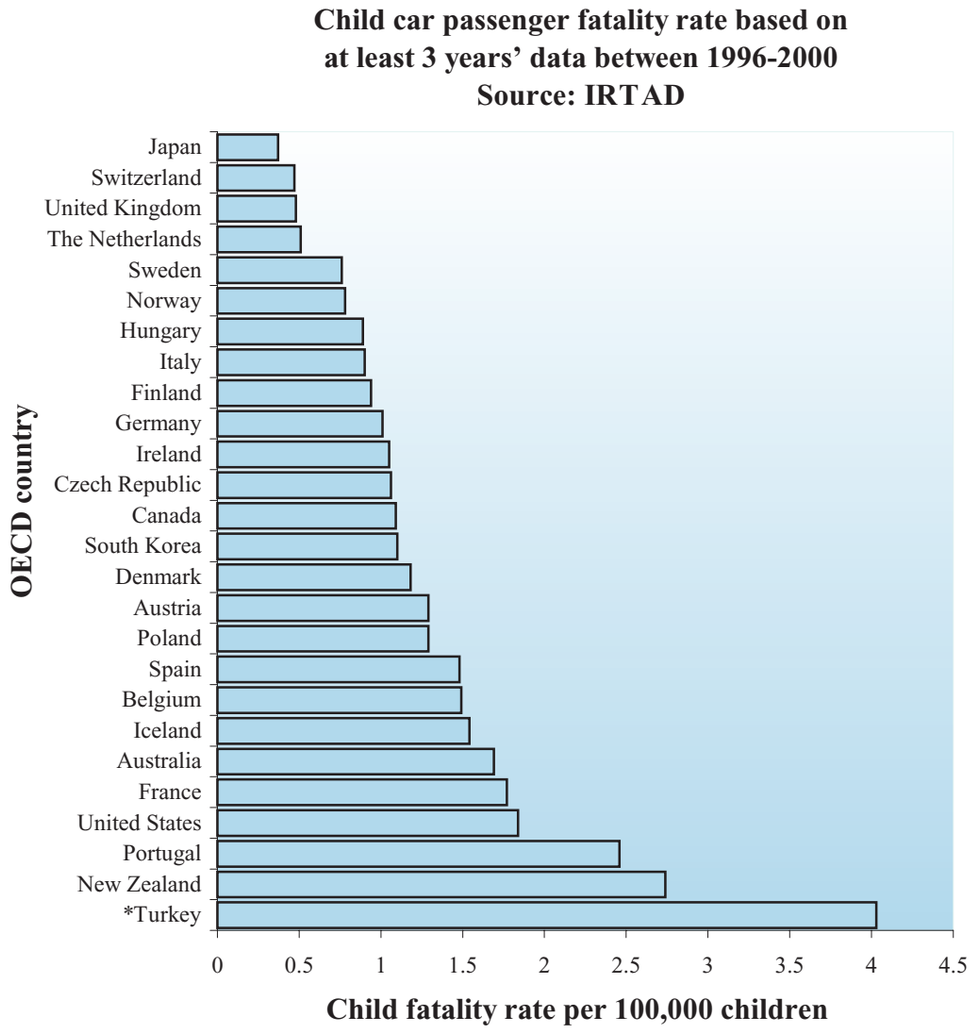
* Based on 2000 data only obtained from survey.

Figure 3: Fatality league: child bicyclists



* Based on 2000 data only obtained from survey. Note: as discussed later there are serious problems with using this league table to assess relative safety, given the magnitude of differences in bicycling exposure between countries.

Figure 4: **Fatality league: child vehicle occupants**

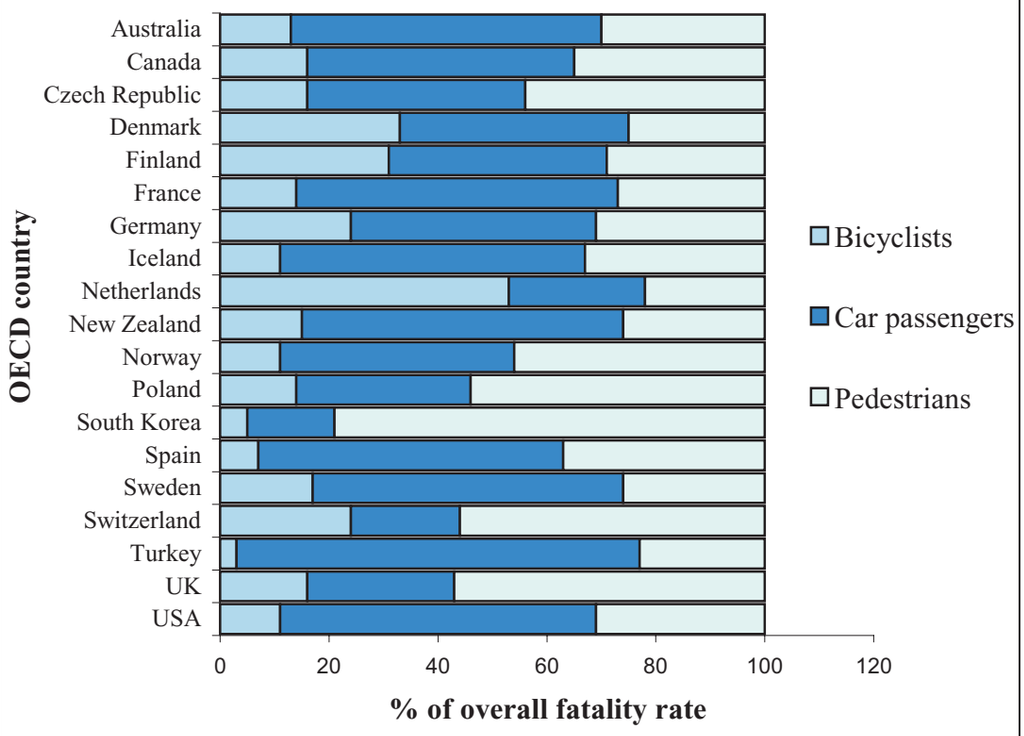


* Based on 2000 data only obtained from survey.

3.2. Distribution of fatalities by mode within countries

The distribution of fatalities by mode varies between countries (see Figure 5). Pedestrian fatalities account for over half of all fatalities in only four countries namely Poland, South Korea, Switzerland and the UK. Bicyclist fatalities account for more than half of all fatalities in The Netherlands only, whilst car passengers account for over half of all fatalities in eight countries namely Australia, France, Iceland, New Zealand, Spain, Sweden, Turkey and the USA. The explanation of these variations is likely to be related to differences in the exposure (especially in relation to bicycling) and to the relative safety of the different modes in each country.

Figure 5: Percentage of overall child traffic fatality rate accounted for by each mode



3.3. IRTAD trends

Graphs are presented for the 26 countries for which there are casualty data on the IRTAD database. Iceland is shown separately because the numbers of fatalities are low, and in many years are zero.

Trends are shown from 1981 for all fatalities and from 1990 to 2002 for the individual modes. Not all countries have complete data for the whole period. In some cases this is a result of expansion of the OECD group of countries with data only being available from joining date, and in some cases due to missing years. Where there are gaps, available data are presented. The process is described in Appendix A.

3.4. IRTAD trend graphs

Data are presented for the following age and mode trends:

3.4.1. All fatalities

Traffic deaths per 100,000 population of 0-14 year olds – All fatalities in 1981–2001 (Figure 6)

Traffic deaths per 100,000 population of 0-14 year olds – Pedestrians in 1981–2001 (Figure 7)

Traffic deaths per 100,000 population of 0-14 year olds – Bicyclists in 1981–2001 (Figure 8)

Traffic deaths per 100,000 population of 0-14 year olds – Passengers in 1981–2001 (Figure 9)

3.4.2. Fatalities aged 6-9

Traffic deaths per 100,000 population of 6-9 year olds – All fatalities in 1990–2001 (Figure 10)

Traffic deaths per 100,000 population of 6-9 year olds – Pedestrians in 1990–2001 (Figure 11)

Traffic deaths per 100,000 population of 6-9 year olds – Bicyclists in 1990–2001 (Figure 12)

Traffic deaths per 100,000 population of 6-9 year olds – Passengers in 1990–2001 (Figure 13)

3.4.3. Fatalities aged 10-14

Traffic deaths per 100,000 population of 10-14 year olds – All fatalities in 1990–2001 (Figure 14)

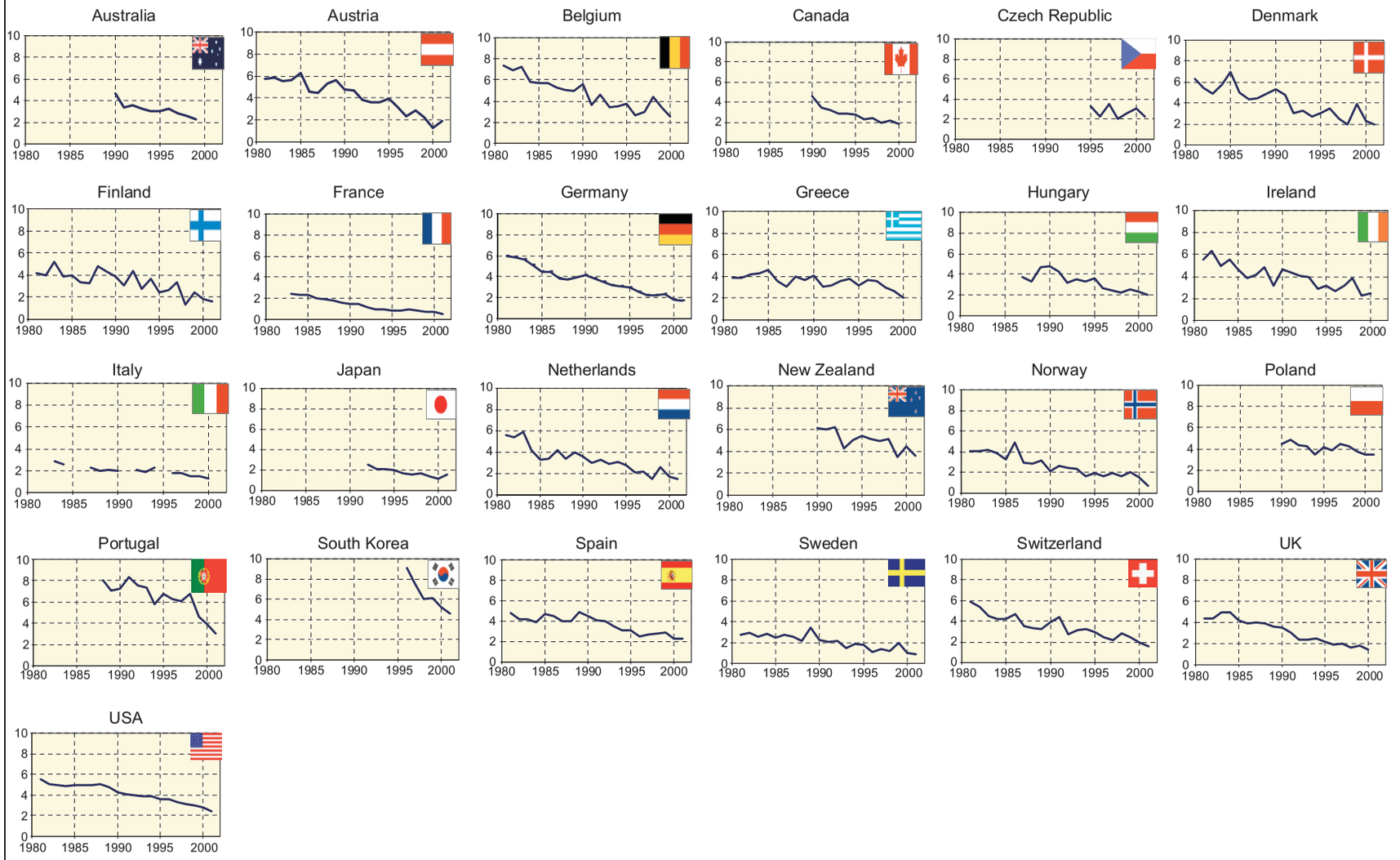
Traffic deaths per 100,000 population of 10-14 year olds – Pedestrians in 1990–2001 (Figure 15)

Traffic deaths per 100,000 population of 10-14 year olds – Bicyclists in 1990–2001 (Figure 16)

Traffic deaths per 100,000 population of 10-14 year olds – Passengers in 1990–2001 (Figure 17)

The trends for Iceland are shown at the end of this Section (Figure 18). The small population of Iceland and the low number of fatalities means that the trend lines are difficult to interpret on the same scale as the other countries. Data were not available for Luxembourg, Mexico, Turkey and the Slovak Republic. The method by which trends were calculated is shown in Appendix A.

Figure 6: Traffic deaths per 100,000 population of 0-14 year olds – All fatalities in 1981–2001



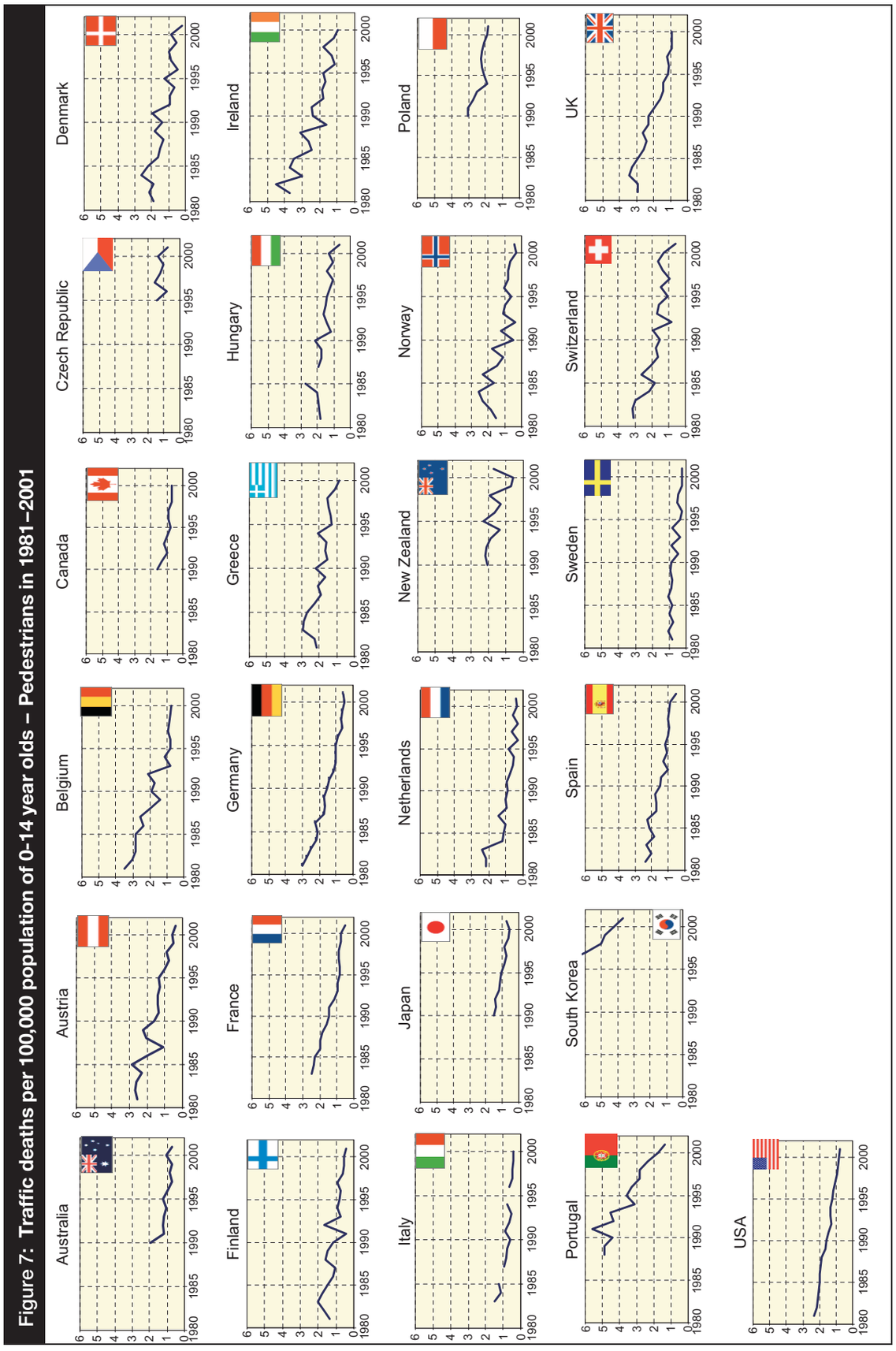
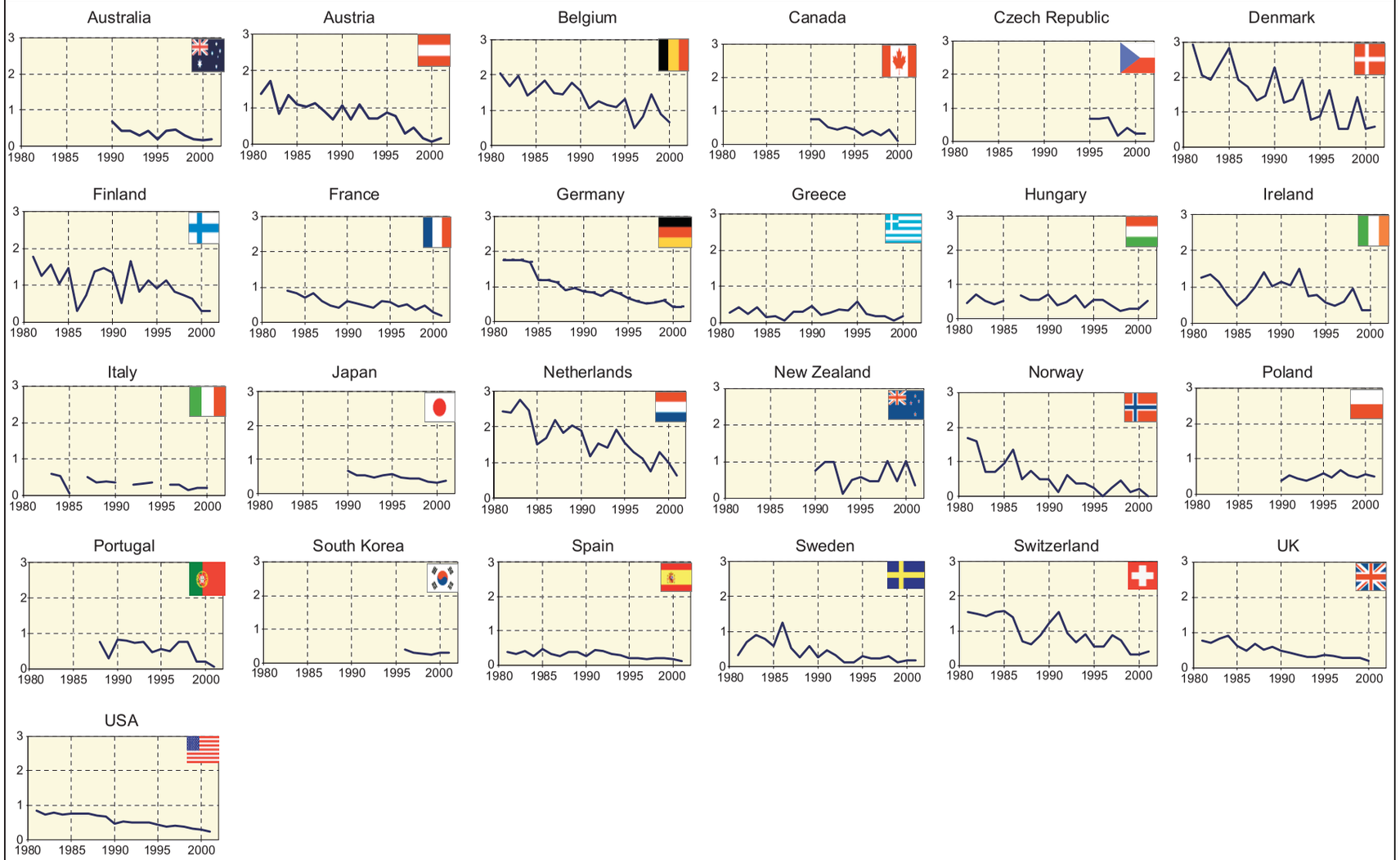


Figure 7: Traffic deaths per 100,000 population of 0-14 year olds – Pedestrians in 1981–2001
Australia
Austria
Belgium
Canada
Czech Republic
Denmark
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Japan
Netherlands
New Zealand
Norway
Poland
Portugal
South Korea
Spain
Sweden
Switzerland
UK
USA
0
1
2
3
4
5
6
1980
1985
1990
1995
2000

Figure 8: Traffic deaths per 100,000 population of 0-14 year olds – Bicyclists in 1981–2001



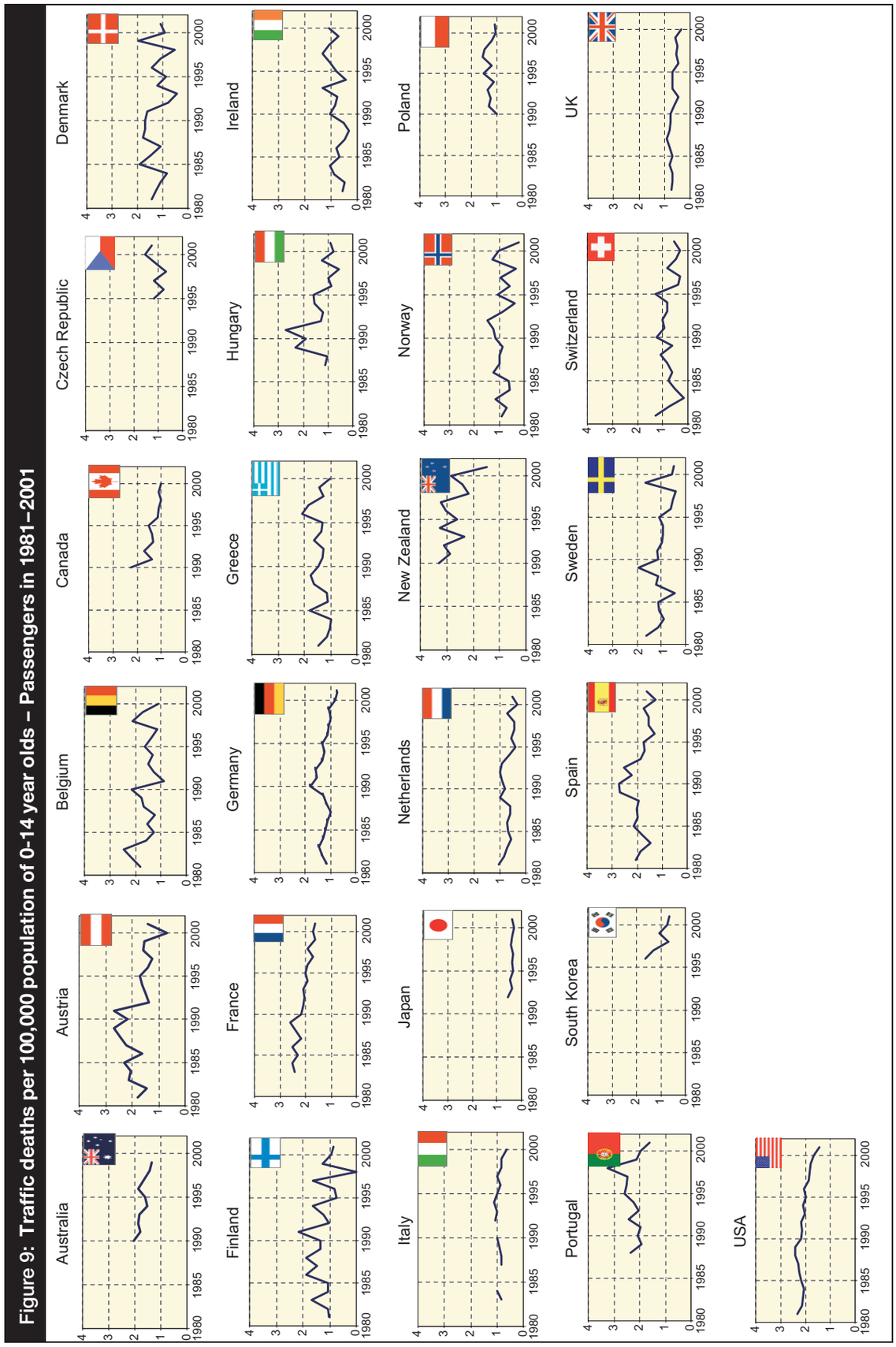
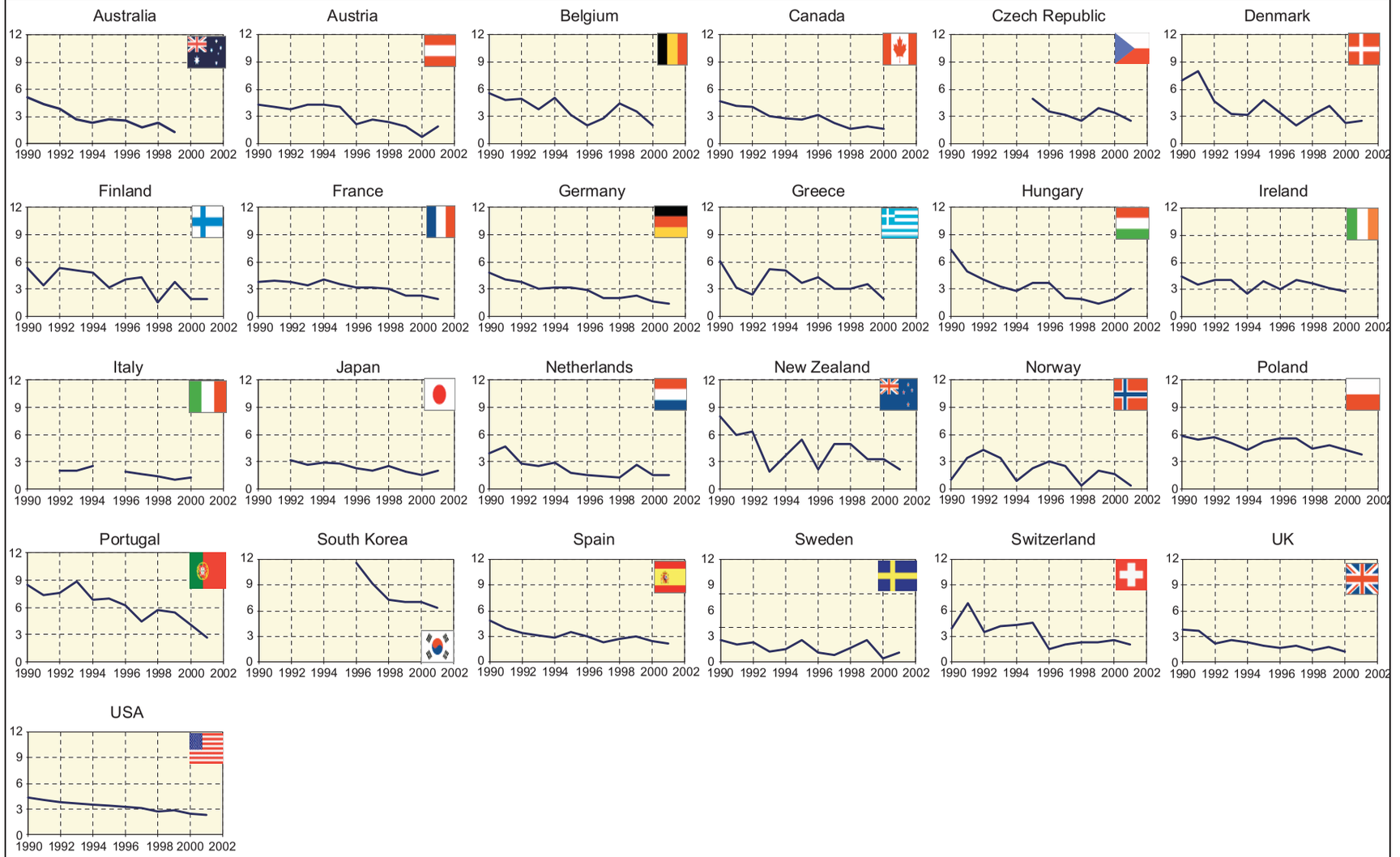


Figure 9: Traffic deaths per 100,000 population of 0-14 year olds – Passengers in 1981–2001
Australia
Austria
Belgium
Canada
Czech Republic
Denmark
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Japan
Netherlands
New Zealand
Norway
Poland
Portugal
South Korea
Spain
Sweden
Switzerland
UK
USA
0
1
2
3
4
1980
1985
1990
1995
2000

Figure 10: Traffic deaths per 100,000 population of 6-9 year olds – All fatalities in 1990–2001



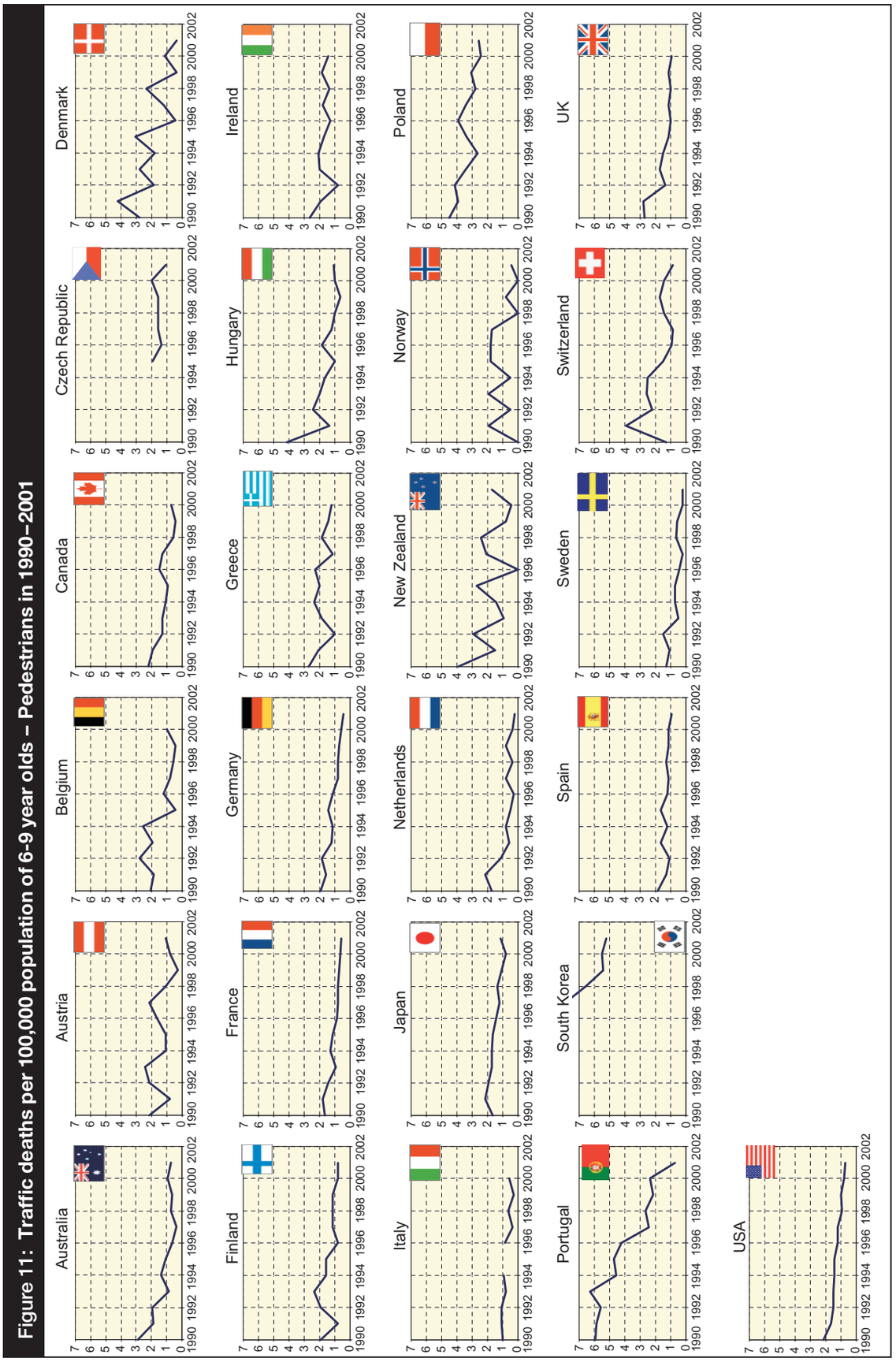
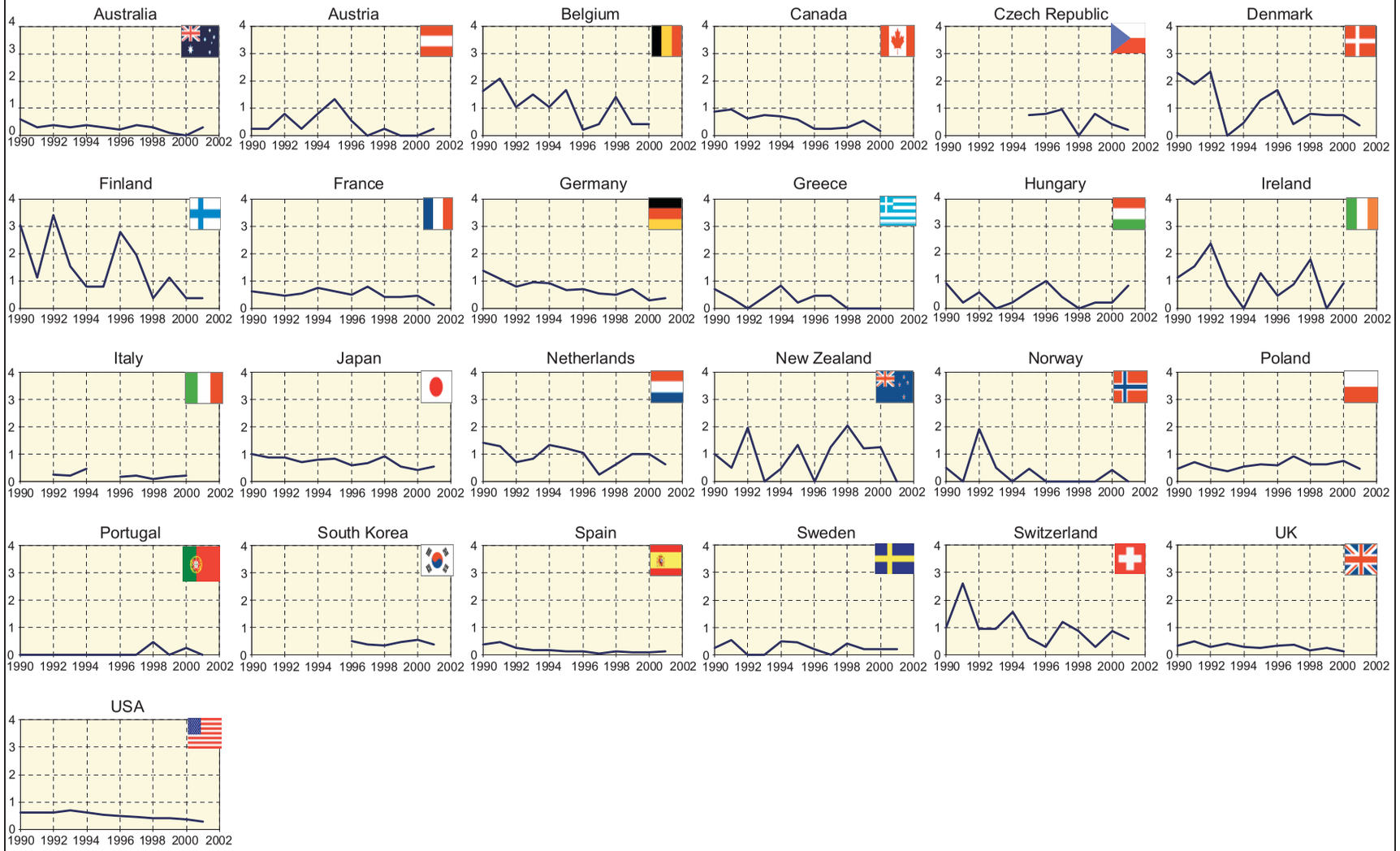


Figure 11: Traffic deaths per 100,000 population of 6-9 year olds – Pedestrians in 1990–2001
Australia
Austria
Belgium
Canada
Czech Republic
Denmark
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Japan
Netherlands
New Zealand
Norway
Poland
Portugal
South Korea
Spain
Sweden
Switzerland
UK
USA

Figure 12: Traffic deaths per 100,000 population of 6-9 year olds – Bicyclists in 1990–2001



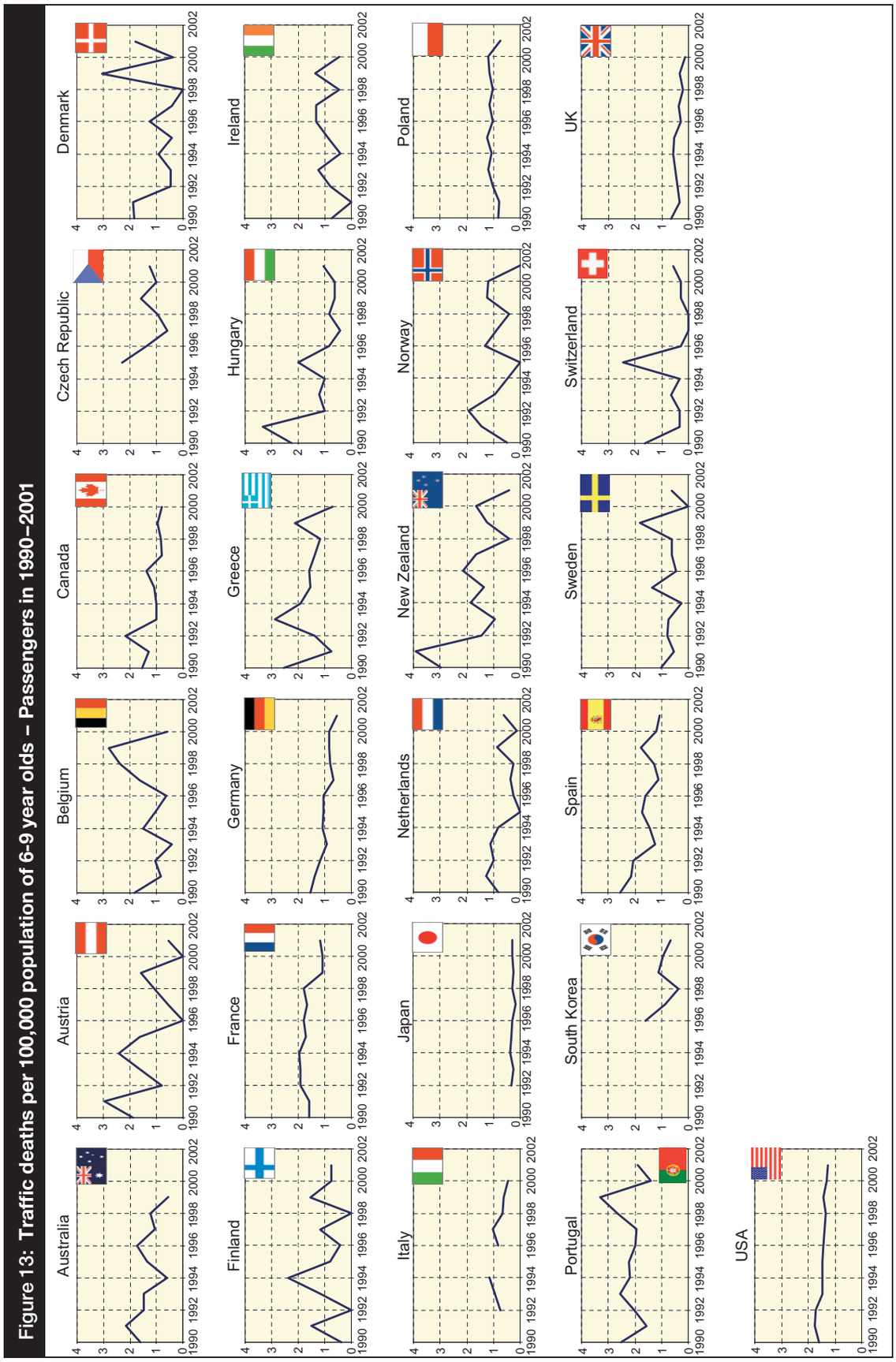
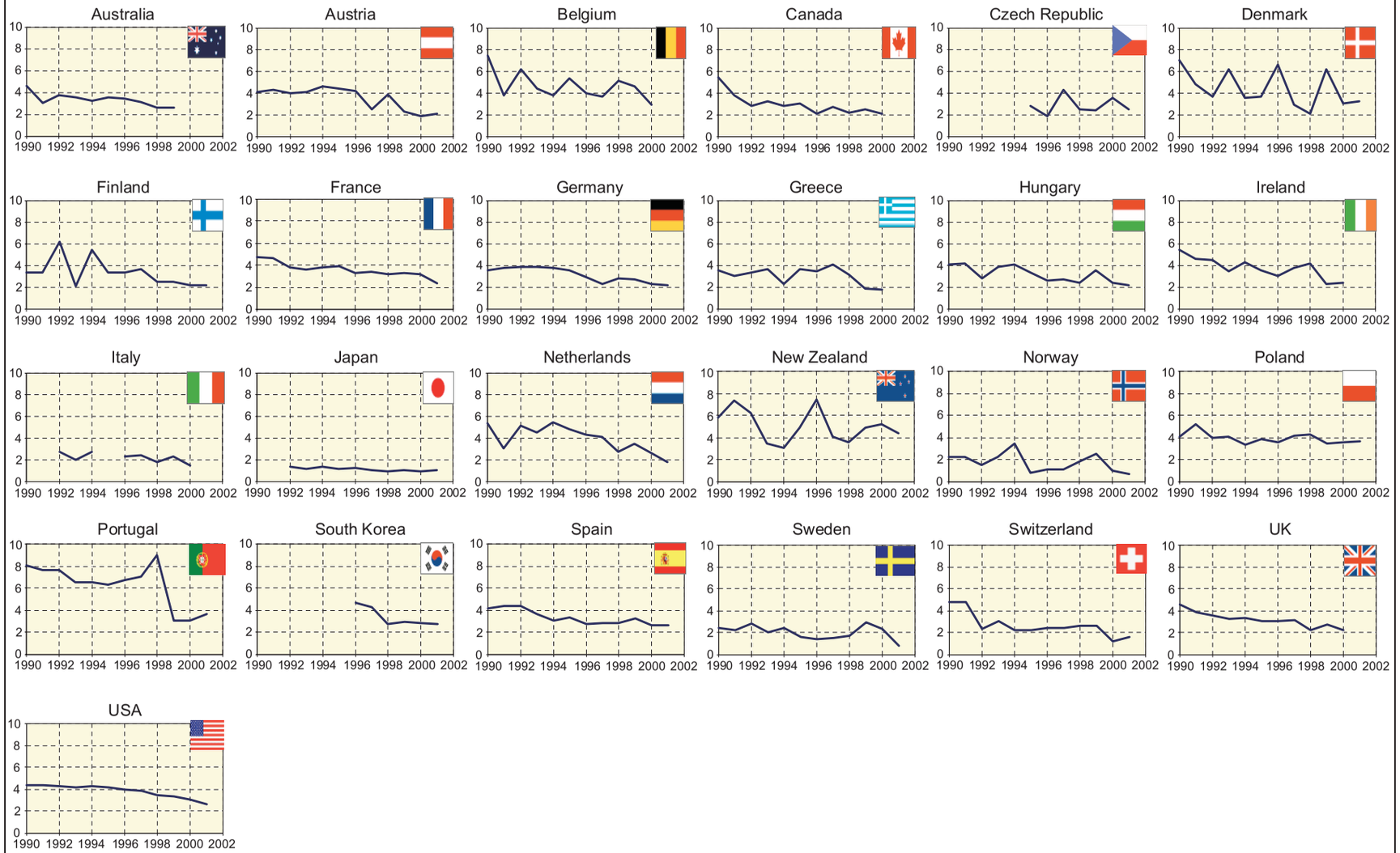


Figure 13: Traffic deaths per 100,000 population of 6-9 year olds – Passengers in 1990–2001
Australia
Austria
Belgium
Canada
Czech Republic
Denmark
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Japan
Netherlands
New Zealand
Norway
Poland
Portugal
South Korea
Spain
Sweden
Switzerland
UK
USA
0 1 2 3 4
1990 1992 1994 1996 1998 2000 2002

Figure 14: Traffic deaths per 100,000 population of 10-14 year olds – All fatalities in 1990–2001



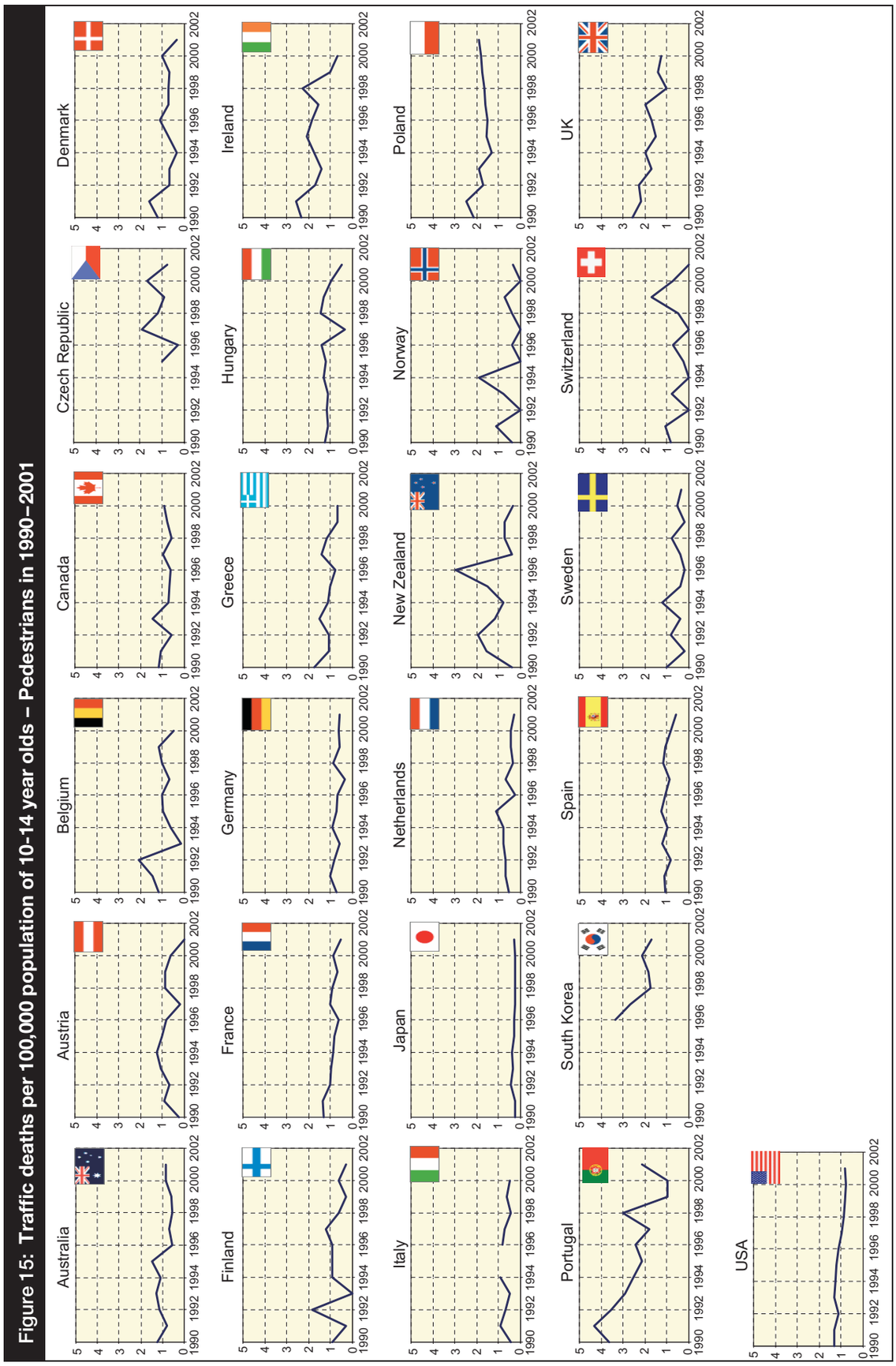
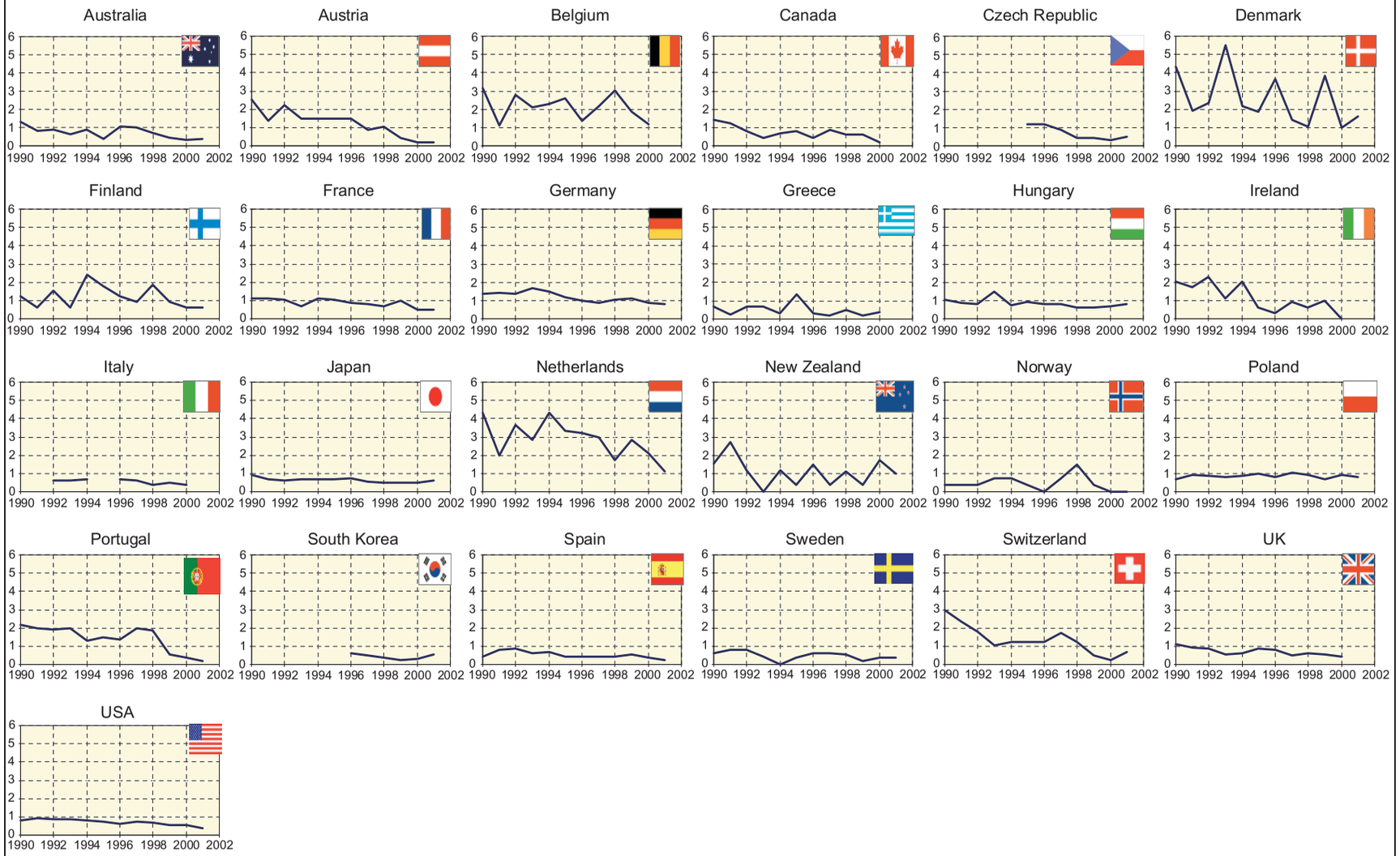


Figure 15: Traffic deaths per 100,000 population of 10-14 year olds – Pedestrians in 1990–2001
Australia
Austria
Belgium
Canada
Czech Republic
Denmark
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Japan
Netherlands
New Zealand
Norway
Poland
Portugal
South Korea
Spain
Sweden
Switzerland
UK
USA

Figure 16: Traffic deaths per 100,000 population of 10-14 year olds – Bicyclists in 1990–2001



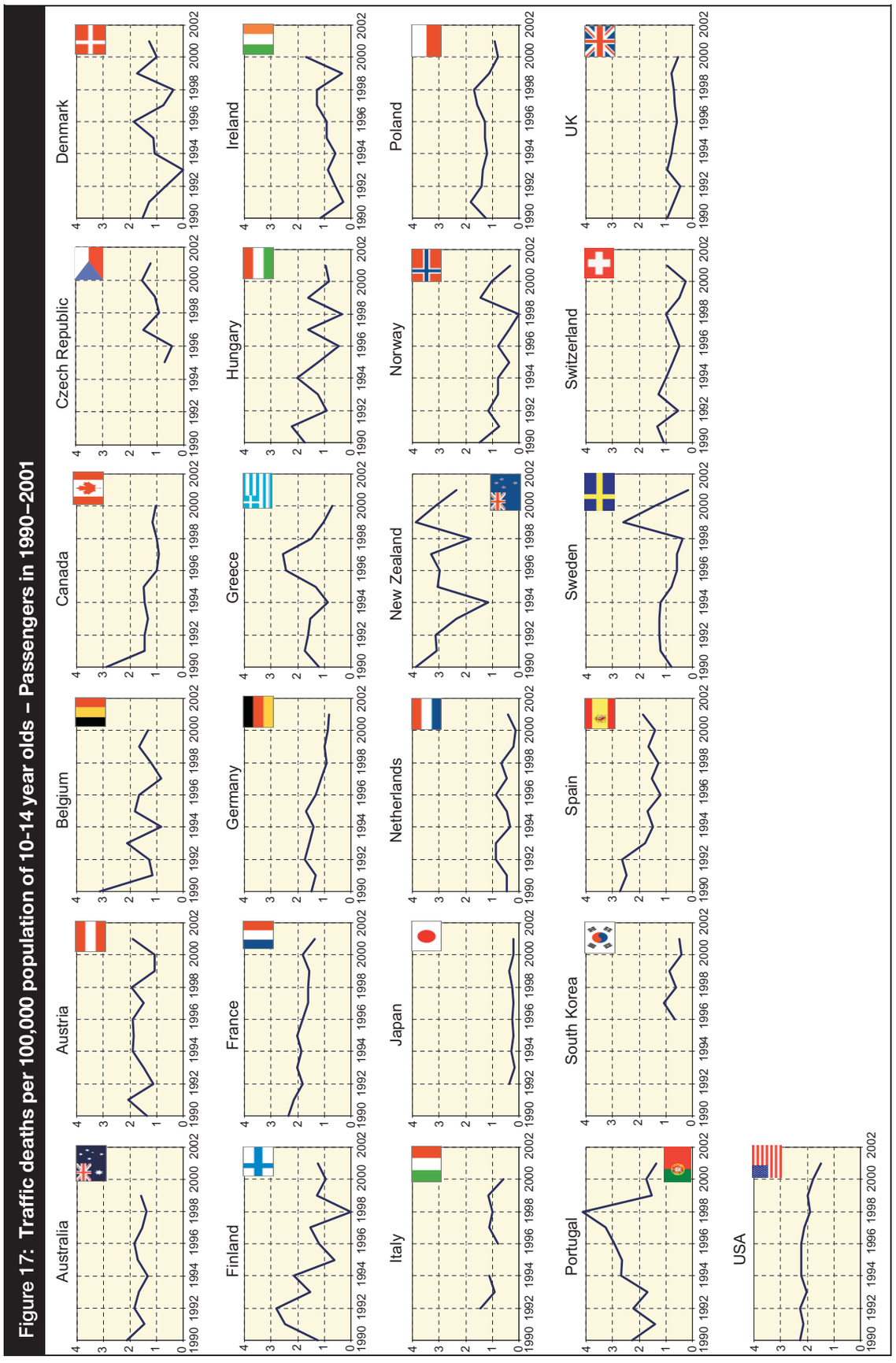
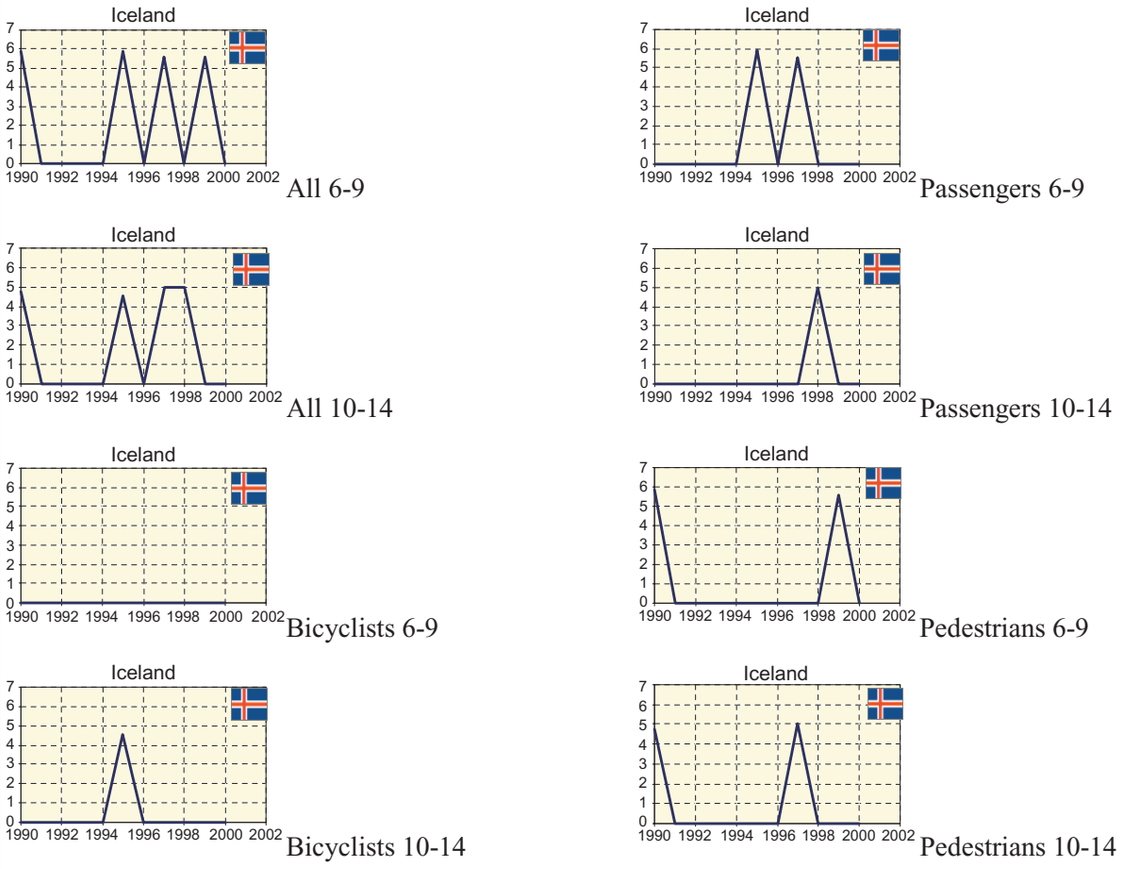


Figure 17: Traffic deaths per 100,000 population of 10-14 year olds – Passengers in 1990–2001
Australia
Austria
Belgium
Canada
Czech Republic
Denmark
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Japan
Netherlands
New Zealand
Norway
Poland
Portugal
South Korea
Spain
Sweden
Switzerland
UK
USA
0 1 2 3 4
1990 1992 1994 1996 1998 2000 2002

Figure 18: Traffic deaths per 100,000 population in Iceland in 1990–2001



3.5. All fatalities

3.5.1. All children aged 0-14 years

There is a group of eight countries whose fatality rate in 1981 was similar at about 6 to 8 child fatalities per 100,000 children aged 0-14 years. These are Austria, Belgium, Denmark, Germany, Ireland, The Netherlands, Switzerland and the USA. In each case they have improved at a similar rate and decreased to about 2 fatalities per 100,000 children by 2000/2001. Those countries starting from a lower rate of about 4 fatalities per 100,000 children have made progress but at a lesser rate. These eight countries include Finland, France, Greece, Italy, Norway, Spain, Sweden and the UK where the fall is to between 1 and 3 fatalities per 100,000 children.

3.5.2. Children aged 6-9 and 10-14 years

In 11 of the countries between 1990 and 2001 there has been a larger improvement in the 6-9 year old age range[3] than in the 10-14 year age range. In Ireland, The

3 Australia, Austria, Belgium, Denmark, Germany, Hungary, Japan, New Zealand, Portugal, Spain and Sweden.

Netherlands, Switzerland and the UK the older children showed a bigger improvement. In the remaining countries the picture is less clear.

3.6. Pedestrians

3.6.1. All children aged 0-14 years

There is a group of six countries where the fatality rate for children aged 0-14 years was 3 or more per 100,000 children in 1990. These are Belgium, Germany, Ireland, Portugal, Switzerland, and the UK. With the exception of Portugal, which is just above, they have all improved over the decade to around one fatality per 100,000 children.

Interpretation of pedestrian safety has similar difficulties to that of bicycling as we do not have much information on how much children walk in each country. We know, for example, that children in the USA walk less than many of their European counterparts, and we know that in Sweden and The Netherlands, which are the safest countries for children as pedestrians, that they walk rather more.

3.6.2. Children aged 6-9 and 10-14 years

There is quite a large variability in the slope of the graphs due to relatively small numbers. However, with the exception of Australia, Denmark, Hungary, Poland, Portugal and the UK, the lines are quite flat for the 6-9 year olds with Portugal and the UK being the exceptions for the 10-14 year olds. Interpretation is again difficult because we know that with the rise in car ownership and use in many countries, the amount that children are walking is declining. The large and rapid reduction in Portugal is interesting because there has been less systematic national improvement in infrastructure or training over the decade, but there has been increasing prosperity after joining the EU. It may be hypothesised in the absence of any supporting data that much of this apparent improvement in safety is due to less walking. We do have exposure data for the UK that shows a decline in walking but this is coupled with a real improvement in safety for those that do walk. This will be the focus of a separate report to be published by the UK Department for Transport.

3.7. Bicyclists

3.7.1. All children aged 0-14 years

The number of bicyclist fatalities in each country is relatively small with the year-to-year variability being high. The fastest improvement in safety for bicyclists is in Denmark, where the rate decreased between 1981 and 2001 from three to below one fatality per 100,000 children. Finland, Germany, The Netherlands, Norway and Switzerland have also made impressive improvements over this period. Interestingly, these are some of the countries where bicycling has been encouraged. The difficulty in interpreting this group of graphs is the lack of knowledge about the amount of

bicycling per child. In the absence of this information, countries such as Greece, France, Hungary, Ireland, Italy, Japan, Poland, Portugal, Spain, the UK and the USA appear to have been relatively safe for bicyclists over this period. If these are contrasted with Sweden where there is known to be a substantial amount of bicycling, one might conclude that, for example, the UK or Spain where there is less bicycling, and Sweden where there is more, were equally safe places for this mode. Such conclusions may not be inferred from these data in the absence of exposure information. How much of the improvement in safety in any of the countries is due to a reduction in the amount of bicycling by children, and how much is a real effect is unknown.

3.7.2. Children aged 6-9 and 10-14 years

There are too few fatalities to children aged 6-9 years to be able to interpret this series of graphs. We have no feel at all for the magnitude of changes in the numbers of 6-9 year olds bicycling in these countries. The graphs for the 10-14 year olds are a bit more informative with large reductions in the fatality rate being observed in Denmark, The Netherlands and Switzerland, three countries where improvements in infrastructure and training have taken place over the decade under study.

3.8. Passengers

3.8.1. All children aged 0-14 years

The improvement in fatality rates for children as passengers across this group of countries are very modest and variable. It is here we may get some clues as to what is happening to bicycle and pedestrian safety. In Ireland and Portugal, for example, there is a rising trend in fatalities per 100,000 children. Greece showed an upward trend until about 1995, Spain did until about 1990, and Hungary's trend increased between 1985 and about 1992 possibly representing an increase in car use after its independence. However, without reliable data about exposure we may only speculate.

3.8.2. Children aged 6-9 and 10-14 years

The fatality rate for 6-9 and 10-14 year old passengers show a degree of variability which makes it difficult to interpret the graphs. For the younger group there have been improvements in six countries (Australia, Austria, Canada, Hungary, New Zealand, and Spain) and for the older group in Canada, Finland, France, and Spain. However, there are rises in Ireland, Greece and Portugal (until about 1999 after which there is an improvement).

3.9. General comments

Taken at face value these graphs show improvements in the rate per 100,000 children fatally injured in road traffic accidents across the OECD countries for which we have data. However, we know that the exposure of children as pedestrians, bicyclists and passengers across the countries is not homogeneous and this complicates the task of interpretation. The economic prosperity of countries is strongly related to car ownership and use, and this in turn often leads to a reduction in the amount walked and bicycled. Again this effect may not be continued because several countries, notably The Netherlands, Sweden, Denmark, Finland, Germany, Switzerland and the UK, have been, or are starting to, actively encourage walking and discourage non-essential car trips in the interest of the environment and children's independent mobility.

Until such exposure information, or reliable proxies, are available, international comparisons will be difficult and the true rate of progress towards traffic safety for children be masked by other factors.

A case study exploration of the relationship between changes in exposure and road traffic fatalities for children in the UK will be conducted as part of a separate report to be published by the UK Department for Transport.

4. SOCIO-ECONOMIC AND DEMOGRAPHIC INDICATORS AND CORRELATION WITH CHILD ROAD TRAFFIC FATALITY RATE

Chapter coverage

Data availability

Economic indicators

Correlation between GDP per capita and child road traffic fatality rate

Correlation between child poverty index and child road traffic fatality rate

Correlation between Gini coefficient and child road traffic fatality rate

Correlation between percentage urban population and child road traffic fatality rate

Correlation between population density and child road traffic fatality rate

Correlation between percentage lone parent families and child road traffic fatality rate

Correlation between cars per capita and child traffic fatality rate

High risk groups and intervention policy

Chapter summary

Research has shown that inequalities in child road traffic accident rates are highly correlated with socio-economic factors and demographic factors.

To examine whether there was any correlation between a country's overall socio-economic and demographic profile and overall safety performance a number of macro indicators of socio-economic and demographic factors were plotted against overall child fatality rate.

This information was gathered for all OECD countries (where available) whether or not they had contributed to the survey.

No clear strong correlations were found between macro socio-economic and demographic indicators and overall fatality rate. It is hard to demonstrate a clear correlation between macro socio-economic indicators and child traffic safety performance when making international comparisons. Although all of the correlations are relatively weak, the strongest ones are those that are associated with wealth and economic inequality in each country.

4.1. Introduction

The survey provides information on the extent and range of intervention approaches within each country. In the wider context there are other socio-economic factors that are likely to have some influence on children's traffic safety. Research has shown that inequalities in child road traffic accident rates are highly correlated with socio-economic factors and demographic factors (for example, Christie 1995). To examine whether there was any correlation between a country's overall socio-economic and demographic profile and overall safety performance, a number of macro indicators of socio-economic and demographic factors were plotted against overall child fatality rate. This information was gathered for all OECD countries (where available) whether or not they had contributed to the survey. These factors and their definition are shown below.

1) Economic indicators

Three measures of economic status were used:

- Gross Domestic Product (GDP) per capita (exchange rate US dollar). Data were extracted from the website: http://www.oecd.org/dataoecd/48/5/2371372.pdf
- Child poverty index is the percentage of children living in households with income below 50% of the national median. Data were extracted from the UNICEF website: http://www.unicef-icdc.org/
- The Gini coefficient:[4] A measure of income distribution within a country. A higher value of Gini coefficient represents lower equality of income distribution. Data were extracted from the United Nations website: http://hdr.undp.org/reports/global/2001/en/

These measures were used as indicators of wealth and inequalities.

2) Demographic indicators

- Percentage of population living in urban areas. Data were extracted from the World Development Indicators 2000 (World Bank).
- Population density per square kilometre. Data were extracted from the CIA World Factbook website: http://www.cia.gov/

These indicators were used as indicators of the overall geographic distribution of the population within a country.

4 The ***Gini coefficient*** was developed by the Italian statistician Corrado Gini (1884-1965). It is a measure of the income inequality in a society. The Gini coefficient is a number between 0 and 100, where 0 means perfect equality (everyone has the same income) and 100 means perfect inequality (one person has all the income, everyone else earns nothing).

3) Social indicators

- Percentage of lone parent families. Data were extracted from the OECD website: http://www.oecd.org/dataoecd/40/26/2492149.xls

This measure was used as an indicator of social structure.

4) Exposure indicators

- Cars per capita. Data were extracted from the IRTAD website: http://www.bast.de/htdocs/fachthemen/irtad/

4.2. Data availability

Not all OECD countries provide data for these indicators, so these data may be prone to under reporting bias. Table 2 shows which countries have information on these indicators.

The rank order of OECD countries for each of these variables is shown in the Table 3.

Table 2: Socio-economic and demographic indictors data availability for OECD countries

IRTAD data	Population density	% lone parent families	% urban population	Gini coefficient	Cars per capita	GDP per capita	Child poverty
Australia	✓	✓	✓	✓	✓	✓	✓
Austria	✓	✓	✓	✓	✓	✓	No
Belgium	✓	✓	✓	✓	✓	✓	✓
Canada	✓	✓	✓	✓	✓	✓	✓
Czech R	✓	No	✓	✓	✓	✓	✓
Denmark	✓	✓	✓	✓	✓	✓	✓
Finland	✓	✓	✓	✓	✓	✓	✓
France	✓	✓	✓	✓	✓	✓	✓
Germany	✓	✓	✓	✓	✓	✓	✓
Hungary	✓	No	✓	✓	✓	✓	✓
Iceland	✓	No	✓	No	✓	✓	No
Ireland	✓	✓	✓	✓	✓	✓	✓
Italy	✓	✓	✓	✓	✓	✓	✓
Japan	✓	✓	✓	✓	✓	✓	✓
Netherlands	✓	✓	✓	✓	✓	✓	✓
New Zealand	✓	✓	✓	No	✓	✓	No
Norway	✓	✓	✓	✓	✓	✓	✓
Poland	✓	No	No	✓	✓	✓	✓
Portugal	✓	✓	✓	✓	✓	✓	No
South Korea	✓	✓	No	✓	✓	✓	No
Spain	✓	✓	✓	✓	✓	✓	✓
Sweden	✓	✓	✓	✓	✓	✓	✓
Switzerland	✓	✓	✓	✓	✓	✓	No
Turkey	✓	No	✓	✓	✓	✓	✓
UK	✓	✓	✓	✓	✓	✓	✓
USA	✓	✓	✓	✓	✓	✓	✓

Table 3: Rank order of countries against each socio-economic and demographic indicator

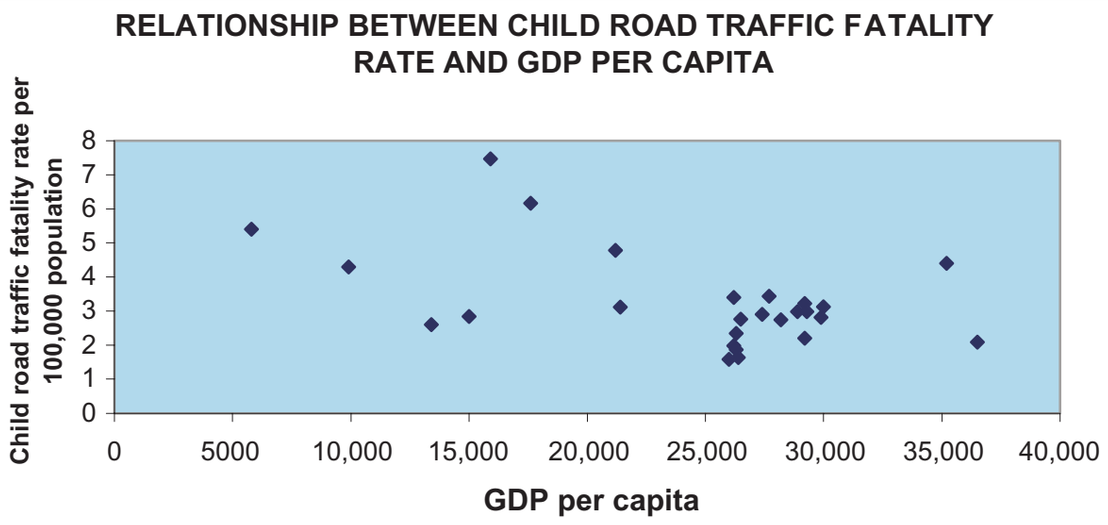
Country	% urban population	Country	% lone parent families	Country	Cars per capita	Country	% of children living in poverty	Country	GDP per capita	Country	Gini	Country	Population density
Belgium	97	Canada	11	Portugal	0.84	Sweden	2.6	Norway	36500	Austria	23.1	South Korea	490.7
Iceland	92	UK	11	USA	0.79	Norway	3.9	USA	35200	Hungary	24.4	Netherlands	386.9
Australia	91	Finland	9	New Zealand	0.68	Finland	4.3	Ireland	30000	Denmark	24.7	Belgium	336.8
Netherlands	89	Ireland	9	Italy	0.66	Belgium	4.4	Switzerland	29900	Japan	24.9	Japan	336.1
UK	89	New Zealand	9	Iceland	0.64	Denmark	5.1	Iceland	29300	Belgium	25	UK	244.2
Germany	88	Norway	9	Switzerland	0.64	Czech Republic	5.9	Denmark	29200	Sweden	25	Germany	233.2
New Zealand	86	South Korea	9	Austria	0.63	Netherlands	7.7	Netherlands	29200	Czech Republic	25.4	Italy	191.6
Denmark	85	United States	9	Germany	0.63	France	7.9	Canada	28900	Finland	25.6	Switzerland	176.8
Sweden	83	Australia	8	Australia	0.62	Hungary	10.3	Austria	28200	Norway	25.8	Czech R	130.1
Canada	79	Austria	8	Japan	0.62	Germany	10.7	Belgium	27700	Italy	27.3	Denmark	124.6
Japan	79	Portugal	8	Spain	0.59	Japan	12.2	Australia	27400	Germany	30	Poland	123.5
Spain	78	Belgium	7	Canada	0.58	Spain	12.3	Finland	26500	Canada	31.5	France	109.3
USA	77	France	7	France	0.58	Australia	12.6	Japan	26400	Poland	31.6	Portugal	109.1
France	75	Italy	7	Norway	0.57	Poland	15.4	Germany	26300	South Korea	31.6	Hungary	108.3
Norway	75	Denmark	6	Belgium	0.56	Canada	15.5	UK	26300	Spain	32.5	Austria	97.4
Czech R	74	Spain	6	Sweden	0.53	Ireland	16.8	France	26200	Netherlands	32.6	Turkey	86.2
Austria	67	Switzerland	6	Netherlands	0.50	Turkey	19.7	Italy	26200	France	32.7	Spain	79.4
Italy	67	Germany	5	UK	0.49	UK	19.8	Sweden	26000	Switzerland	33.1	Ireland	55.3
Switzerland	67	Japan	5	Finland	0.48	Italy	20.5	Spain	21400	Australia	35.2	USA	29.1
Turkey	66	Netherlands	5	Czech R	0.46	USA	22.4	New Zealand	21200	Portugal	35.6	Sweden	19.7
Hungary	64	Sweden	3	Denmark	0.45			Portugal	17600	Ireland	35.9	Finland	15.4
Portugal	64			Ireland	0.44			South Korea	15900	UK	36.1	New Zealand	14.5
Finland	59			Hungary	0.27			Czech R	15000	USA	40.8	Norway	14
Ireland	59			Turkey	0.14			Hungary	13400	Turkey	41.5	Canada	3.2
								Poland	9900			Iceland	2.7
								Turkey	5800			Australia	2.5

4.3. Economic indicators

4.3.1. Correlation between GDP per capita and child road traffic fatality rate

There was a moderate negative correlation between GDP per capita and child road traffic fatality rate (R = 0.51) (see Figure 19).

Figure 19: Correlation between GDP per capita and child road traffic fatality rate

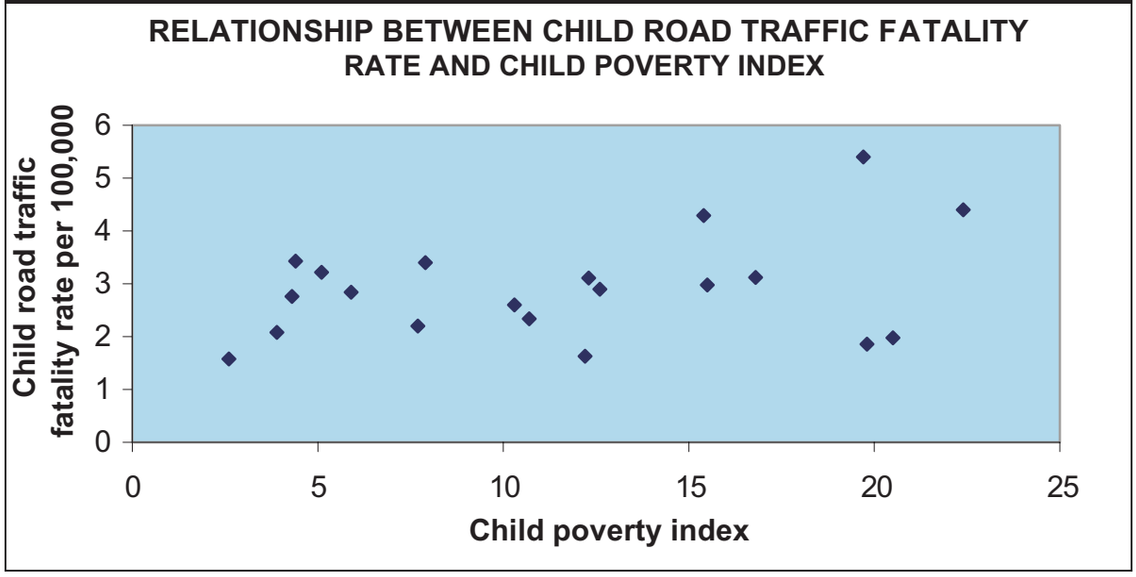


4.3.2. Correlation between child poverty index and child road traffic fatality rate

There was a weak positive correlation (R = 0.36) between the child poverty index and child road traffic fatality rate (see Figure 20).

No data for Austria, Iceland, South Korea, New Zealand, Portugal, Slovakia, Switzerland.

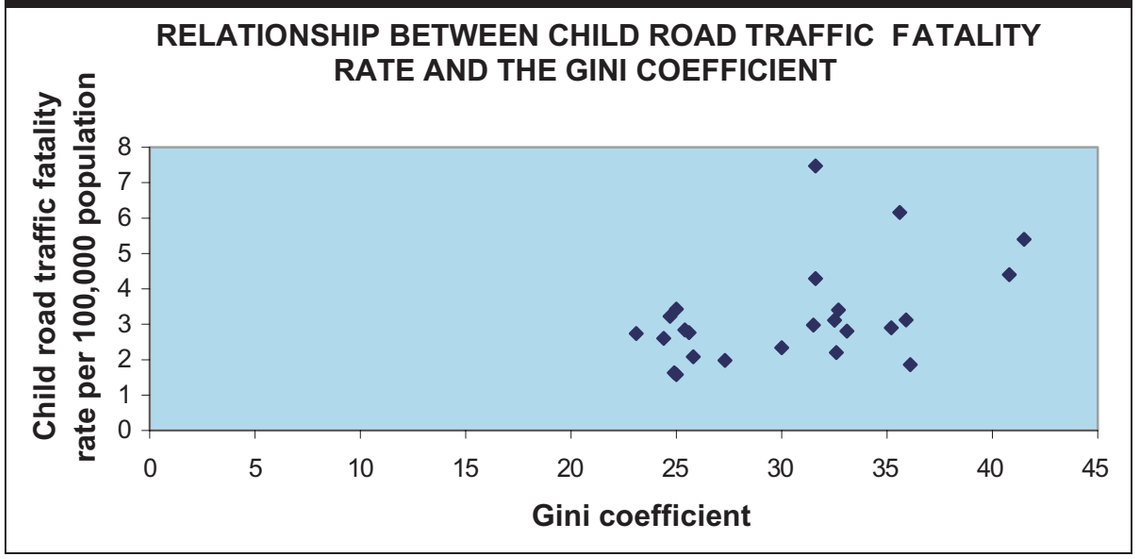
Figure 20: Correlation between child poverty index and child road traffic fatality rate



4.3.3. *Correlation between Gini coefficient and child road traffic fatality rate*

There was a moderate positive correlation (R = 0.47) between the Gini coefficient and child road traffic fatality rate (see Figure 21).

Figure 21: Correlation between Gini coefficient and child road traffic fatality rate



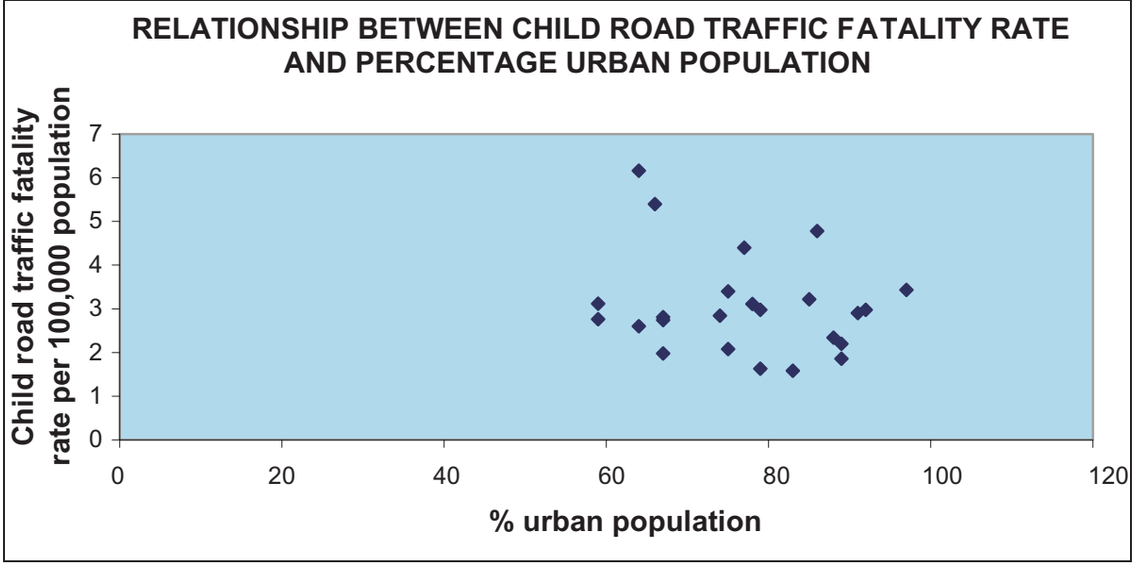
No data for Iceland, Luxembourg, New Zealand.

4.4. Demographic indicators

4.4.1. Correlation between percentage urban population and child road traffic fatality rate

There was no clear correlation (R = 0.21) between the percentage of the population that lived in urban areas and child road traffic fatality rate (see Figure 22).

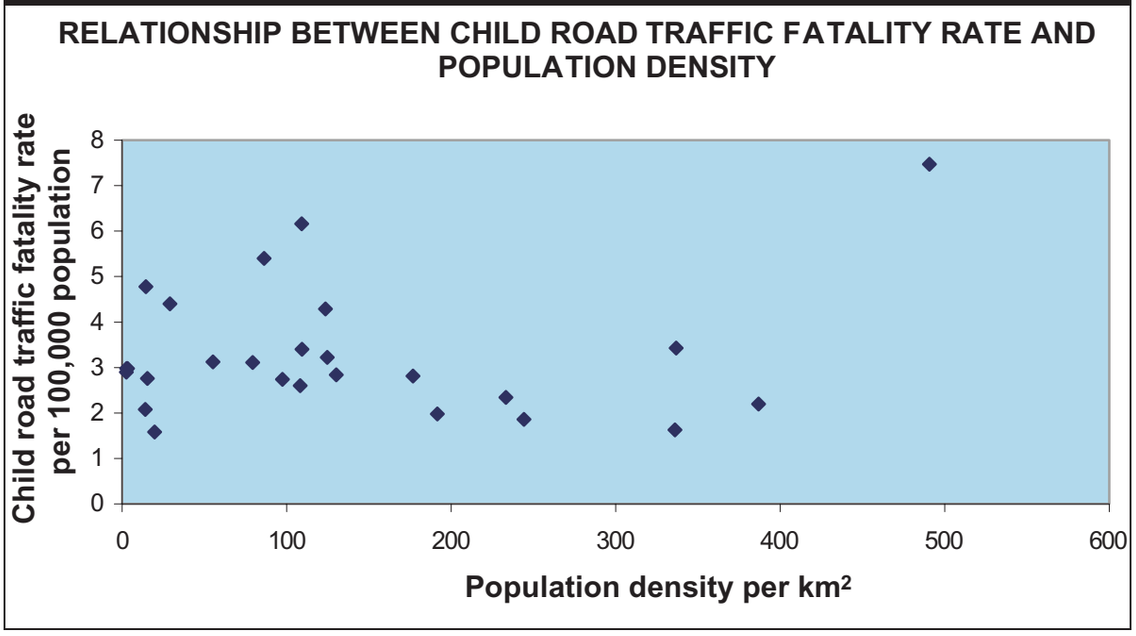
Figure 22: Correlation between percentage urban population and child road traffic fatality rate



4.4.2. Correlation between population density and child road traffic fatality rate

There was no clear correlation (R = 0.15) between population density and child road traffic fatality rate (see Figure 23).

Figure 23: **Correlation between population density and child road traffic fatality rate**

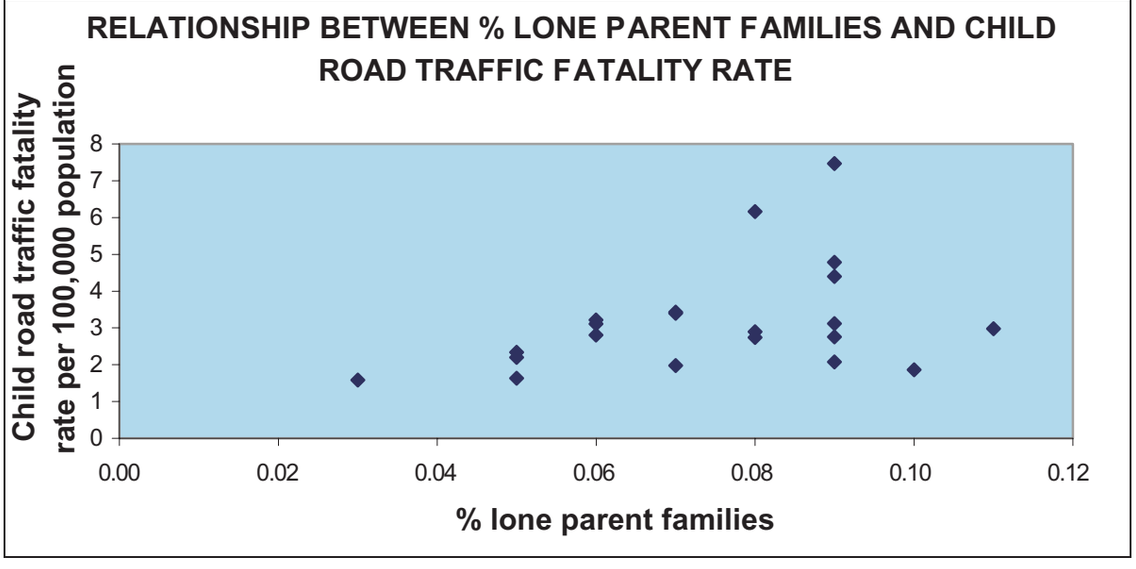


4.5. Social indicators

4.5.1. Correlation between percentage lone parent families and child road traffic fatality rate

There was a weak positive correlation (R = 0.38) between percentage of lone parent families and child road traffic fatality rate (see Figure 24).

Figure 24: **Correlation between % lone parent families and child road traffic fatality rate**



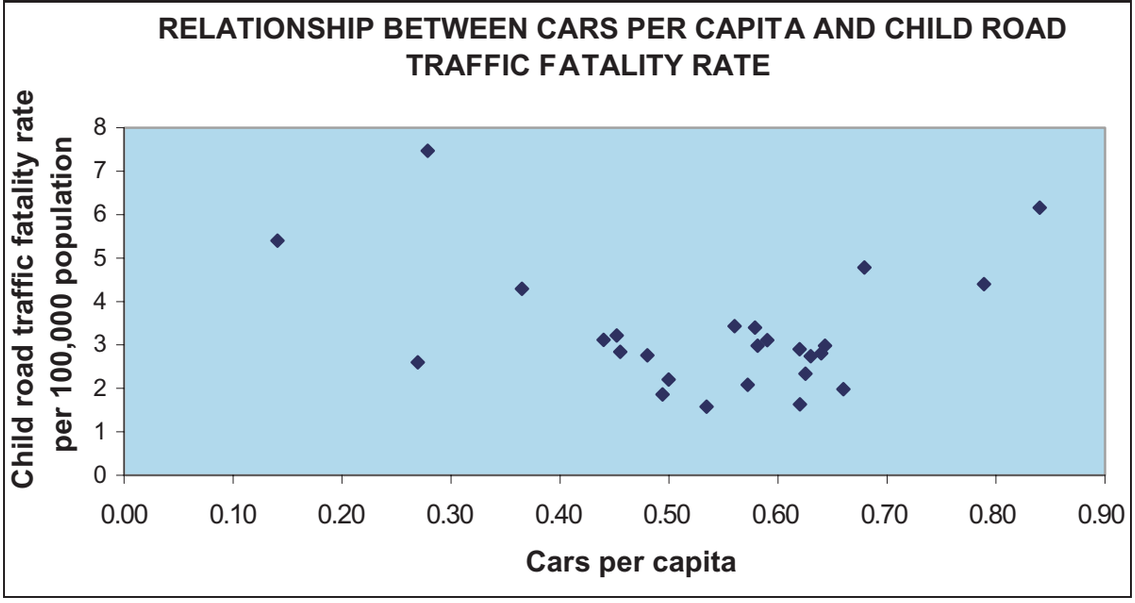
No data for Czech Republic, Hungary, Iceland, Mexico, Poland, Slovakia, Turkey.

4.6. Exposure indicators

4.6.1. Correlation between cars per capita and child traffic fatality rate

There was no clear correlation (R = 0.17) between cars per capita and child road traffic fatality rate (see Figure 25).

Figure 25: Correlation between cars per capita and child traffic fatality rate



4.7. Summary of findings

No clear strong correlations were found between macro socio-economic and demographic indicators and overall fatality rate. The correlation coefficients are shown in order of size in the Table 4 below. It is hard to demonstrate a clear correlation between macro socio-economic indicators and child traffic safety performance when making international comparisons. Although all of the correlations are relatively weak, the strongest ones are those that are associated with wealth and economic inequality in each country.

Table 4: Summary of correlation coefficients for socio-economic and demographic indicators

Indicator	Correlation with overall fatality rate
GDP per capita	0.51
Gini coefficient	0.47
Percentage of lone parent families	0.38
Child poverty index	0.36
Percentage urban population	0.21
Population density	0.18
Cars per capita	0.17

5. SURVEY FINDINGS

Chapter coverage

Criteria for selection of top performers with shared characteristics

Operational definitions

Presentation of data

Response rates

Chapter summary

The survey was conducted among the 30 countries of the OECD.

A complete or partial response was received from 21 countries representing a response rate of 70%. Countries with incomplete responses are Denmark (Travel), Hungary (Bicyclists, Travel), Portugal (Bicyclists, Pedestrians, Policy, Travel).

In the league tables several countries have similar child fatality rates making it difficult to partition the countries into good, moderate and poor performing groups. Taking the top five countries (i.e. 25%) with the lowest child fatality rates as a group provides one way of looking at top performers compared to countries performing less well.

The five countries with the lowest child fatality rate across all modes that participated in the survey were: Sweden, the UK, Norway, The Netherlands and Germany.

The five countries with the lowest child fatality rate for pedestrians were: Sweden, The Netherlands, Finland, Germany and Denmark.

The five countries with the lowest child fatality rate for vehicle occupants were: Switzerland, the UK, The Netherlands, Sweden and Norway.

For reasons discussed in Chapter 6 we do not feel it is appropriate to identify top performers from population based fatality rates for child bicyclists.

5.1. Introduction

It is difficult to carry out quantitative analysis on a small sample of countries. However, presenting the data in a visual and graphic way can help identify patterns in responses that can help identify good practice.

The data in this report are presented in a similar way to those of the Innocenti Report on children's traffic safety. The results are shown in league tables with the best performers shown in ascending order, with those with the lowest fatality rates appearing at the top of the table. These rates are based on fatalities per 100,000 head of population. The league tables are based on IRTAD fatality data from at least 3 years between 1996-2000 with the exception of Turkey where the rate is based on the year 2000 only.

Consideration was given to whether the league tables should be based on the overall rate or mode specific rates. As mode specific questionnaires had been used it was agreed to use mode specific fatality rates. In addition, the overall rate hides significant variation in league position when compared to league tables based on fatality rates by mode. For example, Table 5 below shows how the position of the five top overall performers changes, in some instances quite radically, when fatality rates by mode are used. Part of this variation is likely to be attributable to the different levels of walking, bicycling and vehicle occupancy in these countries – that is the relative exposure. This report contains a chapter on travel, exposure and risk (Chapter 6) that shows that taking exposure into account can provide different messages about the safety performance of each country in a way that cannot be achieved by using rates per head of population. It is noted that, by using rates per head of population, a value is given to the overall incidence of fatalities irrespective of how risky an activity is in different countries. Chapter 6 acts a balance to this approach and shows that the paucity of exposure data for many countries means that the rate per head of population, despite its limitations, is the only standard measure at present.

Table 5: **Position of overall top performers in each fatality league and changes from overall position when individual modes are taken into account***

Country	Overall	Pedestrian	Car passenger
Sweden	**1**	1	4
UK	**2**	12	2
Norway	**3**	7	5
Netherlands	**4**	2	3
Germany	**5**	4	8

* For reasons discussed in Chapter 6 we do not feel it is appropriate to identify top performers from population based fatality rates for child bicyclists.

As the Policy and Travel questionnaires address general strategic issues, the overall fatality rate was used for these tables. Therefore, different fatality rates have been used in this report as appropriate.

Each country's response to a question is shown against its position in the league table.

An important point to consider in viewing the league tables is that the survey is looking at ***current*** policies and practice. In most countries both policy and practice are evolving, sometimes rapidly.

The survey findings are presented by showing the shared characteristics of the top performers and by identifying which of these characteristics distinguish them from those countries performing less well according to criteria described below.

5.2. Criteria for selection of top performers with shared characteristics

In the league tables several countries have similar child fatality rates making it difficult to partition the countries into good, moderate and poor performing groups. Taking the top five countries (i.e. 25%) with the lowest child fatality rates as a group provides one way of looking at top performers compared to countries performing less well.

The five countries with the lowest child fatality rate across all modes that participated in the survey were: Sweden, the UK, Norway, The Netherlands and Germany.

The five countries with the lowest child fatality rate for pedestrians were: Sweden, The Netherlands, Finland, Germany and Denmark.

The five countries with the lowest child fatality rate for vehicle occupants were: Switzerland, the UK, The Netherlands, Sweden and Norway.

For reasons discussed in Chapter 6 we do not feel it is appropriate to identify top performers from population based fatality rates for child bicyclists.

5.3. Operational definitions

The terms "shared characteristic" and "distinguishing characteristic" are operationally defined in the following ways.

A "shared characteristic" is one that is shared by at least three of the five top performers in any of the league tables.

A “distinguishing characteristic” is one that is a shared characteristic of the top performers and is not shared by the majority (over half) of the remaining countries that are performing less well.

5.4. Presentation of data

Each table has a key to identify the response level for each country to a given question. The full ranges of possible responses are also shown. Each table by mode shows the fatality rate by mode and this rate as a proportion of the overall fatality rate. In Chapters 6 and 10 each table is based on the overall fatality rate.

5.5. Response rates

The survey was conducted among the 30 countries of the OECD. Of these countries a complete or partial response was received from 21 countries representing a response rate of 70%. Countries with incomplete responses are Denmark (Travel), Hungary (Bicyclists, Travel), Portugal (Bicyclists, Pedestrians, Policy, Travel) (see Table 6). The absence of the contribution of these countries may have influenced the contrasts between countries. Table 7 shows the fatality rates across all modes, for pedestrians, bicyclists and vehicle occupants in ascending order for the countries who participated in the survey and those who did not participate (identified in the shaded cells). It can be seen from Table 7 that the countries that did participate provide a good range of the overall best, moderate and poor performers.

Table 6: Countries responding to each questionnaire

Country	Bicyclists	Pedestrians	Policy	Travel	Vehicle occupants
Australia	Y	Y	Y	Y	Y
Austria	No response				
Belgium	No response				
Canada	Y	Y	Y	Y	Y
Czech republic	Y	Y	Y	Y	Y
Denmark	Y	Y	Y	N	Y
Finland	Y	Y	Y	Y	Y
France	Y	Y	Y	Y	Y
Germany	Y	Y	Y	Y	Y
Greece	No response				
Hungary	N	Y	Y	N	Y
Iceland	Y	Y	Y	Y	Y
Ireland	No response				
Italy	No response				
Japan	Declined				
Luxembourg	Declined				
Mexico	No response				
Netherlands	Y	Y	Y	Y	Y
New Zealand	Y	Y	Y	Y	Y
Norway	Y	Y	Y	Y	Y
Poland	Y	Y	Y	Y	Y
Portugal	N	N	N	N	Y
South Korea	Y	Y	Y	Y	Y
Slovak republic	No response				
Spain	Y	Y	Y	Y	Y
Sweden	Y	Y	Y	Y	Y
Switzerland	Y	Y	Y	Y	Y
Turkey	Y	Y	Y	Y	Y
UK	Y	Y	Y	Y	Y
USA	Y	Y	Y	Y	Y

Y = YES QUESTIONNAIRE RETURNED
N = NO QUESTIONNAIRE RETURNED

Table 7: **League tables based on fatality rates per 100,000 child population for all modes, pedestrians, bicyclists and vehicle occupants showing those countries that did not participate in the survey**

Country	All modes league	Country	Pedestrian league	Country	Bicyclist league	Country	Car occupant league
Sweden	1.58	Sweden	0.35	*Turkey	0.18	Japan	0.37
Japan	1.68	Netherlands	0.44	Spain	0.19	Switzerland	0.47
United Kingdom	1.86	Italy	0.53	Norway	0.2	United Kingdom	0.48
Italy	1.97	Finland	0.67	Sweden	0.22	Netherlands	0.51
Norway	2.08	Germany	0.69	Italy	0.25	Sweden	0.76
Netherlands	2.2	Denmark	0.72	United Kingdom	0.28	Norway	0.78
Germany	2.34	Japan	0.75	Iceland	0.31	Hungary	0.89
Hungary	2.6	Austria	0.75	Korea	0.31	Italy	0.9
Austria	2.74	Canada	0.77	Canada	0.35	Finland	0.94
Finland	2.76	Belgium	0.82	Hungary	0.35	Germany	1.01
Switzerland	2.81	Norway	0.83	Austria	0.35	Ireland	1.05
Czech Republic	2.84	France	0.83	United States	0.36	Czech Republic	1.06
Australia	2.9	Australia	0.86	Australia	0.39	Canada	1.09
Canada	2.98	Iceland	0.92	Japan	0.4	South Korea	1.1
Iceland	2.98	United States	0.96	France	0.42	Denmark	1.18
Spain	3.11	Spain	0.97	Czech Republic	0.44	Poland	1.29
Ireland	3.15	United Kingdom	1.02	Portugal	0.48	Austria	1.29
Denmark	3.22	Czech Republic	1.2	Germany	0.54	Spain	1.48
France	3.4	*Turkey	1.21	Poland	0.55	Belgium	1.49
Belgium	3.47	Hungary	1.21	Ireland	0.55	Iceland	1.54
Poland	4.29	New Zealand	1.22	Switzerland	0.56	Australia	1.69
United States	4.4	Ireland	1.29	New Zealand	0.69	France	1.77
New Zealand	4.78	Switzerland	1.33	Finland	0.73	United States	1.84
Turkey	5.42	Poland	2.14	Belgium	0.86	Portugal	2.46
Portugal	6.12	Portugal	2.62	Denmark	0.93	New Zealand	2.74
South Korea	7.47	South Korea	5.41	Netherlands	1.09	*Turkey	4.03

* Based on one year only.

Non participant

6. CHILDREN'S TRAVEL, EXPOSURE AND RISK

Chapter coverage

Introduction

Children's travel survey

Availability of children's travel data

Summary of children's travel data used for ensuing analysis

Adult travel data

Variation in travel patterns between countries

Role of car ownership in explaining travel patterns

Travel changes with age

Modifying fatality rates by exposure (for 10-14 year olds)

Fatality rates and kilometres travelled for 10-14 year old pedestrians

Fatality rates and kilometres travelled for 10-14 year old bicyclists

Fatality rates and kilometres travelled for 10-14 year old car occupants

Fatality rates and trip numbers for 10-14 year old pedestrians

Fatality rates and trip numbers for 10-14 year old bicyclists

Measuring exposure

Whether children's travel is accompanied

National concerns about children's travel

Children's travel initiatives

Background details of the data on children's travel

Base data used for exposure analysis

Chapter summary

Having quantitative information about children's travel is critical to making assessments about children's safety and the relative risks that they face. However, although many countries do collect children's travel data, it is often not produced

in a standardised form that facilitates international comparisons, and suffers from various other limitations. The data that were available show:

- There is a large variation in how children travel in different countries, and the amount of walking, bicycling or public transport use is not straightforwardly linked to levels of car ownership.
- As children get older, an increasing proportion of their travel is undertaken independently—reflected in increasing bicycling and use of public transport.
- For children walking or travelling as a car occupant, fatality rates per unit of travel accentuates the distinction between countries that appear to be performing relatively well or relatively less well in terms of the number of traffic deaths per 100,000 children.
- For children bicycling, consideration of the fatality rate per unit of travel completely alters the assessment of which countries can be considered safe or unsafe. It also suggests that countries with low levels of bicycling are likely to be particularly unsafe for child bicyclists.

From the work, various insights emerge about the best ways to measure children's exposure/travel habits.

Data from the travel survey also shows that, in most countries, 0-5 year-olds are typically accompanied when travelling. However, accompaniment of the 6-9 year-olds is not uniform across all countries and may be a factor in explaining why some countries are relatively safer than others.

Growing car use by children is considered a major issue in two countries, an issue of some importance in 8 countries but only a minor issue in another 8 countries. Most initiatives to address children's travel tend to focus on the school journey.

6.1. Introduction

The usefulness of an analysis based on league tables constructed from fatality rates per head of population is limited. Constructing league tables in this way may be able to indicate the ***incidence*** of fatalities among a population group but it will not be able to indicate the ***risk*** associated with walking, bicycling or travelling in cars in each country because this will depend on how much of this activity occurs in the population group.

Exposure to risk is an extremely important factor in understanding safety. However, in order to construct a league table based on exposure to risk, information is required on the levels of walking, bicycling and car occupancy to provide a denominator to express fatal accidents per unit of exposure. The need for

information on exposure was identified 20 years ago by the OECD (1983) Transport Research – *Traffic Safety of Children* (Paris: OECD).

In order to examine the relationship between exposure and accidents, detailed information on children's travel patterns was sought in the children's travel questionnaire. This chapter describes the data extracted from the questionnaire. It looks at both quantitative and qualitative measures of exposure, and explores the effects of exposure on fatality rates.

6.2. Children's travel survey

The children's travel survey aimed to collect information on travel in order to express fatality rates per unit that children walk, bicycle or travel as a car passenger. The response rate for this questionnaire was 67% (20 out of 30 OECD countries). The countries that participated in the "Children's Travel" survey are shown in Table 8.

Table 8: Countries that participated in the "Children's Travel" survey

Australia	France	New Zealand	Sweden
Canada	Germany	Norway	Switzerland
Czech Republic	Hungary*	Poland	Turkey
Denmark	Iceland	South Korea	UK
Finland	Netherlands	Spain	USA

* Although Hungary provided some travel information, they did not respond directly to the questionnaire.

No response was received from Austria, Belgium, Greece, Italy, Ireland, Japan, Luxembourg, Mexico, Portugal or the Slovak Republic.

Of the 20 countries that responded, 14 collect travel data. For the 13 that provided survey details, further information is given in Section 6.20. The availability of national data about children's travel is displayed graphically in the next section.

6.3. Availability of children's travel data

The question posed on this topic was:

Has your country collected any national data about children's travel?

The available response levels were 'yes' or 'no'. Each country's response is shown in Table 9.

Table 9: Country by overall fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by availability of national travel data for children

Country	Overall rate	National data
Sweden	1.58	Yes
UK	1.86	Yes
Norway	2.08	Yes
Netherlands	2.20	Yes
Germany	2.34	Yes
Hungary	2.60	Yes
Finland	2.76	Yes
Switzerland	2.81	Yes
Czech Republic	2.84	No
Australia	2.90	No
Canada	2.98	For some states
Iceland	2.98	No
Spain	3.11	Yes
Denmark	3.22	Yes
France	3.40	No
Poland	4.29	Yes
USA	4.40	Yes
New Zealand	4.78	Yes
Turkey	5.40	No
South Korea	7.47	No

Many countries collect data on children's travel patterns.

6.4. Summary of children's travel data used for ensuing analysis

Examination of the available data suggested that it was only possible to use comparable data from 10 countries, and that it was necessary to focus on the 10 to 14 age group, as this is the age group for which countries have most similar data. The countries whose data was used are shown in Table 10.

Table 10: Countries with comparable travel data

Denmark	Norway
Germany	Sweden
Hungary	Switzerland
Netherlands	UK
New Zealand	USA

Table 11 provides a summary of the data used in this analysis, and highlights the limitations of the data even for this small group of countries. For example, there is a lack of distance data for walking in New Zealand, a lack of cycle data for the USA, and Denmark only had data about percentage modal shares. The raw data used in the analysis is given in Section 6.21.

Table 11: Summary of data used in the analysis of exposure

Country	Sample age group and size	Newest data	Other survey details
DENMARK	11-15 year olds	1993	Only information on % of trips by different modes.
GERMANY	10-14 year olds (from survey of 3200 children and young people)	1998-99	Data on kilometres but not trip numbers.
HUNGARY	10-14 year olds (from survey of 2041 children aged 0-14 years)	1999	
NEW ZEALAND	10-14 year olds (from survey including 3638 children)	1997	Distance estimates are not available for walking.
NETHERLANDS	12-14 year olds (from survey involving 1681 pupils during their first years at various secondary schools)	1999	
NORWAY	13-14 year olds (582 children surveyed)	2001	Journeys >100km excluded.
SWEDEN	10-14 year olds (from survey including approx 1000 children aged 6-14 years)	1999	(This is the most recent data of suitable quality, although later surveys have been conducted.)
SWITZERLAND	10-14 year olds (from survey including 3,071 children aged 6 to 14 years)	2000	Some trips are classified as being of 'unknown mode'.
UK	10-14yrs old (1527 children surveyed)	1999-2001	3-years of data are grouped to obtain large enough sample sizes.
USA	10-14 year olds (from survey of 42,033 households)	1995	The sample of bicycle trips was too small to give the figures separately.

6.5. Adult travel data

As a supplementary part of the project, data about the distances that adults travel by different modes were requested for 1980, 1990, 1995 and 2000. It was thought that this might provide a more comprehensive data set that could be useful for analysing children's exposure. Although feedback was received from 16 countries, only nine were actually able to supply some national figures. Hence, there was no enlargement of the data set. Moreover, much of the data supplied was patchy, inconsistent with other sources of international data about national travel habits and, in some cases, included strange jumps in the figures which would have required further clarification from the country concerned. Some of the countries stated that data was not available which was surprising, as partial figures about their country appear in other reference sources. Consequently, it was concluded that to obtain, understand, standardise and use such data was a more substantial exercise than initially envisaged, and could not be included within the scope of this project. It could, however, be a useful exercise to undertake in future work. Acknowledgement is made to the countries that responded given the time and effort involved. It is hoped that this information can be used in the future.

6.6. Variation in travel patterns between countries

One of the key findings from the children's travel survey data was the large variation in the travel patterns of 10-14 year olds in different countries. As highlighted previously, we received data for 10 countries which is summarised in Section 6.21 in Tables 18 and 19. From these, it was possible to pick out the countries which had the highest and the lowest levels of use of particular modes. These extremes are shown for numbers of kilometres travelled in Table 12 and for number of trips in Table 13. (Note that even for these 10 countries, data was only partial – for example, it is plausible that cycle use in the USA is even lower than 0.3%, but they do not have information about bicycling levels available. Note too that the figures for total travel are not totals of the individual columns, but relate to the maximum and minimum levels of travel recorded in the individual country surveys as given in Tables 18 and 19.)

To some extent, the differences recorded in 10-14 year olds travel habits may be due to differences in data collection methods (for example, Swiss data includes walking off the public highway. This would not be the case in the UK, and possibly not in a number of other countries.). Differences in the 'other' category may also reflect the inclusion or exclusion of international air travel. However, although finding some method of fully standardising the data might modify the extent of the discrepancies, it seems likely that major differences would remain. However, it is notable that in most countries (except Hungary) the car accounts for at least half of all distance travelled by 10-14 year olds.

Table 12: Variation in the travel patterns of 10-14 year olds in different countries: kilometres travelled

	Kilometres travelled		% distance travelled	
	Min	***Max***	***Min***	***Max***
Walk	123 USA	773 Switzerland	0.8 USA	9.2 Hungary
Bicycle	10 Hungary	2200 Netherlands	0.3 Hungary	31.0 Netherlands
Car	1113 Hungary	12,780 USA	33.7 Hungary	84.0 USA
Bus, train or other public transport	321 USA	2026 Hungary	2.1 USA	61.4 Hungary
Other	3 Hungary	1997 USA	0.1 Hungary	13.1 USA
Total	3302 Hungary	15,222 USA	100	100

Table 13: Variation in the travel patterns of 10-14 year olds in different countries: number of trips

	Number of trips		% of trips	
	Min	***Max***	***Min***	***Max***
Walk	180 Netherlands	461 Norway	11.1 USA	40.5 Switzerland
Bicycle	6 Hungary	630 Netherlands	1.0 Hungary	62.0 Denmark
Car	88 Hungary	899 USA	14.1 Hungary	65.9 USA
Bus, train or other public transport	19 USA	307 Hungary	1.4 USA	49.3 Hungary
Other	6 Hungary	296 USA	0.9 Norway	10.7 Sweden
Total	623 Hungary	1452 New Zealand	100	100

6.7. Role of car ownership in determining travel patterns

Figures 26 and 27 show the relationship between car ownership and use (according to the travel distances, and numbers of trips undertaken by 10-14 year olds). These demonstrate that car ownership does have some effect, as shown by the extremes (Hungary – low ownership and use; USA – high ownership and use). However, in the middle of the distribution, there are no clear patterns – highlighting that it is not possible to directly infer children's car use from national car ownership levels – or to make subsequent assumptions about the use of other modes or associated safety implications. Instead, modal choices are clearly substantially affected by political, social and cultural factors within each country.

Figure 26: Relationship between car ownership and number of kilometres travelled by car

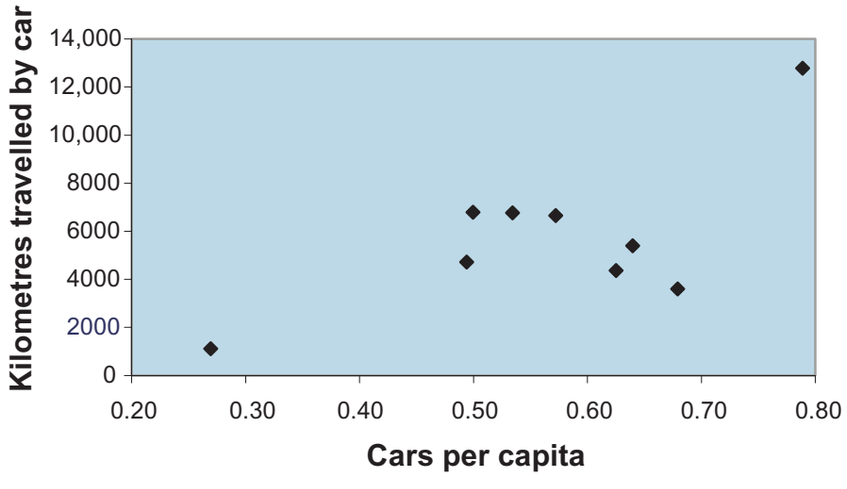
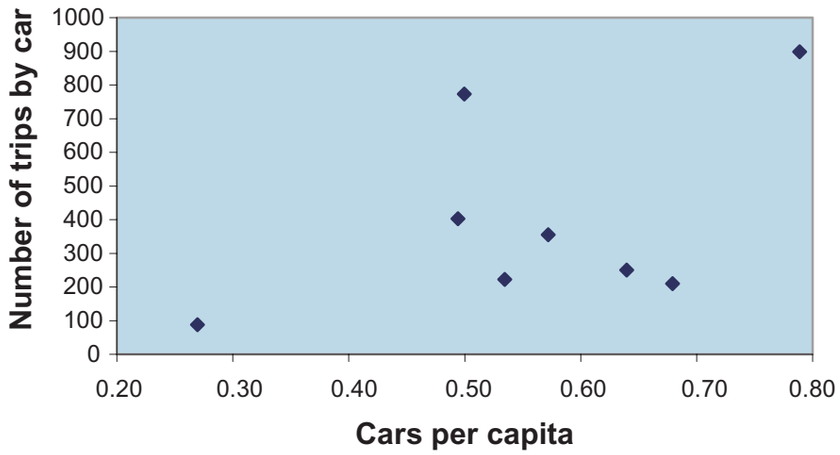


Figure 27: **Relationship between car ownership and number of trips by car**

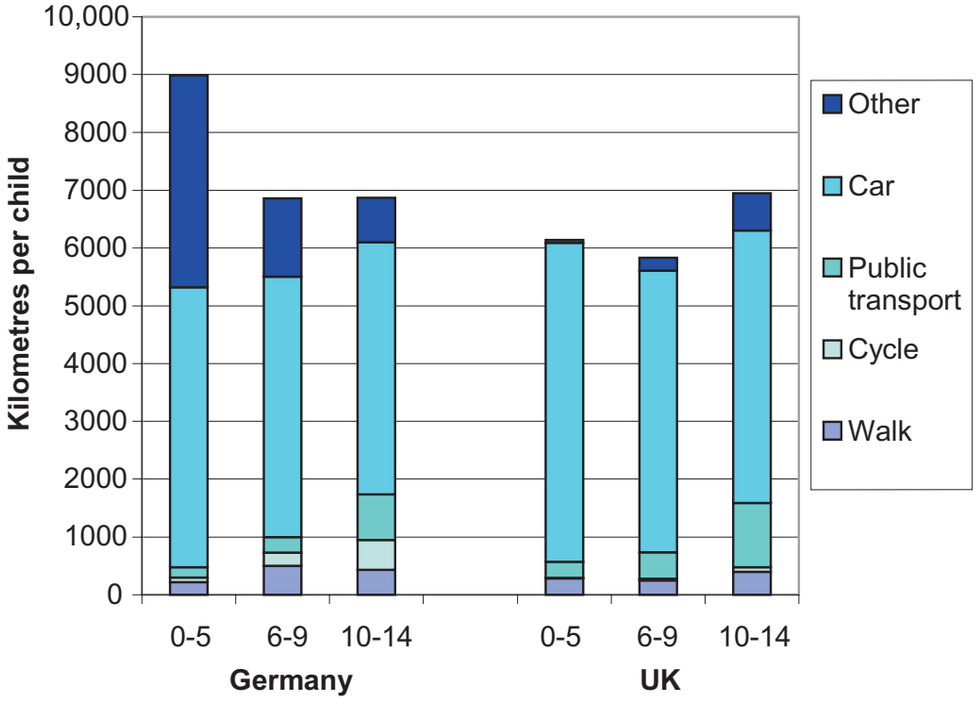


6.8. Travel changes with age

There were two countries – Germany and the UK – where it was possible to follow changes in travel patterns through the three age bands defined in the survey (i.e. 0-5, 6-9 and 10-14) (see Figure 28). These data suggest that, as children get older:

a) there is not necessarily a consistent increase in the amount of travel that children undertake, although they are likely to undertake more independent travel –

Figure 28: **Changes in travel patterns by age: kilometres travelled by mode**



reflected in the increased use of bicycling and public transport use in the older age groups

b) car use dominates the amount of distance travelled for all age groups, although it stays roughly stable in quantity across the age ranges.

Note that the 'other' category for Germany probably includes international air travel, whereas it does not for the UK. In the UK the other category includes school buses, two-wheeled motorised vehicles, motor caravans, Dormobiles, taxis, minicabs, domestic air travel and other public and private transport.

6.9. Modifying fatality rates by exposure (for 10-14 year olds)

The following commentary applies to the graphs on the ensuing pages. In brief, these examine whether looking at fatality rate per unit of exposure (i.e. the number of fatalities per kilometre travelled, or per trip made) alters the assessment of which countries are showing 'good' and 'less good' performance.

6.9.1. Calculation of fatality rates taking exposure into account

In the following analysis, a fatality rate by exposure unit has been calculated by taking the fatality rate per 100,000 population for the appropriate age group (in this case, 10-14 year olds) when travelling by a particular mode (for example, as a pedestrian) and then dividing that fatality rate by the average number of kilometres or trips travelled by children of that age group each year. The main purpose of this calculation is to enable comparisons of how different countries perform.

For example, the fatality rate that takes exposure into account for 10-14 year old pedestrians, according to the distance they travel, is calculated as:

$$\frac{\textit{Pedestrian deaths per 100,000 10-14 year olds}}{\textit{Number of kilometres travelled on foot per 10-14 years old per year}}$$

It gives an indicator of the deaths per 100,000 km or 100,000 trips travelled by mode and age group.

Data used to calculate fatality rates per kilometre are shown for pedestrians in Figures 29-31, for bicyclists in Figures 32-34 and car occupants Figures 35-37. Data used to calculate fatality rates per trip are shown for pedestrians in Figures 38-40, for bicyclists in Figures 41-43 and car occupants Figures 44-46.

6.9.2. Conclusions about the effects of modifying fatality rates by exposure

For walking and car use, looking at country performance according to an exposure based rate, i.e. the number of deaths per hundred thousand km travelled on foot or

by car, seems to suggests a distinction between good and less good performers, rather than a graduated league (although the league is not entirely misleading as an ordering mechanism).

- For walking, the USA, Hungary and the UK appear to be performing relatively less well whilst the other countries are doing relatively well (particularly Norway and Switzerland – where 10-14 year olds walk relatively long distances).
- For car use, Germany, Hungary, Sweden and New Zealand are doing relatively less well, whilst the others are all doing reasonably well (with no outstanding performers).

For bicycling, the situation is very different. The inclusion of exposure entirely alters which countries can be classed as 'good' and 'less good'. In particular, countries with low levels of bicycling are generally relatively unsafe for bicyclists.

- For bicycling, the UK, Hungary and New Zealand emerge as relatively less good performers, whilst the others are all doing reasonably well (with no outstanding performers).

For bicycling and car use, Hungary represents an exceptional case, as levels of both are unusually low, and its relative accident performance for these modes is particularly poor.

6.10. Fatality rate per 100,000 kilometres travelled for 10-14 year old pedestrians (Figures 29-31)

Figure 29: Fatality rate per 100,000 10-14 year old pedestrians

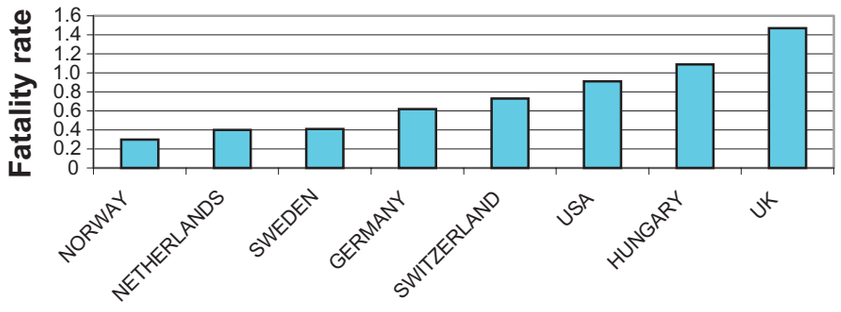


Figure 30: Number of kilometres travelled by 10-14 year old pedestrians

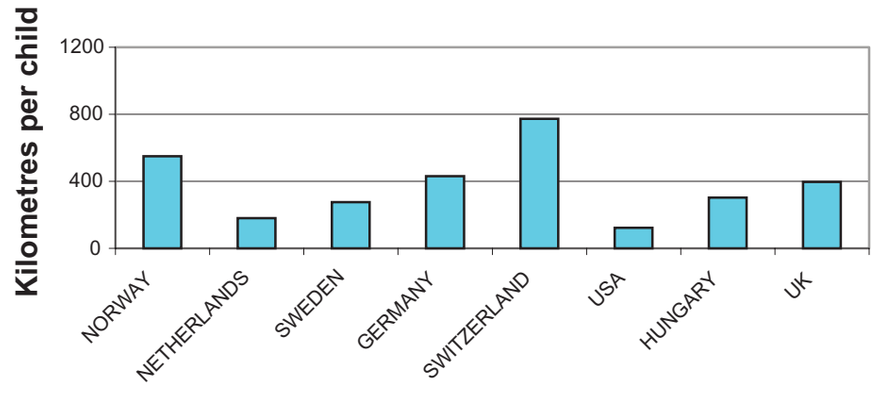
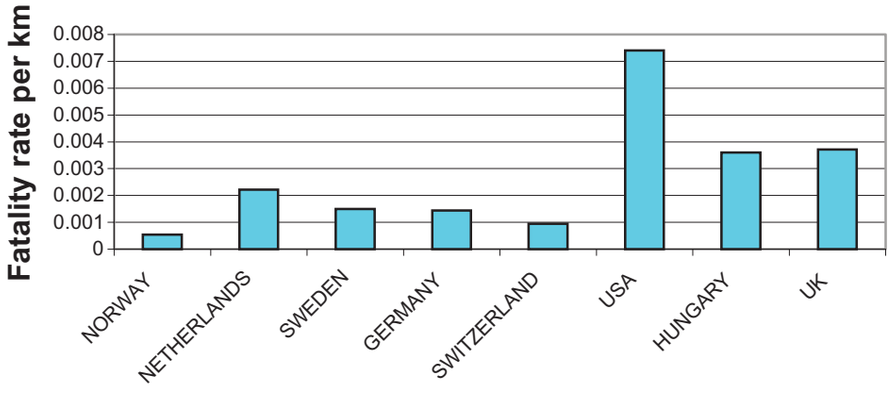


Figure 31: Index of fatalities per kilometres travelled by 10-14 year old pedestrians



6.11. Fatality rate per 100,000 kilometres travelled for 10-14 year old bicyclists (Figures 32-34)

Figure 32: Fatality rate per 100,000 10-14 year old bicyclists

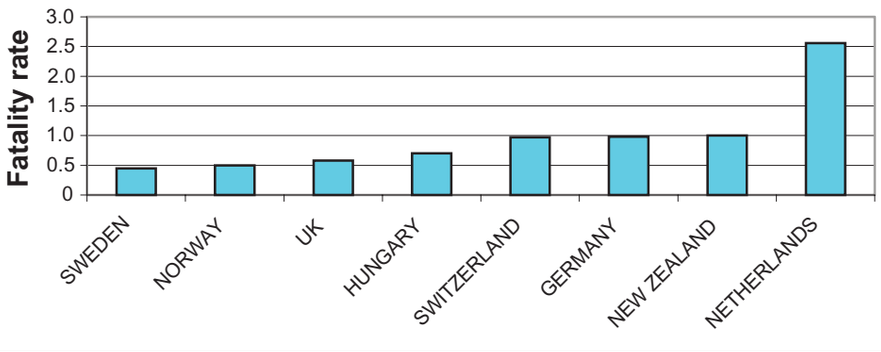


Figure 33: Number of kilometres travelled by 10-14 year old bicyclists

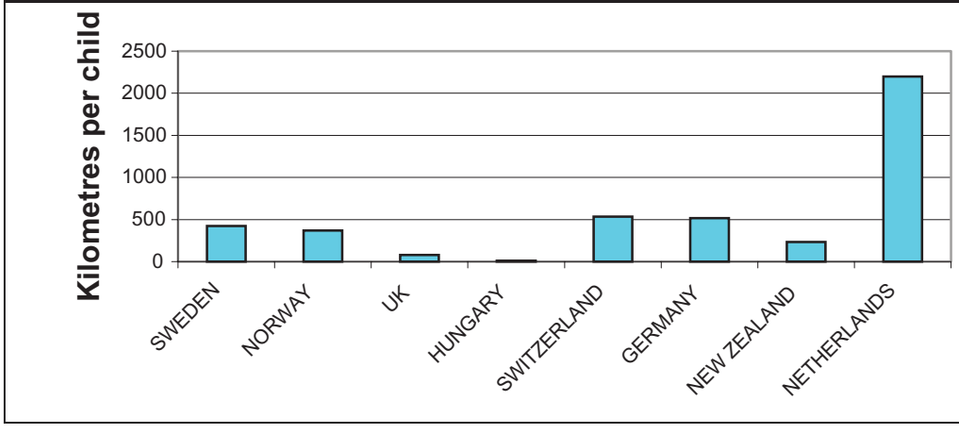
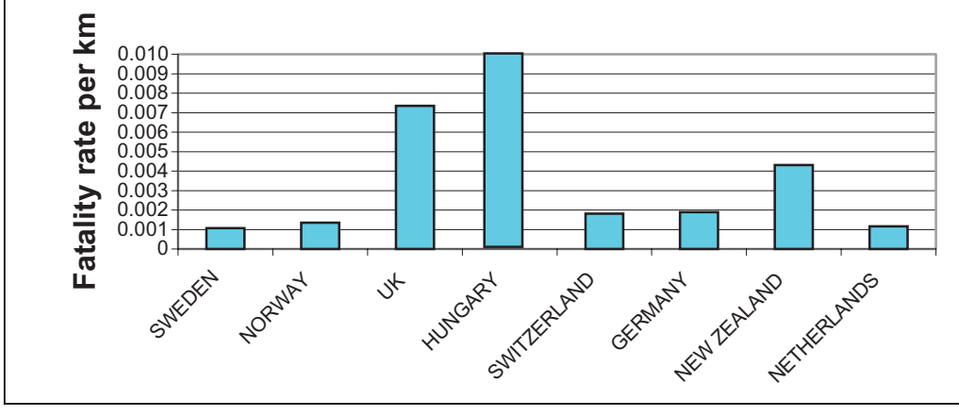


Figure 34: Fatality rates per kilometres travelled by 10-14 year old bicyclists



Note: The index figure for Hungary is 0.070. This has not been shown in full as it then becomes very difficult to distinguish between the other countries.

6.12. Fatality rate per 100,000 kilometres travelled for 10-14 year old car occupants (Figures 35-37)

Figure 35: Fatality rate per 100,000 10-14 year old car occupants

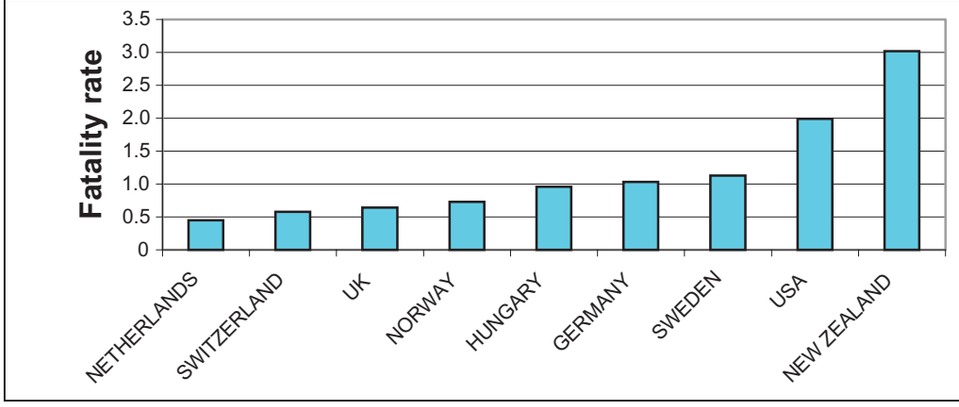


Figure 36: Number of kilometres travelled by 10-14 year old car occupants

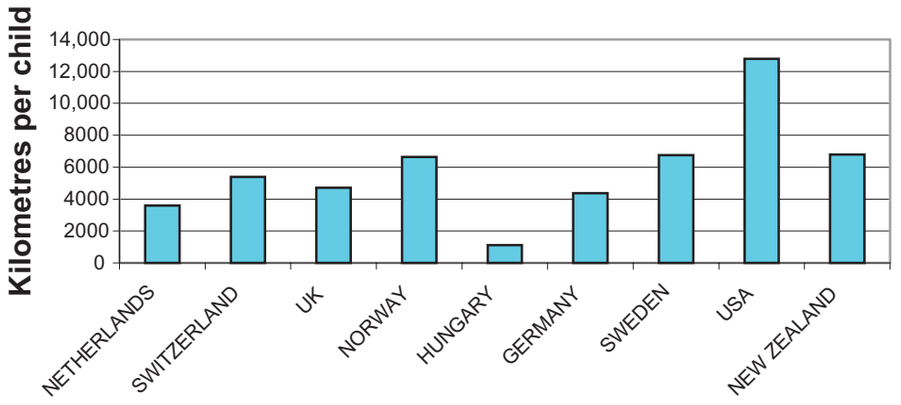
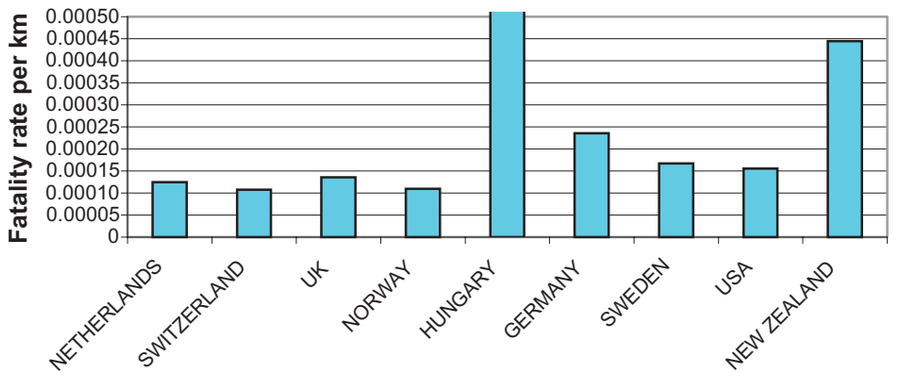


Figure 37: Fatality rate per kilometres travelled by 10-14 year car occupants



Note: The index figure for Hungary is 0.00090. This has not been shown in full as it then becomes very difficult to distinguish between the other countries.

6.13. Fatality rate per 100,000 trips for 10-14 year old pedestrians (Figures 38-40)

Figure 38: **Fatality rate per 100,000 10-14 year old pedestrians**

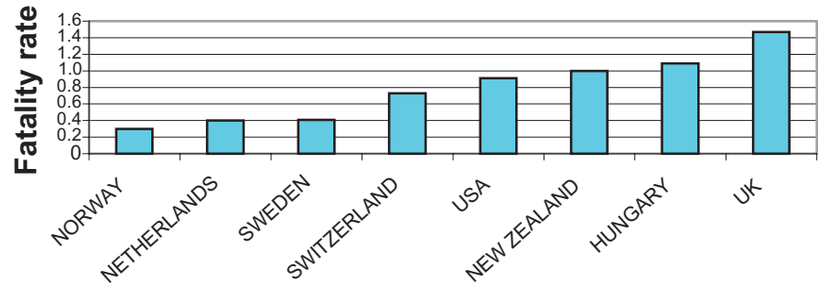


Figure 39: **Number of trips by 10-14 year old pedestrians**

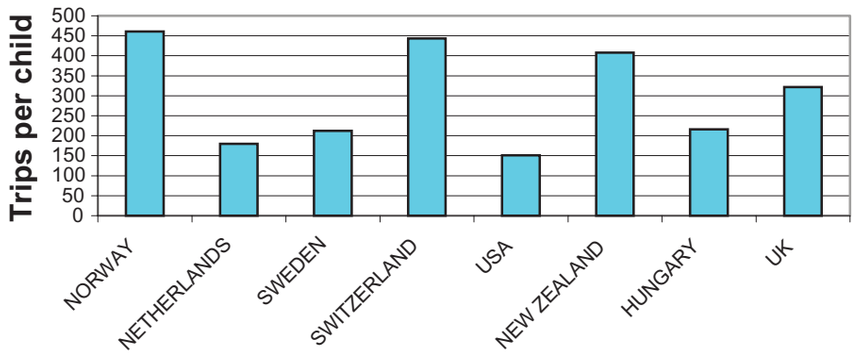
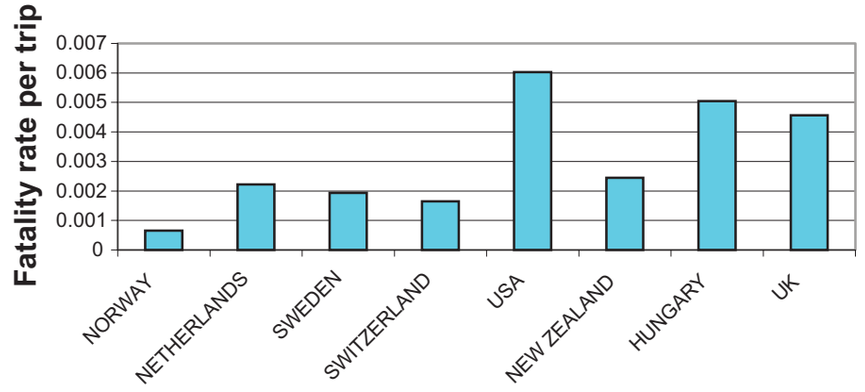


Figure 40: **Fatality rate per trip by 10-14 year pedestrians**



6.14. Fatality rate per 100,000 trips for 10-14 year old bicyclists (Figures 41-43)

Figure 41: Fatality rate per 100,000 10-14 year old bicyclists

Figure 42: Number of trips by 10-14 year old bicyclists

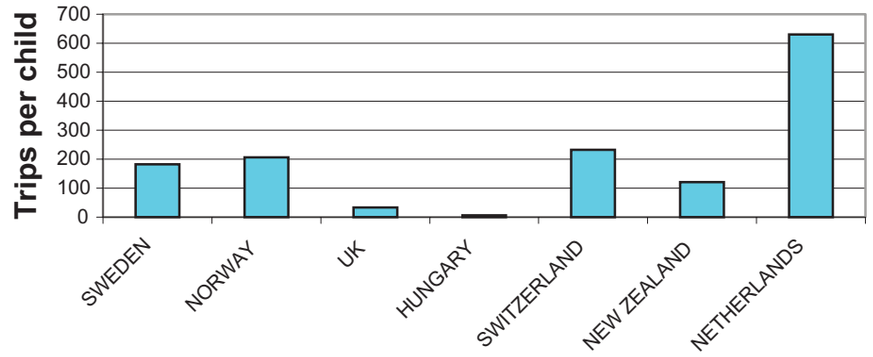
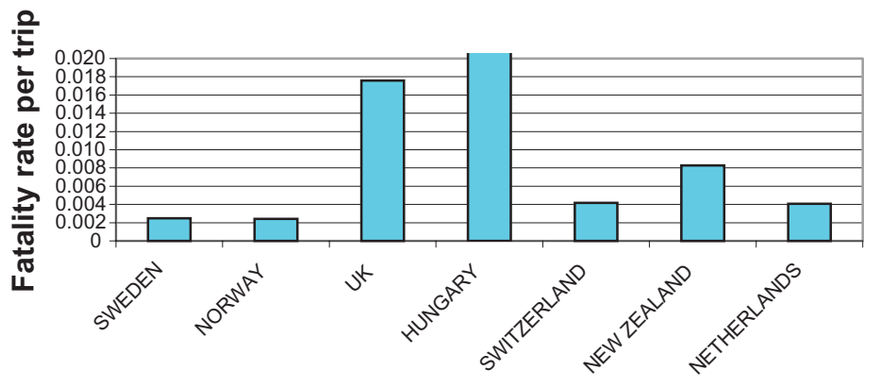


Figure 43: Fatality rate per trip by 10-14 year bicyclists



Note: The index figure for Hungary is 0.120. This has not been shown in full as it then becomes very difficult to distinguish between the other countries.

6.15. Fatality rate per 100,000 trips for 10-14 year old car occupants (Figures 44-46)

Figure 44: **Fatality rate per 100,000 10-14 year old car occupants**

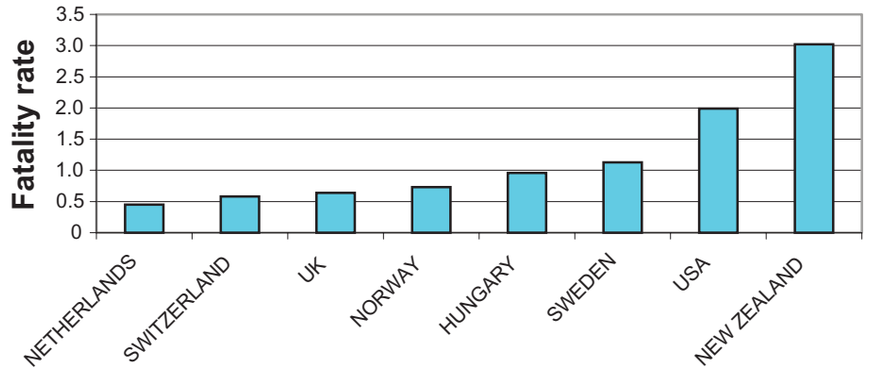


Figure 45: **Number of trips by 10-14 year old car occupants**

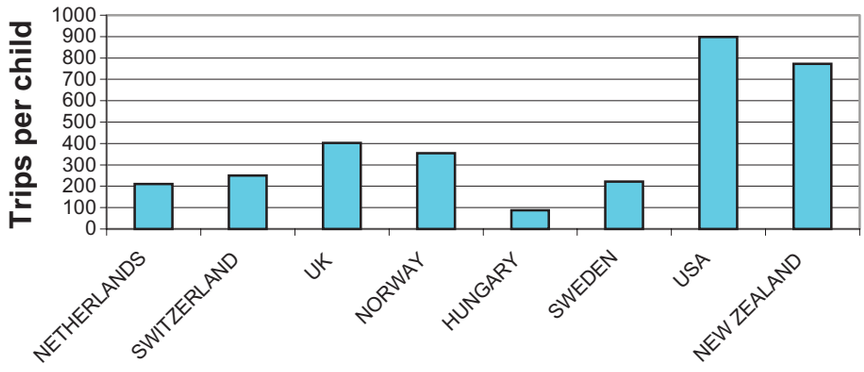
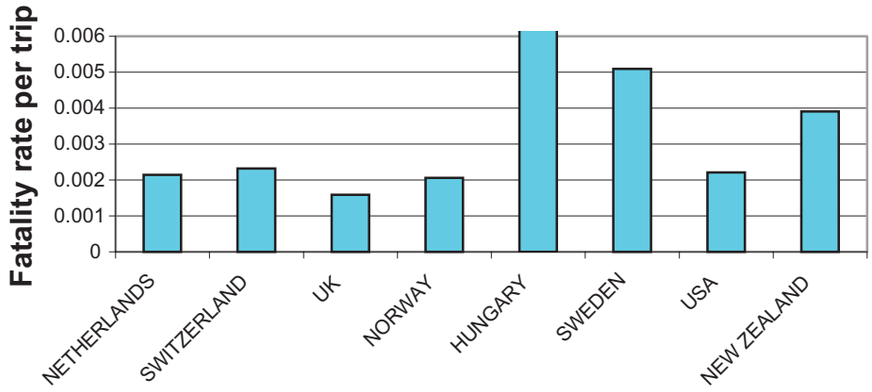


Figure 46: **Index of fatalities per trip by 10-14 year car occupants**



Note: The index figure for Hungary is 0.010. This has not been shown in full as it then becomes very difficult to distinguish between the other countries.

6.16. Measuring exposure

Having undertaken the analysis of risk according to survey data about children's travel, it became clear that countries use a variety of different methods to actually measure children's travel. This Section explores the issues that arise and includes our recommendations about best practice for such survey work. The main points are summarised at the end of this Section.

6.16.1. How often to survey

From our work, it seems that those interested in accidents are likely to be interested in trends over time, not merely a snapshot of conditions at a particular point in time. Hence, if budgetary constraints dictate a choice, we would recommend a less substantial survey that takes place at least every five years in preference to a one-off, very substantial piece of work. Countries that have the most comprehensive and longitudinal information generally seem to combine surveying children's travel habits with regular surveys of adults' travel habits, often using household travel diaries.

6.16.2. What age group to survey

In our study, we asked for information relating to the age bands 0-5, 6-9, and 10-14. These age bands were chosen because they correspond with the age bands used in the IRTAD accidents database. It is clear that independent travel is not likely to be significant for children aged 0-5 whilst it becomes much more significant for children aged 10-14. For these reasons, countries with limited resources may want to focus on the older children, although arguments can be made for looking at all age groups. In particular, ages 8 and 9 are claimed by some to be a time of critical transition from dependent to independent travel, although our survey did not enable us to investigate this issue. Given the current UN position, which defines children as being all those aged up to 18, coupled with the substantial accident problems as children become even more independent and also start to drive, a strong case can also be made for specifically gathering data about people aged 15 to 18, that can be analysed separately from other 'adult' travel data.

6.16.3. How to measure travel and what breakdowns to use

Countries vary in whether they measure travel distances, numbers of trips or the amount of time spent travelling. They also vary in how much they break down information about travel by mode and by journey purpose. Clearly, in an ideal world, it is best to collect information that is comprehensive and as disaggregated as possible, since this can always be aggregated afterwards. However, given the need to limit surveys both due to resource constraints and interviewee fatigue, this is not always possible.

Breakdown by journey purpose

In terms of journey purpose, a distinction between travel to school (and other educational institutions) and travel for other purposes seems to be the easiest and most common distinction made. It can also be considered particularly important given the amount of work that is now taking place to try and encourage children to adopt more sustainable patterns of travel that is often starting by addressing the school journey.

Breakdown by travel mode

In terms of mode, the most straightforward distinctions are usually between car, walking, bicycling and public transport, although this does not work in countries like the USA where school buses are a particularly important mode of travel that policymakers want separate information about. If there are some modes which are relatively underused, it is also important that the sample size is big enough to get meaningful data about them. For example, given the relatively small number of children who bicycle in the USA, their statisticians felt that the sample size used was not big enough to provide meaningful data.

Travel units

In terms of trips versus distance versus time, it is clear that many countries regard travel distance as the most objective and straightforward measure of exposure. However, countries such as New Zealand have made strong arguments that 'number of trips' or 'travel time' provide better measurements.

It can be argued that 'number of trips' provides a better measure because many children's journeys are short, therefore uses of distance measurements do not help to differentiate sufficiently between differing travel patterns. Clearly, using trip numbers as opposed to distance also has a very significant impact on assessing the ***relative*** risk of different modes – for example, for comparing the risk of car travel with walking or bicycling. An argument can be made that 'trip numbers' is the better measure to use when comparing modes, since initiatives aimed at changing travel choices are primarily concerned with trips (not distance), and might well result in a longer car trip being substituted for a shorter walk trip, therefore the valid assessment of risk primarily relates to the number of trips by each mode.

Use of 'travel time' is recommended because children's exposure may partly depend on the amount of time they spent playing during their journey, since many will not make a simple, direct trip. Many road safety experts would argue that children face the greatest risk when they are playing in the road environment rather than travelling somewhere, and that such risks are currently poorly considered in road safety initiatives. Consequently, focusing on travel times may help to highlight this issue.

A case can also be made that interviewees are more likely to be able to give correct measurements for numbers of trips or travel times, as opposed to travel distances.

Ideally, exposure information should also distinguish between the types of roads that children use and cross, since this is known to have a significant influence on risk, as highlighted in a recent report comparing the road safety experience of the UK, France and The Netherlands (Bly *et al*. 1999).

However, given the prevalence of the distance measurement by many countries, our recommendation would be that all countries collect information on travel distances as their primary measure, but that it is clearly valuable to have information about trip numbers and travel times as well. It is perhaps interesting that in our analysis, use of trip numbers as opposed to trip distances did not significantly affect the picture that emerged in terms of 'good' and 'less good' performing countries ***for each mode***, although given the small sample of countries with data, it cannot be claimed with any degree of confidence that the two can always be used interchangeably. As highlighted previously, use of trip distances can also be misleading when comparing the relative safety of ***different*** modes.

6.16.4. Defining the detail of travel information

There are differences in the ways in which countries record journeys – in terms of what counts as a journey and in terms of where journeys are made. For example, the UK used to discount all journeys of less than one mile. This clearly does not make sense given the current interest in travel by sustainable modes – particularly walking and bicycling – and it is important that journeys of all lengths are included. The UK surveys currently exclude all journeys that are not made on the public high road, whereas we believe that such journeys are included in surveys carried out, for example, by Switzerland. It would be useful if countries could be clearer about what they include and exclude, and, if a common international standard cannot be reached, to ensure that data about non-standard categories of travel can be analysed separately.

6.16.5. Sample size

Statistically, it is not possible to define the ideal sample size for a travel survey since this is dependent on the degree of variation within the sampled population. Instead, the guiding principle is usually – 'the bigger the better'. In our survey, it seems that national studies of children usually involve between 500-1500 children per age band (i.e. 0-5, 6-9 and/or 10-14), making total samples for 0-14 year olds typically between approximately 1500 and 4500 children. As highlighted previously, if there are some modes which are of policy interest, but usage is very low, the sample size will need to be big enough to get useful information about this mode. For example, in the USA, a sample size of 42,000 households was not considered large enough to provide meaningful information about bicycling.

Key recommendations

- Measuring exposure is critical to understanding safety and risk.
- Snapshot surveys, at least every five years are preferable to the less frequent, more comprehensive surveys.
- Combining with adult travel surveys (often using household travel diaries) may be the most efficient way of getting information about children's travel habits.
- Having data for people aged 0-18, which can be analysed separately from other adult travel data, is useful. Where resources are limited, focusing on the older end of this age range (6 years +) may be most useful. For comparison with IRTAD, it is useful to record information about 15-18 year olds separately from data about the other age groups.
- Distinguishing between travel to school (or other educational establishments) and travel for other purposes is the easiest distinction to make in terms of trip purpose.
- In terms of modal breakdown, the simplest distinctions are between 'car', 'bicycle', 'walk', 'public transport' and 'other', although different countries may have special types of transport that they want to focus on (for example, school buses).
- In terms of travel units, travel kilometres are currently the most popular measure to use – and therefore the measure most likely to currently facilitate international comparisons. However, a strong case can be made that countries should also measure trip numbers and travel times.
- Ideally, an international standard should be developed for the detail of recording travel information – for example, what counts as 'a journey'. Meanwhile, countries should be clearer about the definitions that they use in their surveys, and ensure that data about non-standard categories of travel can be analysed separately.
- Sample sizes used by different countries for measuring travel by 0-14 year olds are typically between 1500 and 4500 children. However, larger numbers may be needed to provide reliable information about travel by less well used modes.

6.17. Whether children's travel is accompanied

In addition to looking at quantitative issues of exposure, one question was included in the questionnaire to get a qualitative estimate of the degree of adult accompaniment[5] on children's trips. The question posed on this topic was:

> *For each age group, which category best corresponds to the proportion of journeys where the child would be accompanied by an adult?*

The available response levels were 'all', 'many', 'half', 'some', 'few', 'none' or 'variable'. Each country's response is shown in Table 14.

Table 14: Country by overall fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by reported accompaniment of children of different ages

Country	Overall rate	% 0-5 accompanied	% 6-9 accompanied	% 10-14 accompanied
Sweden	1.58	All	Many	Some
UK	1.86	All	Many	Few
Norway	2.08	All	Many	Some
Netherlands*	2.20	All (0-4)	Many (5-8)	Some (12-14)
Germany	2.34	Many	Half	Some
Hungary	2.60		Missing	
Finland	2.76	Many	Variable	Variable
Switzerland	2.81	All	Some	Few
Czech Republic	2.84	All	Variable	Few
Australia	2.90	All	Half	Some
Canada	2.98	All	Half	Variable
Iceland	2.98	All	Half	Some
Spain	3.11	All	Many	Half
Denmark	3.22	All	Many	Some
France	3.40	All	Many	Half
Poland	4.29	All	Half	Some
USA	4.40	All	Half	Variable
New Zealand	4.78	All	Many	Variable
Turkey	5.40	All	Many	Some
South Korea	7.47	All	Some	Few

* 8-12 SOME

ALL	MANY	HALF	SOME, FEW, NONE, VARIABLE

Adult accompaniment of all children aged 0-5 was a shared characteristic of four of the five the top performers, namely Sweden, the UK, Norway and The Netherlands, but did not distinguish them from the majority of countries performing less well since 0-5 year olds are accompanied in most countries. Adult accompaniment of ***many*** children aged 6-9 was a shared characteristic of four of the five top performers, namely Sweden, the UK, Norway and The Netherlands, and this distinguished them from the majority of countries performing less well. (It should be noted that this conclusion will inevitably be dependent on other national factors such as the nature of the road environment – for example, more child friendly environments may obviate the need for 6-9 year adult accompaniment.) The extent of accompaniment of children aged 10-14 was much less than for the other age groups in most countries.

5 This question asked about accompaniment of travel in general and the results are therefore not specific to pedestrian exposure (although it is possible that some countries would have responded for child pedestrians – the wording of this question might be usefully altered if there is a future questionnaire on this topic).

6.18. National concern about children's travel

The travel questionnaire also asked each country whether growing car use by children was an issue for national or state level transport policy. A summary of the results is shown in Table 15. Growing car use by children was a major issue for two countries, an issue of some importance for eight countries but only a minor issue for a further eight countries.

6.19.

Table 15: National concern about children's growing car use

Major issue	Issue of some importance	Minor issue	Not known
UK	Norway	Sweden	Hungary
Korea	Netherlands	Germany	
	Finland	Switzerland	
	Australia	Czech Republic	
	Canada	Spain	
	Iceland	France	
	USA	Poland	
	New Zealand	Turkey	

Children's travel initiatives

The travel questionnaires also asked about whether countries were undertaking any initiatives to influence children's travel. The child travel initiatives are described in Appendix B. The initiatives have been organised under generic headings to make it easier to look at specific issues. The initiatives reported here represent a sample of some, rather than all of the initiatives in that country. It seems that almost all initiatives which aim to influence children's travel focus on school travel.

6.20. Background details of the data on children's travel

Details of the travel surveys undertaken by countries are shown in the Table 16.

Table 16: Details of the travel surveys undertaken by countries

Country	Sample size	Frequency	Newest data	Oldest data	Other survey details
Denmark		Surveys in 1993 about general travel, and 1998-2000 about school travel	1998-2000	1993	Data about percentage modal shares of trip numbers available for 6-10 and 11-15 year olds
Finland		One-off survey	1999	1999	Survey of 6-17 year olds undertaken as a computer aided phone interview. Mode specific data about trip numbers or average travel distances per person not available
Germany	The interviews were carried out in 27 regions with more than 3200 children and young people	One-off survey	1998-99	1998-99	The interviews were carried out within four different periods of time during 1998 or at the turn of the year from 1998 to 1999. Data gives kilometres by mode and age only
Hungary	2041	One-off survey	1999	1999	
New Zealand	7000 households including 3638 children	Surveys conducted in 1989/90 and 1997/98; Proposal for ongoing survey beginning 2002/3 is under consideration	1997	1989	Further details of methodology used to collect data are available on the LTSA website, http://www.ltsa.govt.nz/research/travel_survey/research/travel_survey.html or on request from the LTSA. Distance estimates are not available for walking
Netherlands	a) National survey based on a select sample of total population (63,284 families) using diary data collection b) Enquiry involving 1681 pupils during their first years at various secondary schools	The national survey on mobility of the population is held annually. The enquiry of pupils was undertaken once only	1999	1999	Data available relates to 0-11 year olds, and 12-14 year olds
Norway	More than 20,000 people aged 13-33 and older. 582 children aged 13-14 years surveyed	The previous surveys were undertaken in 1985, 1992 and 1998	2001	1985	Data is only about daily mobility (no journeys >100 km included) Source: Denstadli, Jon Martin and Hjorthol, Randi. (2001) The Norwegian Travel Survey 2001. Oslo, Institute of Transport Economics. TØI report 588/2002

continued overleaf

Table 16: Continued

Country	Sample size	Frequency	Newest data	Oldest data	Other survey details
Poland					There are some investigations on communication behaviour of citizens (people older than 6) in Warsaw, Łódź and Katowice but the data obtainment requires additional data transformation and higher costs
Spain					National data but this does not fit into the survey variables
Sweden	National Travel Survey: in total approx. 8000 persons in the ages 6-84 surveyed. Approx. 1000 in the age-group 6-14 included	Annual	1999		(This is the most recent data of suitable quality, although later surveys have been conducted.) Telephone surveys are undertaken and people less than 15 years are interviewed through a parent. People are asked in detail about all travel in the traffic environment on one particular day. Response rate is 78% for children younger than 15. No data are available for 0-5 year olds
Switzerland	3071 children aged 6 to 14 years (total sample size: 29,407 individuals aged 6 to 99 years)	Every 5 years	2000	2000	Data are not available for 0-5 trips, and some trips are classified as being of 'unknown mode'. Scientific survey of the population's travel behaviour conducted by the Swiss Federal Office of Spatial Development and the Swiss Federal Statistical Office
UK	1780 0-5 yrs old; 1262 6-9 yrs old; 1527 10-14 yrs old.	Continuous survey since mid-1988	2001	1976	Source: National Travel Survey, Department for Transport – 3-years data are grouped to obtain large enough sample sizes. From 2002 single years data will be published. See Technical Reports for 2000 and 2001 available at www.transtat.dft.gov.uk/personal
USA	42,033 households	Every 5 years	1995	1969	School bus and bicycle are included in 'other private transport'. The sample of bicycle trips was too small to breakout. Data are not available for 0-5 year olds. Source: 1995 Nationwide Personal Transportation Survey (NPTS)

6.21. Base data used for exposure analysis

The base data used for exposure analysis is shown in Tables 17-19.

Table 17: Fatality rates from traffic accidents

	Deaths per 100,000 10-14 year olds (1996-2000 average)			
	Walk	Bicycle	Car occupants	Totals
Germany	0.62	0.98	1.03	2.63
Hungary	1.09	0.70	0.96	2.75
Netherlands	0.40	2.56	0.45	3.41
New Zealand	1.00	1.00	3.02	5.02
Norway	0.30	0.50	0.73	1.53
Sweden	0.41	0.45	1.13	1.99
Switzerland	0.73	0.97	0.58	2.28
UK	1.47	0.58	0.64	2.69
USA	0.91	0.62	1.99	3.52

Table 18: Trip distances and numbers

	Kilometres per child per year						Number of trips per child per year					
	Walk	Bicycle	Car	Public transport*	Other	Total	Walk	Bicycle	Car	Public transport*	Other	Total
Germany	431	518	4369	785	766	6869	n/a	n/a	n/a	n/a	n/a	n/a
Hungary	303	10	1113	2026	3	3302	216	6	88	307	6	623
Netherlands	180	2200	3600	850	250	7100	180	630	210	55	15	1090
New Zealand	n/a	232	6791	2008	104	n/a	408	121	773	139	11	1452
Norway	550	370	6650	1890	30	9490	461	206	355	182	11	1215
Sweden	275	423	6763	1121	742	9325	212	182	222	77	83	776
Switzerland	773	535	5398	1943	236	9044	443	232	250	99	25	1095
UK	396	79	4720	1071	638	6904	322	33	403	106	36	901
USA	123	n/a	12,780	321	1997	15,222	151	n/a	899	19	296	1365

* This column includes all travel by 'bus, train and other public transport'.

Table 19: Percentage share of distances and trips by mode

	% kilometres by mode per child per year						% trips by mode per child per year					
	Walk	Bicycle	Car	Public transport*	Other	Total	Walk	Bicycle	Car	Public transport*	Other	Total
Denmark	N/a	N/a	N/a	N/a	N/a	N/a	15.0	62.0	17.0	6.0	1.0	100
Germany	6.3	7.5	63.6	11.4	11.2	100	N/a	N/a	N/a	N/a	N/a	100
Hungary	9.2	0.3	33.7	61.4	0.1	100	34.7	1.0	14.1	49.3	1.0	100
Netherlands	2.5	31.0	50.7	12.0	3.5	100	16.5	57.8	19.3	5.0	1.4	100
New Zealand	N/a	N/a	N/a	N/a	N/a	100	28.1	8.3	53.2	9.6	0.8	100
Norway	5.8	3.9	70.1	19.9	0.3	100	37.9	17.0	29.2	15.0	0.9	100
Sweden	2.9	4.5	72.5	12.0	8.0	100	27.3	23.5	28.6	9.9	10.7	100
Switzerland	8.5	5.9	59.7	21.5	2.6	100	40.5	21.2	22.8	9.0	2.3	100
UK	5.7	1.1	68.4	15.5	9.2	100	35.7	3.7	44.7	11.8	4.0	100
USA	0.8	N/a	84.0	2.1	13.1	100	11.1	N/a	65.9	1.4	21.7	100

* Note that this column includes travel by 'bus, train and other public transport.

7. CHILDREN AS PEDESTRIANS

Chapter coverage

High-risk groups of child pedestrians

Environment: pedestrians

Environment: pedestrians near schools

Environment: outside play areas

Education and training initiatives: pedestrians

Types of education and training initiatives: pedestrians

Compulsory education and training: pedestrians

National publicity activity: pedestrians

Regional publicity activity: pedestrians

Behaviour and legislation: pedestrians

Driver responsibility and child pedestrian accidents

Legislation aimed at child pedestrian behaviour

Research: pedestrians

Child pedestrian safety initiatives

Chapter summary

The top five performers in the child pedestrian league are Sweden, The Netherlands, Finland, Germany and Denmark.

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 shared this approach.

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.

Table 20: Countries that participated in the "Children as pedestrians" survey

Australia	France	New Zealand	Sweden
Canada	Germany	Norway	Switzerland
Czech Republic	Hungary	Poland	Turkey
Denmark	Iceland	South Korea	UK
Finland	Netherlands	Spain	USA

7.1. Introduction

The response rate for this questionnaire was 67% (20 out of 30 OECD countries).

The countries that participated in the "Children as pedestrians" survey are shown in Table 20.

The top five performers in the pedestrian league table were:

- Sweden

- Netherlands
- Finland
- Germany
- Denmark

7.2. High-risk groups of child pedestrians

The question posed on this topic was:

Table 21: Country by pedestrian fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by identification of high-risk groups

Country	Pedestrian rate as % of overall rate	Pedestrian rate	High-risk groups identified
Sweden	26	0.35	No
Netherlands	22	0.44	Yes
Finland	29	0.67	Yes
Germany	31	0.69	No
Denmark	25	0.72	No
Canada	35	0.77	No
France	27	0.83	No
Norway	46	0.83	Yes
Australia	29	0.86	Yes
Iceland	33	0.92	No
USA	30	0.96	Yes
Spain	37	0.97	No
UK	57	1.02	Yes
Czech Republic	44	1.20	No
Hungary	49	1.21	No
Turkey	22	1.21	No
New Zealand	26	1.22	Yes
Switzerland	56	1.33	No
Poland	54	2.14	Yes
South Korea	79	5.41	No

Have you identified any high-risk groups of child pedestrians (for example, age, gender, socio-economic group, ethnic origin, disabled children, children living in urban/rural areas)?

The available response levels were 'yes' or 'no'. Each country's response is shown in Table 21. The groups they are identified are shown below.

7.2.1. Groups of high-risk child pedestrians identified

The following groups were identified as high-risk pedestrians:

Age: Under 10's (Finland, New Zealand, Poland, USA, UK)

Gender: Boys (especially young boys) (The Netherlands, New Zealand, UK)

Socio-economic group: Low socio-economic groups (New Zealand, UK, USA)

Ethnic origin: Ethnic and cultural minorities (The Netherlands, New Zealand, USA, UK)

Disability: Special educational needs such as visual and auditory impairments and Attention Deficit and Hyperactivity disorder (UK)

Place (general): Major urban areas (New Zealand, USA, UK, Poland)

Place (situational): Under 2 year old pedestrians injured by slow moving vehicles (especially reversing) on private land (Australia); Under 10s alighting from school buses on high speed rural roads (Australia).

The identification of high-risk groups of pedestrians was not a shared characteristic of the top performers and therefore did not distinguish them from other countries performing less well. Less than half of participating countries said that they had identified high-risk groups of pedestrians. A number of cross cutting themes emerged. These were the high risks associated with low socio-economic and ethnic minority groups, boys, young children and urban areas.

7.3. Environment: pedestrians

The question posed on this topic was:

> *In your country, in how many local authorities or municipalities have the following safety measures?*



The available response levels were 'most', 'many', 'some', 'few' or 'none'. Each country's response is shown in Table 22.

Table 22: Country by pedestrian fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by safety measures

Country	Pedestrian rate as % of overall rate	Pedestrian rate	Speed reduction measures	30kph/ 40kph limits	Signal crossing	Non-signal crossing
Sweden	26	0.35	Most	Most	Most	Most
Netherlands	22	0.44	Most	Most	Many	Most
Finland	29	0.67	Most	Most	Most	Most
Germany	31	0.69	Many	Most	Most	Most
Denmark	25	0.72	Most	Some	Most	Most
Canada	35	0.77	Some	Many	Many	Many
France	27	0.83	Some	Many	Some	Most
Norway	46	0.83	Most	Most	Many	Most
Australia	29	0.86	Many	Few	Most	Most
Iceland	33	0.92	Many	Many	Some	Many
USA	30	0.96	Many	Some	Many	Many
Spain	37	0.97	Many	Many	Many	Most
UK	57	1.02	Most	Many	Most	Most
Czech Republic	44	1.20	Many	Many	Most	Most
Hungary	49	1.21	Many	Many	Most	Many
Turkey	22	1.21	Many	Few	Many	Some
New Zealand	26	1.22	Most	Few	Most	Most
Switzerland	56	1.33	Some	Some	Some	Many
Poland	54	2.14	Some	Some	Many	Many
South Korea	79	5.41	Most	Many	Most	Most

MOST	MANY	SOME, FEW, NONE

The implementation of speed reduction measures (including environmental modification and 30kph speed limits) and signalised crossings in ***most*** local authorities or municipalities was a shared characteristic of the top performers and this distinguished them from the majority of countries performing less well. Four of the five top performers, namely Sweden, The Netherlands, Finland and Denmark, had speed reduction measures in most areas. Four of the five top performers namely Sweden, The Netherlands, Finland and Germany, had very low speed limits in most areas.

7.4. Environment: pedestrians near schools

The question posed on this topic was:

> *In your country, how many schools have the following safety measures outside?*

The available response levels were ‘most’, ‘many’, ‘some’, ‘few’ or ‘none’. Each country’s response is shown in Table 23.

Table 23: Country by pedestrian fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by safety measures near schools

Country	Pedestrian rate as a % of overall rate	Pedestrian rate	Speed reduction measures	30-40 kph limits	Signal cross	Non-signal cross	Barriers	Parking restrictions	Warning signs
Sweden	26	0.35	Many	Many	Most	Few	Few	Some	Most
Netherlands	22	0.44	Many	Many	Few	Some	Some	Many	Most
Finland	29	0.67	Many	Many	Many	Most	Some	Some	Most
Germany	31	0.69	Few	Many	Some	Some	Many	Most	Most
Denmark	25	0.72	Many	Some	Some	Many	Some	Most	Most
Canada	35	0.77	Some	Most	Some	Some	Few	Many	Most
France	27	0.83	Few	Some	Few	Most	Some	Few	Some
Norway	46	0.83	Some	Many	Some	Many	Few	Many	Some
Australia	29	0.86	Some	Most	Many	Many	None	Many	Most
Iceland	33	0.92	Many	Many	Some	Many	Few	Some	Most
USA	30	0.96	Some	Many	Some	Some	Few	Few	Many
Spain	37	0.97	Some	Some	Some	Many	Many	Many	Most
UK	57	1.02	Few	Few	Some	Some	Some	Many	Many
Czech Republic	44	1.20	Some	Some	Many	Most	Most	Few	Most
Hungary	49	1.21	Few	Few	Many	Many	Many	Some	Most
Turkey	22	1.21	Most	Few	Some	Many	Few	Few	Some
New Zealand	26	1.22	Few	Few	Few	Most	Some	Most	Most
Switzerland	56	1.33	Few	Some	Few	Many	Few	Some	Many
Poland	54	2.14	Some	Some	Some	Most	Many	Many	Many
South Korea	79	5.41	Many	Many	Most	Many	Many	Most	Most

MOST	MANY	SOME, FEW, NONE

The implementation of speed reduction measures outside ***many*** schools was a shared characteristic of the top performers and distinguished them from the majority of countries performing less well. Four of the five top performers, namely Sweden, The Netherlands, Finland and Denmark, had speed reduction measures near many schools. Four of the five top performers, namely Sweden, The Netherlands, Finland and Germany, had very low speed limits outside many schools.

Overall, the extent of safety measures outside schools was notably limited across all participating countries.

7.5. Environment: outside play areas

The question posed on this topic was

> *In your country, how many local authorities or municipalities provide outside play areas (for example, parks/playgrounds) for children in residential areas?*

The available response levels were 'most', 'many', 'some', 'few' or 'none'. Each country's response is shown in Table 24.

Table 24: Country by pedestrian fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by provision of outside play areas

Country	Pedestrian rate as % of overall rate	Pedestrian rate	Outside play provision
Sweden	26	0.35	Most
Netherlands	22	0.44	Many
Finland	29	0.67	Most
Germany	31	0.69	Most
Denmark	25	0.72	Most
Canada	35	0.77	Many
France	27	0.83	Some
Norway	46	0.83	Most
Australia	29	0.86	Many
Iceland	33	0.92	Most
USA	30	0.96	Some
Spain	37	0.97	Many
UK	57	1.02	Many
Czech Republic	44	1.20	Many
Hungary	49	1.21	Most
Turkey	22	1.21	Some
New Zealand	26	1.22	Most
Switzerland	56	1.33	Most
Poland	54	2.14	Many
South Korea	79	5.41	Many

MOST	MANY	SOME, FEW, NONE

The provision of outside play areas in most residential areas was a shared characteristic of four of the five top performers, namely Sweden, Finland, Denmark and Germany, and this distinguished them from other countries performing less well. Most participating countries (17) reported that they provided play areas for children in most or many residential areas.

7.6. Education and training initiatives: pedestrians

The question posed on this topic was:

> *In your country is **child pedestrian road safety** education or training promoted?*

The available response levels were 'nationally or most states or regions', 'some', 'few' or 'none'. Each country's response is shown in Table 25.

Table 25: Country by pedestrian fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by education and training initiatives

Country	Pedestrian rate as % of overall rate	Pedestrian rate	Education and training
Sweden	26	0.35	Few or no states/regions
Netherlands	22	0.44	Nationally/most states
Finland	29	0.67	Nationally/most states
Germany	31	0.69	Nationally/most states
Denmark	25	0.72	Nationally/most states
Canada	35	0.77	Nationally/most states
France	27	0.83	Some states/regions
Norway	46	0.83	Some states/regions
Australia	29	0.86	Nationally/most states
Iceland	33	0.92	Nationally/most states
USA	30	0.96	Some states/regions
Spain	37	0.97	Nationally/most states
UK	57	1.02	Nationally/most states
Czech Republic	44	1.20	Nationally/most states
Hungary	49	1.21	Nationally/most states
Turkey	22	1.21	Some states/regions
New Zealand	26	1.22	Nationally/most states
Switzerland	56	1.33	Nationally/most states
Poland	54	2.14	Nationally/most states
South Korea	79	5.41	Nationally/most states

PROMOTED NATIONALLY/ MOST STATES	PROMOTED SOME STATES/ REGIONS	PROMOTED FEW OR NO STATES/REGIONS

The promotion of child pedestrian education and training initiatives nationally or in most states was a shared characteristic of four of the five the top performers, namely The Netherlands, Finland, Denmark and Germany, but this did not distinguish them from other countries performing less well. Most participating countries (15) report that there are education and training initiatives nationally or in most areas.

7.7. Types of education and training initiatives: pedestrians

The following response levels were available to describe the sorts of education and training initiatives promoted by different countries:

a) Teaching of road crossing skills at the roadside

b) Teaching of road crossing skills in playgrounds or traffic parks

c) Pre-school traffic clubs

d) Provision of materials and advice for parents

e) Other, please specify

Each country's response is shown in Table 26.

Table 26: Country by pedestrian fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by types of education and training initiatives

Country	Pedestrian rate as % of overall rate	Pedestrian rate	Teaching crossing skills at roadside	Teaching crossing skills in playgrounds or traffic parks	Pre-school traffic clubs	Provision of materials and advice for parents	Other education or training
Sweden	26	0.35	No	No	No	No	No
Netherlands	22	0.44	Yes	No	No	Yes	Yes
Finland	29	0.67	Yes	Yes	No	Yes	No
Germany	31	0.69	Yes	Yes	Yes	Yes	Yes
Demark	25	0.72	Yes	No	Yes	Yes	No
Canada	35	0.77	No	Yes	Yes	Yes	Yes
France	27	0.83	Yes	Yes	No	No	No
Norway	46	0.83	No	No	Yes	Yes	Yes
Australia	29	0.86	Yes	No	No	Yes	No
Iceland	33	0.92	Yes	No	Yes	Yes	No
USA	30	0.96	No	Yes	No	Yes	Yes
Spain	37	0.97	No	No	No	Yes	Yes
UK	57	1.02	Yes	Yes	Yes	Yes	Yes
Czech Republic	44	1.20	No	Yes	No	Yes	Yes
Hungary	49	1.21	Yes	Yes	No	Yes	No
Turkey	22	1.21	Yes	No	No	No	No
New Zealand	26	1.22	Yes	Yes	Yes	Yes	No
Switzerland	56	1.33	Yes	Yes	No	Yes	No
Poland	54	2.14	Yes	Yes	No	No	No
South Korea	79	5.41	Yes	Yes	No	No	No

The top performers shared a number of different approaches to safety namely:

- teaching crossing skills at the road side
- provision of materials and advice for parents.

These approaches to education and training for child pedestrians did not distinguish them from other countries performing less well.

7.8. Compulsory education and training: pedestrians

The question posed on this topic was:

> *In your country is pedestrian road safety education or training compulsory for children?*

The available response levels were 'nationally or most states or regions', 'some', 'few' or 'not compulsory'. Each country's response is shown in Table 27.

Table 27: Country by pedestrian fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by compulsory education and training

Country	Pedestrian rate as % of overall rate	Pedestrian rate	Aged 0-5	Aged 6-9	Aged 10-14
Sweden	26	0.35	Not compulsory	Not compulsory	Not compulsory
Netherlands	22	0.44	Not compulsory	(5-11) nationally/ most states	Not compulsory
Finland	29	0.67	Not compulsory	Nationally/most states	Nationally/most states
Germany	31	0.69	Some or few states	Nationally/most states	Not compulsory
Denmark	25	0.72	Not compulsory	Nationally/most states	Not compulsory
Canada	35	0.77	Not compulsory	Not compulsory	Not some or few states compulsory
France	27	0.83	Some or few states	Some or few states	Some or few states
Norway	46	0.83	Not compulsory	Nationally/most states	Not compulsory
Australia	29	0.86	Not compulsory	Not compulsory	Not compulsory
Iceland	33	0.92	Nationally/most states	Nationally/most states	Nationally/most states
USA	30	0.96	Not compulsory	Some or few states	Some or few states
Spain	37	0.97	Nationally/most states	Nationally/most states	Nationally/most states
UK	57	1.02	Not compulsory	Not compulsory	Not compulsory
Czech Republic	44	1.20	Not compulsory	Nationally/most states	Not compulsory
Hungary	49	1.21	Nationally/most states	Nationally/most states	Nationally/most states
Turkey	22	1.21	Not compulsory	Not compulsory	Nationally/most states
New Zealand	26	1.22	Not compulsory	Not compulsory	Not compulsory
Switzerland	56	1.33	Nationally/most states	Nationally/most states	Not compulsory
Poland	54	2.14	Not compulsory	Nationally/most states	Nationally/most states
South Korea	79	5.41	Nationally/most states	Nationally/most states	Nationally/most states

COMPULSORY NATIONALLY/ MOST STATES	COMPULSORY IN SOME OR FEW STATES	NOT COMPULSORY

Having compulsory road safety education for children aged between 6-9 years nationally or in most states was a shared characteristic of four of the five top performers, namely The Netherlands, Finland, Germany and Denmark, but this did not distinguish them from other countries performing less well. Most (14) participating countries reported that child pedestrian safety education was compulsory nationally or in most or some states. This was most evident for the 6-9 age group, followed by 10-14 year old group, and the 0-5 age group.

7.9. National publicity activity: pedestrians

The question posed on this topic was:

> *In the last five years has your country run national **child pedestrian safety** campaigns?*
>
> *The available response levels were 'yes' and 'no'.*

And if they responded 'yes', *How often have national campaigns been run over the last five years?*

The available response levels were 'more than once a year', 'once a year' or 'less than once a year'. Each country's response is shown in Table 28.

Table 28: Country by pedestrian fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by national publicity activity in past 5 years

Country	Pedestrian rate as % of overall rate	Pedestrian rate	National publicity in last 5 years	How often
Sweden	26	0.35	No	
Netherlands	22	0.44	Yes	Once a year
Finland	29	0.67	Yes	Once a year
Germany	31	0.69	No	
Denmark	25	0.72	Yes	Once a year
Canada	35	0.77	No	
France	27	0.83	Yes	<Once a year
Norway	46	0.83	Yes	Once a year
Australia	29	0.86	No	
Iceland	33	0.92	No	
USA	30	0.96	No	
Spain	37	0.97	Yes	Once a year
UK	57	1.02	Yes	>Once a year
Czech Republic	44	1.20	No	
Hungary	49	1.21	No	
Turkey	22	1.21	No	
New Zealand	26	1.22	Yes	>Once a year
Switzerland	56	1.33	Yes	Once a year
Poland	54	2.14	Yes	>Once a year
South Korea	79	5.41	No	

Conducting national road safety campaigns once a year was a shared characteristic of three of the five top performers, namely The Netherlands, Finland and Denmark, and this distinguished them from other countries performing less well.

7.10. Regional publicity activity: pedestrians

The question posed on this topic was:

> *In the last five years has your country run regional **child pedestrian safety** campaigns?*

The available response levels were 'yes' and 'no'. Each country's response is shown in Table 29.

Table 29: Country by pedestrian fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by regional publicity activity in past 5 years

Country	Pedestrian rate as % of overall rate	Pedestrian rate	State/regional publicity in last 5 years
Sweden	26	0.35	No
Netherlands	22	0.44	Yes
Finland	29	0.67	Yes
Germany	31	0.69	Yes
Denmark	25	0.72	Yes
Canada	35	0.77	Yes
France	27	0.83	Yes
Norway	46	0.83	Yes
Australia	29	0.86	Yes
Iceland	33	0.92	Yes
USA	30	0.96	Yes
Spain	37	0.97	No
UK	57	1.02	Yes
Czech Republic	44	1.20	No
Hungary	49	1.21	No
Turkey	22	1.21	No
New Zealand	26	1.22	Yes
Switzerland	56	1.33	Yes
Poland	54	2.14	Yes
South Korea	79	5.41	Yes

Conducting regional publicity campaigns for child pedestrians was a shared characteristic of four of the five top performers, namely The Netherlands, Finland, Germany and Denmark, but this did not distinguish them from other countries performing less well. Slightly, more participating countries (15) reported that regional publicity was carried out in the last five years compared to national publicity.

7.11. Behaviour and legislation: pedestrians

7.11.1. Driver responsibility and child pedestrian accidents

The question posed on this topic was:

> *In some countries the driver is assumed to be responsible for an accident in which a child pedestrian is injured. Does this assumption apply to your country?*

The available response levels were 'yes' and 'no'. Each country's response is shown in Table 30.

Table 30: Country by pedestrian fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by legal responsibility of driver when a child pedestrian is injured

Country	Pedestrian rate as % of overall rate	Pedestrian rate	Is driver assumed responsible for accident involving child
Sweden	26	0.35	Yes
Netherlands	22	0.44	Yes
Finland	29	0.67	No
Germany	31	0.69	Yes
Denmark	25	0.72	No
Canada	35	0.77	No
France	27	0.83	Yes
Norway	46	0.83	No
Australia	29	0.86	No
Iceland	33	0.92	Yes
USA	30	0.96	No
Spain	37	0.97	No
UK	57	1.02	No
Czech Republic	44	1.20	No
Hungary	49	1.21	No
Turkey	22	1.21	No
New Zealand	26	1.22	No
Switzerland	56	1.33	Yes
Poland	54	2.14	No
South Korea	79	5.41	Yes

The presence of legislation that assumes driver responsibility in an accident involving a child pedestrian was a shared characteristic of three of the five top performers, namely Sweden, The Netherlands and Germany, and this distinguished them from other countries performing less well. Overall, only 7 participating countries had this legislation.

7.11.2. Legislation aimed at child pedestrian behaviour

The question posed on this topic was:

> *Does your country have any legislation aimed at children's pedestrian behaviour (for example, where they cross, adult accompaniment, use of visibility aids)?*

If legislation was instituted a comment was requested. Where available each country's response is shown in Table 31.

Only Poland had legislation specifically aimed at child pedestrian's behaviour.

Table 31: Legislation aimed at child pedestrian behaviour

Country	Fatality rate	Comment on legislation aimed at child pedestrian behaviour
FINLAND	5.31	From 2003 all pedestrians are required to wear reflective materials during the dark on roads with or without lighting
POLAND	2.14	1. In 1998 legislation was introduced requiring child pedestrians to wear reflective materials in built-up areas during the dark. 2. Children aged 0-7 can walk in the road only with some protection and care 3. Pedestrians are required to cross the road only at a pedestrian crossing

7.12. Research: pedestrians

The question posed on this topic was:

> *In the last five years has your country commissioned research on **child pedestrian safety** in any of the following areas?*

The available response levels were 'yes' and 'no' to the following list:

a) Road engineering measures

b) Safety education

c) Safety publicity

d) Behaviour and legislation

e) Other

f) No research commissioned

Each country's response is shown in Table 32.

Table 32: Country by pedestrian fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by research activity

Country	Pedestrian rate as % of overall rate	Pedestrian rate	Road engineering	Education	Publicity	Behaviour & legislation	Other research
Sweden	26	0.35	No	No	No	No	No
Netherlands	22	0.44	Yes	Yes	No	Yes	Yes
Finland	29	0.67	Yes	Yes	No	No	No
Germany	31	0.69	No	No	No	No	Yes
Denmark	25	0.72	No	No	No	No	Yes
Canada	35	0.77	No	No	No	No	Yes
France	27	0.83			Not known		
Norway	46	0.83	Yes	Yes	No	Yes	No
Australia	29	0.86	No	No	No	No	Yes
Iceland	33	0.92	No	Yes	Yes	No	No
USA	30	0.96	No	No	No	No	Yes
Spain	37	0.97	No	No	No	Yes	No
UK	57	1.02	Yes	Yes	Yes	Yes	No
Czech Republic	44	1.20	No	No	No	No	No
Hungary	49	1.21	No	No	No	No	No
Turkey	22	1.21	No	No	No	No	No
New Zealand	26	1.22	No	No	No	No	Yes
Switzerland	56	1.33	No	No	No	No	No
Poland	54	2.14	No	Yes	No	No	No
South Korea	79	5.41	Yes	Yes	No	No	No

The 'other' research category covered the following topics:

Accident data analysis: (Australia, Canada, Denmark, New Zealand)

School route safety: (Canada, Denmark, New Zealand, The Netherlands)

Protection systems: (Germany)

Surveys of attitudes and behaviour: (The Netherlands)

Technology (automated enforcement): (USA)

Research commissioning activity was a shared characteristic of four of the five top performers, namely The Netherlands, Finland, Germany and Denmark, but this did not distinguish them from other countries performing less well. However there was less research activity in the poorer performing countries. Overall, 14 participating countries reported that they had commissioned research; the single areas most commissioned were education (7) and engineering (5). For other types of research area the main areas commissioned were related to school route safety and accident data analysis.

7.13. Child pedestrian safety initiatives

The child pedestrian safety initiatives are described in Appendix B. The initiatives have been organised under generic headings to make it easier to look at specific issues. The initiatives reported here represent a sample of, and not all of, the initiatives in that country.

8. CHILDREN AS BICYCLISTS

Chapter coverage

High-risk groups of child bicyclists

Environment: bicyclists

Education and training initiatives: bicyclists

Types of education and training initiatives: bicyclists

Compulsory education and training: bicyclists

National publicity: bicyclists

Regional publicity: bicyclists

Behaviour and legislation: bicyclists

Helmet wearing rates among children by helmet wearing legislation

Comment on level of enforcement of bicycle helmet legislation

School policy on bicycle helmet wearing

Legislation aimed at child bicyclist behaviour

Research: bicyclists

Child bicyclist safety initiatives

Chapter summary

For bicyclists it is very difficult to have an ordering mechanism based on fatality rates per head of population because, with the exception of The Netherlands, bicycling exposure is very low in most countries. Because of this it is difficult to make robust statements about good and less good performers. For those countries that provided exposure information it is clear that the inclusion of exposure entirely alters which countries can be classed as relatively safe or unsafe for bicyclists.

Eight countries identified high-risk groups of bicyclists.The cross-cutting themes

that emerged were the high risks associated with low socio-economic group, boys (especially aged 10-14) and young children.

In terms of bicycling infrastructure it was notable that 3 countries that are known to have achieved some of the highest levels of bicycling have extensive infrastructure measures in place – and in particular, of the countries in our survey with travel data, The Netherlands have one of the lowest exposure based fatality rates of any country and some of the best infrastructure provision for bicyclists.

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

Most countries had conducted national and regional publicity.

Compulsory bicyclist road safety education for children was a shared approach of most countries.

Nine countries had bicycle helmet wearing legislation nationally or in some states. The enforcement of this helmet wearing law was mostly described as weak or variable. Few countries had legislation directed at other aspects of child bicyclist behaviour.

Ten countries had national data on bicycle helmet wearing rates. Some countries report high national rates of helmet wearing without legislation.

Most countries had commissioned research on child bicyclist safety in the last five years.

Many countries support a range of child bicyclist safety initiatives.

8.1. Introduction

The response rate for this questionnaire was 63% (19 out of 30 OECD countries). The countries that participated in the "Children as bicyclists" are shown in Table 33.

Table 33: Countries that participated in the "Children as bicyclists" survey

Australia	France	Norway	Switzerland
Canada	Germany	Poland	Turkey
Czech Republic	Iceland	South Korea	UK
Denmark	Netherlands	Spain	USA
Finland	New Zealand	Sweden	

For bicyclists it is very difficult to have an ordering mechanism based on fatality rates per head of population because, with the exception of The Netherlands, bicycling exposure is very low in most countries. Because of this it is difficult to make robust statements about good and less good performers. For those countries that provided exposure information it is clear that the inclusion of exposure entirely alters which countries can be classed as 'good' and 'less good'. In particular, whilst The Netherlands appears to perform poorly on the basis of population based fatality rates, when exposure is taken into account they are one of the best performers. Moreover, when exposure is taken into account, countries with low levels of population based bicycling fatality rates are poor performers in terms of exposure-based fatality rates. Whilst the ordering mechanism based on population rates is used in this Chapter, exposure rates are also shown for those countries that were able to provide travel data.

It can be seen that the inclusion of exposure information shows that The Netherlands, whilst having the highest population based fatality rate, has one of the lowest exposure based fatality rates and is one of the few countries that provides an extensive infrastructure for bicyclists.

8.2. High-risk groups of child bicyclists

The question posed on this topic was:

> *Have you identified any high-risk groups of child bicyclists (for example, age, gender, socio-economic group, ethnic origin, disabled children, children living in urban/rural areas)?*

The available response levels were 'yes' or 'no'. Each country's response is shown in Table 34. The groups they identified are shown in Section 8.2.1.

Table 34: **Country by bicyclist fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by identification of high risk groups**

Country	Fatality rate for 10-14 year olds per 100,000 km (where known)	Bicyclist rate as a % of overall rate	Bicyclist rate	High-risk groups identified
Turkey		3	0.18	No
Spain		7	0.19	No
Norway	0.001	11	0.20	Yes
Sweden	0.001	17	0.22	Yes
UK	0.007	16	0.28	Yes
Iceland		11	0.31	No
South Korea		5	0.31	No
Canada		16	0.35	No
USA		11	0.36	Yes
Australia		13	0.39	No
France		14	0.42	No
Czech Republic		16	0.44	No
Germany	0.002	24	0.54	No
Poland		14	0.55	Yes
Switzerland	0.002	24	0.56	No
New Zealand	0.004	15	0.69	Yes
Finland		31	0.73	Yes
Denmark		33	0.93	No
Netherlands	0.001	53	1.09	Yes

8.2.1. Groups of high-risk child bicyclists identified

Age: Under 12s (UK), Under 10s (Finland, New Zealand, USA, UK)

Gender: Boys especially 10-14 (Sweden, Norway, USA, Finland, New Zealand, UK, The Netherlands)

Socio-economic group: Low socio-economic groups – also less likely to wear a helmet (New Zealand, UK, USA)

Ethnic origin: Ethnic and cultural minorities – also less likely to wear a helmet (The Netherlands, New Zealand, USA, UK)

Place: Urban areas (Poland)

Less than half (8) of participating countries said that they had identified high-risk groups of bicyclists. A number of cross-cutting themes emerged. These were the high risks associated with low socio-economic and ethnic minority groups, boys (especially aged 10-14) and young children.

8.3. Environment: bicyclists

The question posed on this topic was:

In your country, how many local authorities or municipalities have introduced the following bicycle safety measures?

The available response levels were 'most', 'many', 'some', 'few' or 'none'. Each country's response is shown in Table 35.

Table 35: Country by bicyclist fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by safety measures

Country	Fatality rate for 10-14 year olds per 100,000 km (where known)	Bicyclist rate as % of overall rate	Bicyclist rate	Separate lanes	Not separate lanes	Special measures
Turkey		3	0.18	None	Few	None
Spain		7	0.19	Few	Some	Some
Norway	0.001	11	0.20	Most	Few	Few
Sweden	0.001	17	0.22	Many	Few	Few
UK	0.007	16	0.28	Many	Many	Many
Iceland		11	0.31	Some	None	None
South Korea		5	0.31	Most	Few	None
Canada		16	0.35	Some	Many	Some
USA		11	0.36	Many	Many	Few
Australia		13	0.39	Some	Many	None
France		14	0.42	Few	Some	Few
Czech Republic		16	0.44	Some	Few	Few
Germany	0.002	24	0.54	Most	Many	Some
Poland		14	0.55	Few	Some	Few
Switzerland	0.002	24	0.56	Many	Many	Some
New Zealand	0.004	15	0.69	Some	Some	Few
Finland		31	0.73	Most	Most	Many
Denmark		33	0.93	Many	Many	Many
Netherlands	0.001	53	1.09	Most	Many	Many

MOST	MANY	SOME, FEW, NONE

Just over half (10) of participating countries said that they had bicycle lanes separate from other traffic in most or many areas. Just under half reported bicycle lanes shared with other vehicles in most or many areas and few countries reported having special measures for bicyclists such as advanced stop lines or priority at traffic lights. It can be seen that the inclusion of exposure information shows that The Netherlands, whilst having the highest population based fatality rate, it has one of the lowest exposure based fatality rates and is one of the few countries that provides an extensive infrastructure for bicyclists. Although travel data were not provided, Denmark and some Finnish cities are also known for having very high levels of bicycling – it is interesting that this appears to correlate with high levels of infrastructure provision.

8.4. Education and training initiatives: bicyclists

The question posed on this topic was:

> *In your country is child bicyclist road safety education or training promoted?*

The available response levels were 'nationally or most states or regions', 'some', 'few' or 'none'. Each country's response is shown in Table 36.

Table 36: Country by bicyclist fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by education and training initiatives

Country	Fatality rate for 10-14 year olds per 100,000 km (where known)	Bicyclist rate as % of overall rate	Bicyclist rate	Education and training
Turkey		3	0.18	Not promoted
Spain		7	0.19	Nationally/most states
Norway	0.001	11	0.20	Some states/regions
Sweden	0.001	17	0.22	Not promoted
UK	0.007	16	0.28	Nationally/most states
Iceland		11	0.31	Nationally/most states
South Korea		5	0.31	Some states/regions
Canada		16	0.35	Nationally/most states
USA		11	0.36	Some states/regions
Australia		13	0.39	Some states/regions
France		14	0.42	Some states/regions
Czech Republic		16	0.44	Nationally/most states
Germany	0.002	24	0.54	Nationally/most states
Poland		14	0.55	Nationally/most states
Switzerland	0.002	24	0.56	Not promoted
New Zealand	0.004	15	0.69	Nationally/most states
Finland		31	0.73	Nationally/most states
Denmark		33	0.93	Nationally/most states
Netherlands	0.001	53	1.09	Some states/regions

PROMOTED NATIONALLY/MOST STATES	PROMOTED SOME STATES/REGIONS	PROMOTED FEW OR NO STATES/REGIONS

Just over half of participating countries (10) reported that there are education and training initiatives nationally or in most areas.

8.5. Types of education and training initiatives: bicyclists

The following response levels were available to describe the types of education and training initiatives promoted by different countries:

a) Bicycling in traffic

b) Bicycling in playgrounds or traffic parks

a) Other, please specify

Each country's response is shown in Table 37.

Table 37: Country by bicyclist fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by types of education and training initiatives

Country	Fatality rate for 10-14 year olds per 100,000 km (where known)	Bicyclist rate as % of overall rate	Bicyclist rate	Bicycling in traffic	Bicycling in parks	Other training
Turkey		3	0.18	No	No	No
Spain		7	0.19	No	Yes	No
Norway	0.001	11	0.20	Yes	Yes	Yes
Sweden	0.001	17	0.22	No	No	No
UK	0.007	16	0.28	Yes	Yes	No
Iceland		11	0.31	No	No	No
South Korea		5	0.31	No	Yes	No
Canada		16	0.35	Yes	Yes	Yes
USA		11	0.36	Yes	Yes	Yes
Australia		13	0.39	Yes	No	No
France		14	0.42	Yes	Yes	No
Czech Republic		16	0.44	No	Yes	No
Germany	0.002	24	0.54	Yes	Yes	No
Poland		14	0.55	No	Yes	No
Switzerland	0.002	24	0.56	Yes	Yes	Yes
New Zealand	0.004	15	0.69	No	Yes	No
Finland		31	0.73	Yes	Yes	No
Denmark		33	0.93	Yes	No	No
Netherlands	0.001	53	1.09	Yes	No	Yes

Training involving bicycling in traffic and traffic parks were supported by over half of all countries.

8.6. Compulsory education and training: bicyclists

The question posed on this topic was:

> *In your country is child bicyclist safety education or training compulsory for children?*

The available response levels were 'nationally or most states or regions', 'some', 'few' or 'not compulsory'. Each country's response is shown in Table 38.

Just over half (10) of participating countries reported that child bicyclist safety education was compulsory nationally/most or some states. This activity was more frequently reported for the 6 + age group.

Table 38 Country by bicyclist fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by compulsory education and training

Country	Fatality rate for 10-14 year olds per 100,000 km (where known)	Bicyclist rate as % of overall rate	Bicyclist rate	Aged 0-5	Aged 6-9	Aged 10-14
Turkey		3	0.18	Not compulsory	Not compulsory	Not compulsory
Spain		7	0.19	Nationally/most states	Nationally/most states	Nationally/most states
Norway	0.001	11	0.20	Not compulsory	Not compulsory	Not compulsory
Sweden	0.001	17	0.22	Not compulsory	Not compulsory	Not compulsory
UK	0.007	16	0.28	Not compulsory	Not compulsory	Not compulsory
Iceland		11	0.31	Not compulsory	Not compulsory	Not compulsory
South Korea		5	0.31	Nationally/most states	Nationally/most states	Nationally/most states
Canada		16	0.35	Not compulsory	Not compulsory	Not compulsory
USA		11	0.36	Not compulsory	Some or few states	Some or few states
Australia		13	0.39	Not compulsory	Not compulsory	Not compulsory
France		14	0.42	Some or few states	Some or few states	Some or few states
Czech Republic		16	0.44	Not compulsory	Nationally/most states	Nationally/most states
Germany	0.002	24	0.54	Not compulsory	Nationally/most states	Some or few states
Poland		14	0.55	Not compulsory	Nationally/most states	Not compulsory
Switzerland	0.002	24	0.56	Not compulsory	Not compulsory	Nationally/most states
New Zealand	0.004	15	0.69	Not compulsory	Not compulsory	Not compulsory
Finland		31	0.73	Not compulsory	Nationally/most states	Nationally/most states
Denmark		33	0.93	Not compulsory	Nationally/most states	Nationally/most states
Netherlands	0.001	53	1.09	Not compulsory	Not compulsory	Not compulsory

COMPULSORY NATIONALLY/MOST STATES	COMPULSORY IN SOME OR FEW STATES	NOT COMPULSORY

8.7. National publicity: bicyclists

The question posed on this topic was:

> *In the last five years has your country run national* ***child bicycle safety*** *campaigns?*

The available response levels were 'yes' and 'no'. And *How often have national campaigns been run over the last five years?*

The available response levels were 'more than once a year', 'once a year' or 'less than once a year'. Each country's response is shown in Table 39.

Table 39: Country by bicyclist fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by national publicity activity in past 5 years

Country	Fatality rate for 10-14 year olds per 100,000 km (where known)	Bicyclist rate as % of overall rate	Bicyclist rate	National publicity in last 5 years	How often
Turkey		3	0.18	No	
Spain		7	0.19	Yes	Once a year
Norway	0.001	11	0.20	Yes	< Once a year
Sweden	0.001	17	0.22	No	
UK	0.007	16	0.28	Yes	Once a year
Iceland		11	0.31	Yes	< Once a year
South Korea		5	0.31	No	
Canada		16	0.35	No	
USA		11	0.36	No	
Australia		13	0.39	Yes	< Once a year
France		14	0.42	Yes	< Once a year
Czech Republic		16	0.44	Yes	Once a year
Germany	0.002	24	0.54	No	
Poland		14	0.55	No	
Switzerland	0.002	24	0.56	No	
New Zealand	0.004	15	0.69	Yes	< Once a year
Finland		31	0.73	Yes	Once a year
Denmark		33	0.93	No	
Netherlands	0.001	53	1.09	Yes	Once a year

Just over half (10) of participating countries had run national publicity in the past five years, though two federal participating countries reported conducting regional publicity.

8.8. Regional publicity: bicyclists

The question posed on this topic was:

> *In the last five years has your country run regional **child bicycle safety** campaigns?*

The available response levels were 'yes' and 'no'. Each country's response is shown in Table 40.

Table 40: Country by bicyclist fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by regional publicity activity in past 5 years

Country	Fatality rate for 10-14 year olds per 100,000 km (where known)	Bicyclist rate as % of overall rate	Bicyclist rate	State/regional publicity in last 5 years
Turkey		3	0.18	No
Spain		7	0.19	No
Norway	0.001	11	0.20	Yes
Sweden	0.001	17	0.22	No
UK	0.007	16	0.28	Yes
Iceland		11	0.31	Yes
South Korea		5	0.31	Yes
Canada		16	0.35	Yes
USA		11	0.36	Yes
Australia		13	0.39	Not known
France		14	0.42	Yes
Czech Republic		16	0.44	Yes
Germany	0.002	24	0.54	Not known
Poland		14	0.55	No
Switzerland	0.002	24	0.56	No
New Zealand	0.004	15	0.69	Yes
Finland		31	0.73	Yes
Denmark		33	0.93	Yes
Netherlands	0.001	53	1.09	Yes

Most countries (12) had run regional campaigns in last five years.

8.9. Behaviour and legislation: bicyclists

8.9.1. Helmet wearing rates among children by helmet wearing legislation

Data on helmet wearing rates were requested from each country if available. Each country's response is shown in Table 41. A comment on the strength of enforcement is shown in the following Section.

Nine countries had bicycle helmet wearing legislation nationally/most or some states. Mostly the enforcement of this helmet wearing law was weak or variable. Notably, Sweden and Norway report high rates of helmet wearing without legislation.

10 countries provide national data on bicycle helmet wearing rates.

Table 41: Country by bicyclist fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by helmet legislation and helmet wearing

Country	Fatality rate for 10-14 year olds per 100,000 km (where known)	Bicyclist rate as % of overall rate	Bicyclist rate	Bicycle helmet legislation	% 0-5	% 6-9	% 10-14	% All
Turkey		3	0.18	Nationally/most states				
Spain		7	0.19	Nationally/most states				
Norway	0.001	11	0.20	Not compulsory				63
Sweden	0.001	17	0.22	Not compulsory	95	90	80 (10-12) 30 (13-14)	80
UK	0.007	16	0.28	Not compulsory				15
Iceland		11	0.31	Nationally/most states				
South Korea		5	0.31	Not compulsory				
Canada		16	0.35	Some or few states				
USA		11	0.36	Some or few states		32	18	25
Australia		13	0.39	Nationally/most states				
France		14	0.42	Not compulsory				
Czech Republic		16	0.44	Nationally/most states				
Germany	0.002	24	0.54	Not compulsory		37 (6-10)	8 (11-16)	
Poland		14	0.55	Not compulsory				
Switzerland	0.002	24	0.56	Not compulsory				36
New Zealand	0.004	15	0.69	Nationally/most states		94 (5-12)	84 (13-18)	
Finland (introduced 2003)		31	0.73	Nationally/most states	85 (0-6)	42 (7-12)	6 (13-17)	
Denmark		33	0.93	Not compulsory	68	53	17	
Netherlands	0.001	53	1.09	Not compulsory	14	3	0.5	5

COMPULSORY NATIONALLY/MOST STATES	COMPULSORY IN SOME OR FEW STATES	NOT COMPULSORY

8.10. Comment on level of enforcement of bicycle helmet legislation

Countries with cycle helmet legislation were asked about enforcement levels and to comment on their legislation. This is summarised below.

Country	Bicyclist rate	Helmet legislation enforced	Comment on enforcement
Turkey	0.18	WEAKLY	
Spain	0.19	WEAKLY	All bicyclists have to wear a helmet in non-built up areas. This regulation needs to be enhanced.
Iceland	0.31	WEAKLY	
Canada	0.35	VARIABLY	
USA	0.36	WEAKLY	Twenty states (including the District of Columbia) have laws requiring the use of helmets for children (generally under age 16). However, few have strong enforcement provisions, and law enforcement organisations are reluctant to sanction children. Law enforcement organisations would prefer to play an educational role.
Australia	0.39	STRONGLY	
Czech Republic	0.44	WEAKLY	Children cannot be fined because they are not held criminally responsible.
New Zealand	0.69	WEAKLY	
Finland	0.73	WEAKLY	

8.11. School policy on bicycle helmet wearing

The question posed on this topic was:

> *In your country how many schools have policies about the use of bicycle helmets on bicycle journeys to school?*

The available response levels were 'most', 'many', 'some', 'few' or 'none'. Each country's response is shown in Table 42.

Table 42: Country by bicyclist fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by school policy on helmet wearing

Country	Fatality rate for 10-14 year olds per 100,000 km (where known)	Bicyclist rate as % of overall rate	Bicyclist rate	School policy on helmets
Turkey		3	0.18	None
Spain		7	0.19	Few
Norway	0.001	11	0.20	Many
Sweden	0.001	17	0.22	Many
UK	0.007	16	0.28	Few
Iceland		11	0.31	Few
South Korea		5	0.31	Some
Canada		16	0.35	Some
USA		11	0.36	Some
Australia		13	0.39	Some
France		14	0.42	None
Czech Republic		16	0.44	Some
Germany	0.002	24	0.54	Some
Poland		14	0.55	None
Switzerland	0.002	24	0.56	None
New Zealand	0.004	15	0.69	Most
Finland		31	0.73	Many
Denmark		33	0.93	Some
Netherlands	0.001	53	1.09	Few

MOST	MANY	SOME, FEW, NONE

Few countries reported that many schools had policies on the wearing of bicycle helmets.

8.12. Legislation aimed at child bicyclist behaviour

The question posed on this topic was:

> *Does your country have any legislation aimed at the behaviour of child bicyclists in the road environment (for example, a compulsory proficiency certificate)?*

If legislation was instituted a comment was requested. Where available each country's response is shown in Table 43.

Table 43: Country by bicyclist fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by legislation aimed at child bicyclists

Country	Fatality rate (Bicycle)	Comment on legislation aimed at child bicyclist behaviour
Turkey	0.18	Child bicyclists must be at least 11 years old.
France	0.42	Introduced in 1993, ''Attestation Scolaire de Sécurité Routière (ASSR)'' 1) First level at around 12 years old. 2) Second level at around 14 years old. Required at school for all children.
Germany	0.54	Children under the age of 8 years have to use the pavement if no separate lane for bicyclists exists. Children up to 10 years are allowed to use the pavement.
Poland	0.55	Children aged 0-10 can ride a bicycle on the pavement Children aged 0-7 must ride a bicycle with some protection and care. There is a duty of having a bicycle licence for children aged 10-18. The above-mentioned rules are rarely applied, seldom supervised, very rarely punished.
Switzerland	0.56	Children are allowed to bicycle in road traffic with beginning of school age (normally 7 years old). Allowed only if children are able to pedal in sitting position.
Finland	0.73	Children under 12 years are allowed to bicycle on the pavement.
Denmark	0.93	Children under the age of 6 years must be accompanied by an adult (over 15 years) in traffic. Penalties involve fines but these are rarely used.

Seven participating countries had other legislation directed at the behaviour of child bicyclists. These laws were aimed at the age at which children could bicycle on the road, licensing and competence.

8.13. Research: bicyclists

The question posed on this topic was:

> *In the last five years has your country commissioned research on **child bicycle safety** in any of the following areas?*

The available response levels were 'yes' and 'no' to the following list:

a) Road engineering measures

b) Safety education

c) Safety publicity

d) Behaviour and legislation

e) Other

f) No research commissioned

Each country's response is shown in Table 44.

The 'other' research category covered the following topics:

Accident data analysis: (The Netherlands, New Zealand, Norway)

Protection systems (bicycle helmets): (Finland, Germany, USA)

Surveys of attitudes and behaviour: (Finland, The Netherlands, Germany)

Technology (instrumented bicycle): (The Netherlands)

Product safety and durability: (The Netherlands)

School journey safety: (Denmark)

Overall 10 participating countries reported that they had commissioned research. The single areas most commissioned were education (7) and behaviour and legislation (6). For other types of research area the main areas commissioned were related to accident data analysis, protection systems (bicycle helmets) and surveys of attitudes and behaviour.

Table 44: Country by bicyclist fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by research activity

Country	Fatality rate for 10-14 year olds per 100,000 km (where known)	Bicyclist rate as % of overall rate	Bicyclist rate	Road engineering	Education	Publicity	Behaviour & legislation	Other research
Turkey		3	0.18	No	No	No	No	No
Spain		7	0.19	No	No	No	No	No
Norway	0.001	11	0.20	Yes	Yes	No	No	Yes
Sweden	0.001	17	0.22	No	No	No	No	No
UK	0.007	16	0.28	Yes	Yes	Yes	Yes	No
Iceland		11	0.31	No	No	No	No	No
South Korea		5	0.31	No	No	No	No	No
Canada		16	0.35	No	No	No	Yes	No
USA		11	0.36	No	Yes	Yes	Yes	Yes
Australia		13	0.39	No	No	No	No	No
France		14	0.42			No information		
Czech Republic		16	0.44	No	No	No	No	No
Germany	0.002	24	0.54	No	Yes	No	Yes	Yes
Poland		14	0.55	No	Yes	No	No	No
Switzerland	0.002	24	0.56	No	No	No	No	No
New Zealand	0.004	15	0.69	No	No	No	No	Yes
Finland		31	0.73	Yes	Yes	No	Yes	Yes
Denmark		33	0.93	No	No	No	No	Yes
Netherlands	0.001	53	1.09	Yes	Yes	No	Yes	Yes

8.14. Child bicyclist safety initiatives

Child bicyclist safety initiatives are described in Appendix C. The initiatives have been organised under generic headings to make it easier to look at specific issues. The initiatives reported here represent a sample of and not all of the initiatives in that country.

9. CHILDREN AS VEHICLE OCCUPANTS

Chapter coverage

High-risk groups of child car occupants

Education and training initiatives: vehicle occupants

Compulsory education and training: vehicle occupants

National publicity: vehicle occupants

Regional publicity: vehicle occupants

Behaviour and legislation: vehicle occupants

Comment on enforcement of seat belt wearing legislation

Legislation on seat belts in school buses

Research: vehicle occupants

Child car occupant safety initiatives

Chapter summary

The top five performers in the child vehicle occupant league are Switzerland, the UK, The Netherlands, Sweden and Norway.

The identification of high-risk groups of vehicle occupants was a shared characteristic of the top performers and this distinguished them from other countries performing less well. Under half of participating countries said that they had identified high-risk groups of vehicle occupants. A number of cross-cutting themes emerged; these were the high risks associated with low socio-economic and ethnic minority groups and rural areas.

The promotion of child car passenger education and training initiatives nationally or in most states was a shared characteristic of most countries.

Having compulsory car passenger safety education for children was not a shared characteristic of the top five performers. Under half of participating countries reported that child car passenger safety education was compulsory nationally or in most states.

Most participating countries had run national and regional publicity in the past five years.

All countries had some form of seat belt legislation for vehicle occupants travelling in private vehicles.

Most countries provide national data on seat belt wearing rates among children. High seat belt wearing rates in the front and rear of private vehicles was a shared characteristic of top performers and this distinguished them from the majority of countries performing less well. A number of general patterns emerged. Lower rates of seat belt use were reported in the back of the car compared to the front and among children aged over five compared to children under 5. Most countries describe the enforcement of seat belt wearing as weak or variable.

The presence of legislation for seat belt wearing on school buses was a shared characteristic of the top performers. This distinguished them from the majority of countries performing less well.

Most countries reported that they had commissioned research on child vehicle occupant safety in the last five years.

Many countries support a range of child vehicle occupant safety initiatives.

9.1. Introduction

The response rate for this questionnaire was 70% (21 out of 30 OECD countries).

The countries that participated in the "Children as Vehicle Occupants" are shown in Table 45.

Table 45: Countries that participated in the "Children as Vehicle Occupants" survey

Australia	France	New Zealand	Spain	USA
Canada	Germany	Norway	Sweden	
Czech Republic	Hungary	Poland	Switzerland	
Denmark	Iceland	Portugal	Turkey	
Finland	Netherlands	South Korea	UK	

The top five performers in the vehicle occupant league table were:

- Switzerland
- UK
- Netherlands
- Sweden
- Norway

9.2. High-risk groups of child car occupants

The question posed on this topic was:

> *Have you identified any high-risk groups of child vehicle occupants (for example age, gender, socio-economic group, ethnic group, disabled children, children in urban/rural areas)?*

The available response levels were 'yes' or 'no' . Each country's response is shown in Table 46. The groups they are identified are shown below.

Table 46: Country by vehicle occupant fatality rate (0–14 years) based on 3-year average taken between 1996–2000 by identification of high-risk groups

Country	Car passenger rate as % of overall rate	Car passenger rate	High-risk groups identified
Switzerland	20	0.47	No
UK	27	0.48	Yes
Netherlands	25	0.51	No
Sweden	57	0.76	Yes
Norway	43	0.78	Yes
Hungary	36	0.89	No
Finland	40	0.94	Yes
Germany	45	1.01	No
Czech Republic	39	1.06	No
Canada	49	1.09	No
South Korea	16	1.1	No
Denmark	42	1.18	No
Poland	32	1.29	Yes
Spain	56	1.48	No
Iceland	56	1.54	Yes
Australia	57	1.69	No
France	59	1.77	No
USA	58	1.84	Yes
Portugal	44	2.46	Yes
New Zealand	59	2.74	Yes
Turkey	74	4.03	No

9.2.1. Groups of high-risk child car occupants identified

Age: Babies travelling in forward facing seats too early, most children aged 4-12 travel unrestrained (Portugal)

Socio-economic group: Low socio-economic groups where there is less seat belt use (the UK, Sweden, New Zealand)

Ethnic origin: Ethnic minorities and cultural groups where there is lower restraint use (the UK, Sweden, New Zealand, USA)

Disability: Lack of restraints for children with disabilities (Portugal)

Place: Rural areas (Iceland, Finland, the UK); urban areas (Poland)

The identification of high-risk groups of child car passengers was a shared characteristic of the top performers, namely the UK, Sweden and Norway, and this distinguished them from other countries performing less well. Under half (9) of participating countries said that they had identified high-risk groups of car passengers. A number of cross-cutting themes emerged these were the high risks associated with low socio-economic and ethnic minority groups, and rural areas.

9.3. Education and training initiatives: vehicle occupants

The question posed on this topic was:

> *In your country is child vehicle road safety education or training promoted?*

The available response levels were 'nationally or most states or regions', 'some', 'few' or 'none'. Each country's response is shown in Table 47.

Table 47: Country by vehicle occupant fatality rate (0–14 years) based on 3-year average taken between 1996–2000 by education and training initiatives

Country	Car passenger rate as % of overall rate	Car passenger rate	Education and training
Switzerland	20	0.47	Few or no states/regions
UK	27	0.48	Nationally/most states
Netherlands	25	0.51	Some states/regions
Sweden	57	0.76	Nationally/most states
Norway	43	0.78	Nationally/most states
Hungary	36	0.89	Nationally/most states
Finland	40	0.94	Nationally/most states
Germany	45	1.01	Some states/regions
Czech Republic	39	1.06	Nationally/most states
Canada	49	1.09	Nationally/most states
South Korea	16	1.10	Nationally/most states
Denmark	42	1.18	Nationally/most states
Poland	32	1.29	Nationally/most states
Spain	56	1.48	Nationally/most states
Iceland	56	1.54	Nationally/most states
Australia	57	1.69	Few or no states/regions
France	59	1.77	Some states/regions
USA	58	1.84	Nationally/most states
Portugal	44	2.46	Some states/regions
New Zealand	59	2.74	Nationally/most states
Turkey	74	4.03	Few or no states/regions

PROMOTED NATIONALLY/MOST STATES	PROMOTED SOME STATES/REGIONS	PROMOTED FEW OR NO STATES/REGIONS

The promotion of child car passenger education and training initiatives nationally or in most states was a shared characteristic of three of the top five performers, namely the UK, Sweden and Norway, but this did not distinguish them from other countries performing less well.

Most participating countries (14) reported that they have education and training initiatives nationally or in most states.

9.4. Compulsory education and training: vehicle occupants

The question posed on this topic was:

> *In your country is education on child safety seat or seat belt use compulsory for children?*

The available response levels were 'nationally or most states or regions', 'some', 'few' or 'not compulsory'. Each country's response is shown in Table 48.

Table 48: Country by vehicle occupant fatality rate (0–14 years) based on 3-year average taken between 1996–2000 by compulsory education and training

Country	Car passenger rate as % of overall rate	Car passenger rate	Aged 0–5	Aged 6–9	Aged 10–14
Switzerland	20	0.47	Not compulsory	Not compulsory	Not compulsory
UK	27	0.48	Not compulsory	Not compulsory	Not compulsory
Netherlands	25	0.51	Not compulsory	Not compulsory	Not compulsory
Sweden	57	0.76	Not compulsory	Not compulsory	Not compulsory
Norway	43	0.78	Not compulsory	Nationally/most states	Nationally/most states
Hungary	36	0.89	Nationally/most states	Nationally/most states	Nationally/most states
Finland	40	0.94	Not compulsory	Nationally/most states	Nationally/most states
Germany	45	1.01	Not compulsory	Not compulsory	Not compulsory
Czech Republic	39	1.06	Nationally/most states	Not compulsory	Not compulsory
Canada	49	1.09	Not compulsory	Not compulsory	Not compulsory
South Korea	16	1.10	Nationally/most states	Nationally/most states	Nationally/most states
Denmark	42	1.18	Not compulsory	Nationally/most states	Not compulsory
Poland	32	1.29	Not compulsory	Nationally/most states	Nationally/most states
Spain	56	1.48	Not compulsory	Not compulsory	Not compulsory
Iceland	56	1.54	Not compulsory	Nationally/most states	Nationally/most states
Australia	57	1.69	Not compulsory	Not compulsory	Not compulsory
France	59	1.77	Some or few states	Some or few states	Some or few states
USA	58	1.84	Nationally/most states	Nationally/most states	Nationally/most states
Portugal	44	2.46	Not compulsory	Nationally/most states	Not compulsory
New Zealand	59	2.74	Not compulsory	Not compulsory	Not compulsory
Turkey	74	4.03	Not compulsory	Not compulsory	Nationally/most states

COMPULSORY NATIONALLY/ MOST STATES	COMPULSORY IN SOME OR FEW STATES	NOT COMPULSORY

Having compulsory car passenger safety education for children was not a shared characteristic of the top performers. Just over half (11) of participating countries reported that child car passenger safety education was compulsory nationally or in most states. This activity was more frequently reported for the 6+ age group.

9.5. National publicity: vehicle occupants

The question posed on this topic was:

> *In the last five years has your country run national **child vehicle occupant safety** campaigns?*

The available response levels were 'yes' and 'no'. AND *How often have national campaigns been run over the last five years?*

The available response levels were 'more than once a year', 'once a year' or 'less than once a year'. Each country's response is shown in Table 49.

Table 49: Country by vehicle occupant fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by national publicity activity in past 5 years

Country	Car passenger rate as % of overall rate	Car passenger rate	National publicity in last 5 years	How often
Switzerland	20	0.47	No	
UK	27	0.48	Yes	> Once a year
Netherlands	25	0.51	Yes	< Once a year
Sweden	57	0.76	No	
Norway	43	0.78	Yes	Once a year
Hungary	36	0.89	Yes	> Once a year
Finland	40	0.94	Yes	Once a year
Germany	45	1.01	Yes	< Once a year
Czech Republic	39	1.06	No	
Canada	49	1.09	Yes	Ongoing
South Korea	16	1.10	Yes	> Once a year
Denmark	42	1.18	Yes	Once a year
Poland	32	1.29	Yes	< Once a year
Spain	56	1.48	Yes	Once a year
Iceland	56	1.54	Yes	> Once a year
Australia	57	1.69	No	
France	59	1.77	Yes	< Once a year
USA	58	1.84	Yes	> Once a year
Portugal	44	2.46	Yes	< Once a year
New Zealand	59	2.74	Yes	> Once a year
Turkey	74	4.03	No	

Conducting national road safety campaigns in the last five years was a shared characteristic of three of the top five performers, namely the UK, The Netherlands and Norway, but this did not distinguish them from other countries performing less well. Most (16) of participating countries had run national publicity in the past five years, though two federal participating countries reported conducting regional publicity.

9.6. Regional publicity: vehicle occupants

The question posed on this topic was:

> *In the last five years has your country run regional **child vehicle occupant safety** campaigns?*

The available response levels were 'yes' and 'no'. Each country's response is shown in Table 50.

Table 50: Country by vehicle occupant fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by regional publicity activity in past 5 years

Country	Car passenger rate as % of overall rate	Car passenger rate	State/regional publicity in last 5 years
Switzerland	20	0.47	No
UK	27	0.48	Yes
Netherlands	25	0.51	Yes
Sweden	57	0.76	No
Norway	43	0.78	No
Hungary	36	0.89	No
Finland	40	0.94	Yes
Germany	45	1.01	Yes
Czech Republic	39	1.06	No
Canada	49	1.09	Yes
South Korea	16	1.1	Yes
Denmark	42	1.18	Yes
Poland	32	1.29	No
Spain	56	1.48	No
Iceland	56	1.54	Yes
Australia	57	1.69	Not known
France	59	1.77	Yes
USA	58	1.84	Yes
Portugal	44	2.46	Yes
New Zealand	59	2.74	Yes
Turkey	74	4.03	No

Conducting regional campaigns was not a shared characteristic of the top performers. Over half (12) of participating countries reported that they had run regional campaigns in the last five years.

9.7. Behaviour and legislation: vehicle occupants

The question posed on this topic was:

> *In your country is there any legislation at a national or regional/state level requiring children to use safety seats or belts – in private vehicles?*

The information on seat belt legislation is summarised for each country in Table 51. A comment on the strength of enforcement is shown in the following Section.

Table 51: Country by vehicle occupant fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by legislation on seat belts in private vehicles and reported wearing rates (subject to data availability in the specified formats)

Country	Car passenger rate as a % of overall rate	Car passenger rate	% wearing in front				% wearing in back				All % any belt use
			0-5	6-9	10-14	ALL	0-5	6-9	10-14	ALL	
Switzerland	20	0.47									70 (0-12)
UK	27	0.48				95 (0-13)	97 (1-4)	87 (5-9)	83 (10-13)	92 (0-13)	
Netherlands	25	0.51	94 (0-4)	98 (5-12)			94 (0-4)	88 (5-12)			
Sweden	57	0.76	97	93	93		93	88	88		
Norway	43	0.78	90			89	95			89	
Hungary	36	0.89									20
Finland	40	0.94					90	74 (6-14)	74 (6-14)		
Germany	45	1.01	98	98 (6-11)		98 (0-11)	98	93 (6-11)		96 (0-11)	96 (0-11)
Czech Republic	39	1.06									0
Canada	49	1.09									86 (<16)
South Korea	16	1.1				84				4	
Poland	32	1.29	4 (1-4)		2 (5-12)		49 (1-4)		37 (5-12)		
Spain	56	1.48									66
Iceland	56	1.54	*				**				
Australia	57	1.69									
France	59	1.77									
Denmark	42	1.82				70				64	65
USA	58	1.84									
Portugal	44	2.46									43
New Zealand	59	2.74				98				92	94
Turkey	74	4.03									

* Safety seat 15%, booster 16%, seat belt 44%.
** Safety seat 63%, booster 51%, seat belt 54%.

All countries had some form of seatbelt legislation for vehicle occupants travelling in private vehicles.

Most countries provide national data on seat belt wearing rates among children.

High seat belt wearing rates in the front and rear of private vehicles was a shared characteristic of all of the top performers namely Switzerland, the UK, The Netherlands, Sweden and Norway and distinguished them from the majority of countries performing less well. Most countries describe the enforcement of seat belt wearing as weak or variable.

9.8. Comment on enforcement of seat belt wearing legislation

Countries with seat belt legislation were asked about enforcement levels and to comment on their legislation. This is summarised below.

Country	Fatality rate (car)	Enforcement of seat belts in private vehicles	Comment on enforcement
Switzerland	0.47	Weakly	
UK	0.48	Variably	It is for individual Chief Officers of Police to determine the level of enforcement given to road traffic offences.
Netherlands	0.51	Variably	Generally police may fine you when supervising, but on regional level special seat belt action may be held, which is announced beforehand.
Sweden	0.76	Variably	
Norway	0.78	Strongly	
Hungary	0.89	Weakly	
Finland	0.94	Variably	Punishable with a fine.
Germany	1.01		As enforcement is the responsibility of the Federal States (Bundeslander) themselves, there is no central information about enforcement intensity. Enforcement intensity varies regionally.
Czech Republic	1.06	Weakly	
Canada	1.09	Strongly	
South Korea	1.1	Strongly	
Denmark	1.18	Variably	
Poland	1.29	Weakly	
Spain	1.48	Weakly	
Iceland	1.54	Variably	
Australia	1.69	Strongly	
France	1.77	Variably	
USA	1.84	Strongly	Varies from state to state. In general heavily enforced.
Portugal	2.46	Variably	Enforcement varies with local campaigns or local police authorities that are more motivated or working in conjunction with Association for Safety Promotion in Children and Teenagers (APSI) or other programmes. Also the use of seat belts in the front seats is much stronger enforced than in the back.
New Zealand	2.74	Variably	Enforcement is often carried out in conjunction with local community action to promote child seat and restraint use, and encourage correct installation and use of child seats.
Turkey	4.03	Variably	

9.9. Legislation on seat belts in school buses

The question posed on this topic was:

> *In your country is there any legislation at a national or regional/state level requiring children to use safety seats or belts on school buses?*

The information on seat belt legislation in school buses is summarised for each country in Table 52.

Table 52: Country by vehicle occupant fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by legislation on seat belts in school buses

Country	Car passenger rate as % of overall rate	Car passenger rate	Seat belt law for school buses
Switzerland	20	0.47	Yes
UK	27	0.48	No*
Netherlands	25	0.51	Yes
Sweden	57	0.76	Yes
Norway	43	0.78	No
Hungary	36	0.89	No
Finland	40	0.94	No
Germany	45	1.01	No
Czech Republic	39	1.06	No
Canada	49	1.09	No
South Korea	16	1.10	No
Denmark	42	1.18	No
Poland	32	1.29	No
Spain	56	1.48	No
Iceland	56	1.54	Yes
Australia	57	1.69	No
France	59	1.77	No
USA	58	1.84	Yes
Portugal	44	2.46	No
New Zealand	59	2.74	No
Turkey	74	4.03	No

* Many children are carried to and from school on public buses that do not have to have seat belts. However, all coaches and school minibuses must provide some form of seat belts for passengers.

The presence of legislation for seat belt wearing on school buses was a shared characteristic of three of the top five performers, namely Switzerland, The Netherlands and Sweden, and this distinguished them from the majority of countries performing less well.

9.10. Research: vehicle occupants

The question posed on this topic was:

> *In the last five years has your country commissioned research on **child vehicle occupant safety** in any of the following areas?*

The available response levels were 'yes' and 'no' to the following list:

a) Behaviour and legislation

b) Safety education

c) Safety publicity

d) Other

e) No research commissioned

Each country's response is shown in Table 53.

Table 53: Country by vehicle occupant fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by research activity

Country	Car passenger rate as % of overall rate	Car passenger rate	Safety education	Safety publicity	Behaviour & legislation	Other
Switzerland	20	0.47	No	No	No	No
UK	27	0.48	No	No	Yes	Yes
Netherlands	25	0.51	No	Yes	Yes	Yes
Sweden	57	0.76	No	No	No	No
Norway	43	0.78	No	No	No	No
Hungary	36	0.89	Yes	Yes	Yes	No
Finland	40	0.94	No	No	Yes	No
Germany	45	1.01	No	No	Yes	Yes
Czech Republic	39	1.06	No	No	No	No
Canada	49	1.09	Yes	Yes	Yes	Yes
South Korea	16	1.10	Yes	No	No	No
Denmark	42	1.18	No	No	No	Yes
Poland	32	1.29	No	No	Yes	No
Spain	56	1.48	No	No	Yes	No
Iceland	56	1.54	No	No	No	No
Australia	57	1.69	No	No	No	No
France	59	1.77	No	No	No	Yes
USA	58	1.84	No	No	Yes	No
Portugal	44	2.46	No	No	No	Yes
New Zealand	59	2.74	Yes	No	Yes	No
Turkey	74	4.03	No	No	No	No

The ‘other’ research category covered the following topics:

Protection systems (standards and testing): (France, Germany, the UK, USA, Portugal)

Surveys of attitudes and behaviour: (Germany, The Netherlands, the UK, Portugal)

Accident data: Portugal

Research commissioning activity related to child car passenger safety was not a shared characteristic of the top performers.

Over half (14) of participating countries reported that they had commissioned research. The single area most commissioned was behaviour and legislation (10).

9.11. Child car occupant safety initiatives

Child car occupant safety initiatives are described in Appendix E. The initiatives have been organised under generic headings to make it easier to look at specific issues. The initiatives reported here represent a sample of and not all of the initiatives in that country.

10. POLICY ON CHILDREN'S TRAFFIC SAFETY

Chapter coverage

Ministries with responsibility for traffic safety

Agencies involved in implementing children's traffic safety

National plans and targets

Implementation plan

Involvement of children in the planning process

Guidance on planning

Policy on increasing walking and bicycling

Reasons for policies on policy on increasing walking and bicycling

National concerns about children's travel

Funding or subsidy of initiatives to influence children's travel

Child traffic safety policy initiatives

Chapter summary

Having national plans for more than 10 years for reducing children's traffic accidents was a shared characteristic of four of the overall top five performers, namely Sweden, the UK, Norway and Germany, but this did not distinguish them from other countries performing less well because most shared this approach. Having separate casualty reduction targets for the children was not a shared characteristic of the top five performers – of these, only the UK had set such targets.

For the 13 participating countries that had a national plan to improve road safety the following measures were included:

- Speed reduction measures
- Infrastructure measures
- Publicity aimed at children

- Low speed limits
- Education
- Publicity aimed at drivers
- Safety equipment
- Practical training

Having implementation plans comprising measures targeted at speed reduction, low speed limits, infrastructure, publicity aimed at both the children and drivers and safety equipment were shared characteristics of the overall top five performers, namely Sweden, the UK, Norway and Germany.

Having advisory environmental planning guidance for the safety, security and freedom of movement of children was a shared characteristic of the overall top five performers, namely Sweden, the UK, Norway and The Netherlands, and distinguished them from other countries performing less well. Children are rarely involved in the planning process.

Having policies on increasing walking and bicycling was a shared characteristic of all top five performers but this did not distinguish them from other countries performing less well because most shared this approach.

There was a range of child traffic safety policy initiatives mentioned by different countries. The initiatives are described under the following generic headings:

- School journey safety
- Consulting children on traffic safety
- Strategy
- Environment
- Inequalities
- Legislation

10.1. Introduction

The response rate for this questionnaire was 67% (20 out of 30 OECD countries).

The countries that participated in the "Policy on Children's Traffic Safety" are shown in Table 54.

Table 54: Countries that participated in the "Policy on Children's Traffic Safety" survey

Australia	France	New Zealand	Sweden
Canada	Germany	Norway	Switzerland
Czech Republic	Hungary	Poland	Turkey
Denmark	Iceland	South Korea	UK
Finland	Netherlands	Spain	USA

The overall top five performers were:

- Sweden
- UK
- Norway
- Netherlands
- Germany

10.2. Ministries with responsibility for traffic safety

The question posed on this topic was:

> *Which of the following best describes your Government's responsibility for child traffic safety?* AND *Specify the ministries that have a responsibility for child traffic safety (for example Ministry of Health, Ministry of Transport etc.).*

The available response levels were 'one', 'two or more', 'none'. Each country's response is shown in Table 55 together with information about each ministry.

Table 55: Country by overall fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by ministries with responsibility for traffic safety in each country

Country	Overall rate	Ministries for child traffic safety	Specified ministries
Sweden	1.58	Two or more	Ministry of Industry, Employment and Communications. Ministry of Health and Social Affairs.
UK	1.86	One	Department for Transport. Department of Health has responsibility for accident reduction amongst other things but DfT take the lead on road safety matters.
Norway	2.08	Two or more	Ministry of Transport. Ministry of Justice. Ministry of Church and Education.
Netherlands	2.20	Two or more	Ministry of Transport. Ministry of Education and Science Ministry of Public Health,Well-being and Sport.

Table 55: Continued

Germany	2.34	Two or more	German Federal Ministry of Transport, Building and Housing is responsible for road safety on a national level and therefore for child safety. But road safety work has a lot of duties, so that nearly every German Ministry on national or regional level has responsibility for child traffic safety.
Hungary	2.60		Ministry of Economy and Transport. Ministry of Interior. Ministry of Education.
Finland	2.76	Two or more	Ministry of Transport and Communications. Ministry of Education Ministry of Interior. Ministry of Social Affairs and Health.
Switzerland	2.81	One	The Federal Department (Ministry) of Environment, Transport, Energy and Communication.
Czech Republic	2.84	Two or more	Ministry for Transport and Communications. Ministry for Education.
Australia*	2.90	One	Commonwealth Department of Transport and Regional Services.
Canada	2.98	Two or more	Ministries of the Provinces and Territories responsible for transportation and highway safety, Transport Canada.
Iceland	2.98	Two or more	Ministry of Health. Ministry of Justice. Ministry of Transport.
Spain	3.11	Two or more	Ministry of Interior. Ministry of Transport. Ministry of Education.
Denmark	3.22	Two or more	Ministry of Transport. Ministry of Justice.
France	3.40	Two or more	Ministry of Transport, Ministry of Education and Youth. Ministry of Health.
Poland	4.29	None	
USA	4.40	Two or more	U.S. Department of Transportation. U.S. Department of Health and Human Services. U.S. Consumer Product Safety Commission.
New Zealand	4.78	One	The Ministry of Transport is responsible for setting the legislative framework for road safety. The Land Transport Safety Authority, a Crown Agency, is responsible for road safety delivery nationally (for example rules development, education, promotion, etc.). Other transport crown agencies have a supporting role, for example, in funding transport infrastructure, or undertaking enforcement.
Turkey	5.40	Two or more	Ministry of Interior. Ministry of National Education.
South Korea	7.47	Two or more	Ministry of Education. Ministry of Construction and Transportation. National Police Agency.

* In Australia each state is responsible for road safety and transportation.

Having shared responsibility for children's traffic safety by two or more ministries with a responsibility for child traffic safety was a shared characteristic of four of the overall top performers, namely Sweden, Norway, The Netherlands and Germany, but this did not distinguish them from other countries performing less well.

10.3. Agencies involved in implementing children's traffic safety

The question posed on this topic was:

Who implements child traffic safety policies and projects in your country?

The available response levels were 'yes' and 'no' to the following list:

a) Police

b) Schools

c) Local Authorities/Municipalities

d) Health Department

e) Charitable Organisations

f) Voluntary Organisations

g) Other NGOs – please specify

Each country's response is shown in Table 56. Categories f) and g) were combined because it was difficult to distinguish between them.

Table 56: Country by overall fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by agencies involved in implementing children's traffic safety

Country	Overall rate	Police	Schools	Local authorities	Health departments	Charities	Voluntary organisations and other NGOs
Sweden	1.58	No	Yes	Yes	Yes	No	Yes
UK	1.86	Yes	Yes	Yes	No	Yes	Yes
Norway	2.08	Yes	Yes	Yes	No	No	Yes
Netherlands	2.20	No	Yes	Yes	No	No	Yes
Germany	2.34	Yes	Yes	Yes	Yes	No	Yes
Hungary	2.60	No	No	No	No	No	No
Finland	2.76	Yes	Yes	Yes	No	No	Yes
Switzerland	2.81	Yes	Yes	Yes	Yes	Yes	Yes
Czech Republic	2.84	Yes	Yes	No	No	No	Yes
Australia	2.90	No	Yes	Yes	No	No	No
Canada	2.98	Yes	Yes	Yes	Yes	Yes	Yes
Iceland	2.98	Yes	Yes	Yes	Yes	Yes	Yes
Spain	3.11	Yes	Yes	Yes	No	No	No
Denmark	3.22	No	Yes	Yes	No	No	Yes
France	3.40	Yes	Yes	Yes	Yes	No	No
Poland	4.29	Yes	Yes	Yes	No	No	Yes
USA	4.40	Yes	Yes	Yes	Yes	Yes	Yes
New Zealand	4.78	Yes	Yes	Yes	Yes	Yes	Yes
Turkey	5.40	Yes	Yes	Yes	No	No	No
South Korea	7.47	Yes	Yes	Yes	No	No	Yes

Implementing children's traffic safety through a number of agencies including police, schools, local authorities, voluntary agencies and NGOs was a shared characteristic of the overall top performers, but this did not distinguish them from other countries performing less well.

10.4. National plans and targets

The question posed on this topic was:

> *Does your Government publish a national plan or strategy to reduce road traffic accidents involving children?* AND *Do these plans include casualty reduction targets for children?*

Countries were also requested to indicate how long they had such plans.

The information from this question is summarised in Table 57. The specific targets identified by countries are shown in Table 58.

Table 57: Country by overall fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by national plans and targets

Country	Overall rate	National plan that includes children's traffic safety	Plan includes casualty reduction targets for children	How long had national policies
Sweden	1.58	Yes	No	>10 years
UK	1.86	Yes	Yes	>10 years
Norway	2.08	Yes	No	>10 years
Netherlands	2.20	No	No	
Germany	2.34	Yes	No	>10 years
Hungary	2.60	No	No	
Finland	2.76	Yes	Yes	>10 years
Switzerland	2.81	No	No	
Czech Republic	2.84	Yes	No	<5 years
Australia	2.90	Yes	No	<5 years
Canada	2.98	Yes	Yes	5-10 years
Iceland	2.98	Yes	Yes	5-10 years
Spain	3.11	Yes	No	>10 years
Denmark	3.22	No	No	
France	3.40	Yes	No	>10 years
Poland	4.29	No	No	
USA	4.40	Yes	Yes	>10 years
New Zealand	4.78	No	No	
Turkey	5.40	No	No	
South Korea	7.47	Yes	Yes	>10 years

HAS A NATIONAL PLAN | HAS TARGETS FOR CHILDREN | HAD A PLAN FOR >10 YEARS

Having national plans for reducing children traffic accidents for more than 10 years was a shared characteristic of four of the five overall top performers, namely Sweden, the UK, Norway and Germany, but this did not distinguish them from other countries performing less well.

Table 58: Traffic safety targets

Country	Comment on targets
CANADA	Canada's Road Safety Vision 2010 national target calls for decreases of 30% in the average numbers of road users killed or seriously injured during the 2008-2010 period (compared to 1996-2001). In addition to the overall national target, Road Safety Vision 2010 contains the following sub-targets: • A 30% decrease in the number of fatally or seriously injured vulnerable road users (pedestrians, motorcyclists, cyclists). • Minimum seat belt wearing rates of 95% and proper use of child restraints by all motor vehicle occupants. • A 40% decrease in the percentage of road users fatally or seriously injured on rural roadways. • A 20% decrease in the number of road users killed or seriously injured in speed- or intersection- related crashes.
FINLAND	These targets are part of the national traffic safety plan (in 2010 the fatalities in traffic must number less than 250).
ICELAND	1. Health Plan to 2010, reduce 25%. 2. Traffic Safety Plan to 2012 reduce 40%.
SOUTH KOREA	Reduce the number of fatalities per 100,000 children to 3.0 (2000 present: 5.8) by 2006.
UK	A 50% reduction in children killed and seriously injured on the roads by 2010 from a 1994-1998 baseline. This target has recently been enhanced to include tackling the significantly higher incidence of road accidents in disadvantaged communities.
USA	The US Department of Transportation (DOT) has an overall goal to reduce motor vehicle fatalities to 1.0 per 100 million vehicle miles travelled by 2008. While this is an overall goal, reducing fatalities among children will help achieve the goal. Other US DOT goals include the following: 1) Reduce child (ages 0-4 years) occupant fatalities by 25% by 2005 (from 653 in 1996 to 490 in 2005). And by 2006 to: 2) Increase restraint use by 4 to 8 year old occupants to 85 percent (from 63 percent in 1999). 3) Reduce the percentage of unrestrained 4 to 8 year old occupants that die in passenger vehicle crashes to 39 percent (from 63 percent in 1999). 4) Reduce the number of moderate to severe injuries per 100,000 4 to 8 year old passenger vehicle occupants involved in motor vehicle crashes to 1050 (from 1509 in 1999). 5) Reduce the number of incapacitating injuries per 100,000 4 to 8 year old passenger vehicle occupants to 5700 (from 6540 in 1999). In addition, the US Department of Health and Human Services (DHHS) has an overall plan to improve the health of the nation. There are goals addressing unintentional (including traffic) injuries in the plan, as well as goal addressing increasing physical activity (including walking and bicycling). The unintentional injury goals do not provide specific targets for children; however the physical activity goals for walking and bicycling do provide specific targets for children. The relevant DHHS goals to achieve by 2010 are as follows: 1) To reduce deaths caused by motor vehicle crashes from 15.6 death per 100,000 population (in 1998) to 9.2 per 100,000 population. 2) To reduce pedestrian deaths on public roads to 1.0 pedestrian deaths per 100,000 population from 1.9 in 1998. 3) To reduce nonfatal injuries caused by motor vehicle crashes to 933 nonfatal injuries per 100,000 population from 1,181 nonfatal injuries per 100,000 population in 1998. 4) To reduce nonfatal pedestrian injuries on public roads to 19 nonfatal injuries per 100,000 population from 26 nonfatal pedestrian injuries per 100,000 population in 1998. 5) To increase use of helmets by bicyclists (no target set). 6) To increase the number of states and the District of Columbia with laws requiring bicycle helmets to all states and the District of Columbia from 10 states having laws requiring bicycle helmets for bicycle riders under age 15 years in 1999. 7) For children and adolescents aged 5 to 15 years, increase the proportion of trips to school (of 1 mile or less) made by walking from 31% in 1995 to 50% by 2010. 8) For children and adolescents aged 5 to 15 years, increase the proportion of trips to school (of 2 miles or less) made by bicycling from 2.4% in 1995 to 5.0% in 2010.

10.5. Implementation plan

The question posed on this topic was:

> *Does your Government's most recent plan or strategy promote any of the following measures?*

The available response levels were 'yes' and 'no' to the following list:

a) Speed reduction measures (for example, traffic calming)

b) Infrastructure measures (for example, crossing facilities, cycle paths)

c) Low speed limits in urban residential areas and villages

d) Road safety education for children

e) Practical training in road safety for child pedestrians or bicyclists

f) Road safety publicity aimed at children

g) Road safety publicity aimed at drivers in relation to children

h) Provision of safety equipment for example (bicycle helmets, safety seats etc) for children

i) Other, please specify.

Each country's response is shown in Table 59.

Table 59: Country by overall fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by implementation measures

Country	Overall rate	Speed reduction measures	Infra-structure measures	Low speed limits	Edu-cation	Practical training	Publicity-children	Publicity-drivers	Safety equip-ment
Sweden	1.58	Yes	Yes	Yes	No	No	No	Yes	No
UK	1.86	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Norway	2.08	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Netherlands	2.20				No plan				
Germany	2.34	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hungary	2.60				No plan				
Finland	2.76	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Switzerland	2.81				No plan				
Czech Republic	2.84	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Australia	2.90	Yes	Yes	Yes	No	No	No	No	No
Canada	2.98	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Iceland	2.98	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Spain	3.11	Yes	Yes	No	Yes	Yes	Yes	No	No
Denmark	3.22				No plan				
France	3.40	Yes	Yes	Yes	Yes	No	Yes	No	No
Poland	4.29				No plan				
USA	4.40	No	No	No	Yes	No	Yes	Yes	Yes
New Zealand	4.78				No plan				
Turkey	5.40				No plan				
South Korea	7.47	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

For the 13 participating countries that had a national plan to improve road safety the following measures were included:

- Speed reduction measures (12 countries)
- Infrastructure measures (12 countries)
- Publicity aimed at children (11 countries)
- Low speed limits (10 countries)
- Education (10 countries)
- Publicity aimed at drivers (10 countries)
- Safety equipment (9 countries)
- Practical training (8 countries)

10.6. Involvement of children in the planning process

The question posed on this topic was:

Are children actively involved in the planning process in your country?

The available response levels were 'very frequently', 'quite frequently', 'not very frequently' and 'never'. Each country's response is shown in Table 60.

Table 60: Country by overall fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by involvement of children

Country	Overall rate	Children actively involved in planning
Sweden	1.58	Not very frequently
UK	1.86	Never
Norway	2.08	Not very frequently
Netherlands	2.20	Not very frequently
Germany	2.34	Never
Hungary	2.60	Not known
Finland	2.76	Not very frequently
Switzerland	2.81	Not very frequently
Czech Republic	2.84	Not very frequently
Australia	2.90	Never
Canada	2.98	Not very frequently
Iceland	2.98	Never
Spain	3.11	Never
Denmark	3.22	Never
France	3.40	Never
Poland	4.29	Never
USA	4.40	Never
New Zealand	4.78	Not very frequently
Turkey	5.40	Not very frequently
South Korea	7.47	Not very frequently

Children rarely take an active part in the planning process in most countries.

10.7. Guidance on planning

The question posed on this topic was:

> *Does your Government have planning guidance that includes principles for safety, security (personal safety) and freedom of movement in the environments where children live, play and go to school?* AND *If yes, what is the status of this guidance?*

Each country's response is shown in Table 61.

Table 61: Country by overall fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by guidance on planning for children's safety

Country	Overall rate	Planning guidance	Status of guidance
Sweden	1.58	Yes	Advisory
UK	1.86	Yes	Advisory
Norway	2.08	Yes	Advisory
Netherlands	2.20	Yes	Advisory
Germany	2.34	No	
Hungary	2.60	No	
Finland	2.76	Yes	Advisory
Switzerland	2.81	Yes	Advisory
Czech Republic	2.84	No	
Australia	2.90	No	
Canada	2.98	Yes	Advisory
Iceland	2.98	Yes	Advisory
Spain	3.11	No	
Denmark	3.22	Yes	Advisory
France	3.40	No	
Poland	4.29	No	
USA	4.40	No	
New Zealand	4.78	Yes	Advisory
Turkey	5.40	No	
South Korea	7.47	Yes	Compulsory

Having advisory environmental planning guidance for the safety, security and freedom of movement of children was a shared characteristic of four of the five overall top performers, namely Sweden, the UK, Norway and The Netherlands, and this distinguished them from other countries performing less well.

10.8. Policy on increasing walking and bicycling

The question posed on this topic was:

> *Does your Government have a policy of increasing the amount of walking and bicycling done by children?* AND *If yes, what are the main reasons for this?*

The available response levels were 'yes' and 'no'. Each country's response is shown in Table 62. The reasons for these policies are summarised for each country in Table 63.

Table 62: Country by overall fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by policy on walking and bicycling

Country	Overall rate	Policy on increasing walking & cycling
Sweden	1.58	Yes
UK	1.86	Yes
Norway	2.08	Yes
Netherlands	2.20	Yes
Germany	2.34	Yes
Hungary	2.60	No
Finland	2.76	Yes
Switzerland	2.81	Yes
Czech Republic	2.84	No
Australia	2.90	Yes
Canada	2.98	Yes
Iceland	2.98	Yes
Spain	3.11	No
Denmark	3.22	Yes
France	3.40	No
Poland	4.29	No
USA	4.40	Yes
New Zealand	4.78	Yes
Turkey	5.40	No
South Korea	7.47	No

10.9. Reasons for policies on increasing walking and bicycling

Table 63: **Country by overall fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by reasons for policies on policy on increasing walking and bicycling**

Country	Overall rate	Health	Reduce car travel	Increase independence	Increase mobility	other
Sweden	1.58	Yes	Yes	Yes	Yes	No
UK	1.86	Yes	Yes	No	Yes	No
Norway	2.08	Yes	Yes	No	No	No
Netherlands	2.20	Yes	Yes	Yes	No	No
Germany	2.34	Yes	Yes	Yes	Yes	Yes
Hungary	2.60	No	No	No	No	No
Finland	2.76	Yes	Yes	No	No	No
Switzerland	2.81	Yes	No	No	No	No
Czech Republic	2.84	No	No	No	No	No
Australia	2.90	Yes	Yes	No	No	Yes
Canada	2.98	Yes	Yes	No	No	No
Iceland	2.98	Yes	Yes	Yes	Yes	No
Spain	3.11	No	No	No	No	No
Denmark	3.22	Yes	Yes	No	Yes	No
France	3.40	No	No	No	No	No
Poland	4.29	No	No	No	No	No
USA	4.40	Yes	Yes	No	Yes	Yes
New Zealand	4.78	Yes	Yes	Yes	Yes	Yes
Turkey	5.40	No	No	No	No	No
South Korea	7.47	No	No	No	No	No

Having policies on increasing walking and bicycling among children driven by concerns about improving health, reducing car travel and increasing independence and mobility was a shared characteristic of all of the overall top five performers but this did not distinguish them from other countries performing less well.

10.10. Funding or subsidy of initiatives to influence children's travel

The question posed on this topic was:

> *At the national or state level is there government funding or subsidy of initiatives to **influence children's travel** (for example school travel initiatives)?*

The available response levels were 'yes' and 'no'. Each country's response is shown in Table 64.

Table 64: Country by overall fatality rate (0-14 years) based on 3-year average taken between 1996-2000 by funding of initiatives for children's travel

Country	Overall rate	Initiatives
Sweden	1.58	No
UK	1.86	Yes
Norway	2.08	Yes
Netherlands	2.20	No
Germany	2.34	No
Hungary	2.60	No
Finland	2.76	No
Switzerland	2.81	No
Czech Republic	2.84	No
Australia	2.90	No
Canada	2.98	Yes
Iceland	2.98	No
Spain	3.11	No
France	3.40	No
Poland	4.29	Yes
USA	4.40	Yes
New Zealand	4.78	Yes
Turkey	5.40	No
South Korea	7.47	No

Despite the concern by many countries about increasing the amount of walking and bicycling by children few countries fund or subsidise initiatives to influence children's travel.

10.11. Child traffic safety policy initiatives

Child traffic safety policy initiatives are described in Appendix F. The initiatives have been organised under generic headings to make it easier to look at specific issues. The initiatives reported here represent a sample of and not all of the initiatives in that country.

11. DISCUSSION

This study has combined a range of existing and new data sources: mortality data from the IRTAD database, demographic and socio-economic indicators, exposure surveys and questionnaire surveys to key informants in transportation departments in OECD member countries. It has used these data to identify and record on a consistent basis the road safety policies, practices, legislation and research that have been adopted by OECD countries and to conduct a comparative analysis of these road safety interventions to attempt to determine the characteristics of top performers in relation to child road safety. A better understanding of these characteristics can, we hope lead to the systematic development of policies to reduce the great differences between countries. It is unlikely, however, that any single policy or intervention will significantly reduce road injuries. Instead packages of policies and intervention of a comprehensive nature may be more useful.

Below we discuss the strengths of the study and also consider the weaknesses or constraints of the research design. We consider the implications of the results: what lessons can countries lower down in the road safety league table learn from the top performers? During the course of the investigation, gaps in research have been identified and these will be summarised.

11.1. Strengths of the study

The UNICEF 'League table of Child Deaths by Injury in Rich Nations' published in 2001 showed that traffic deaths made up 41% of all injury deaths in childhood and that rates in the country at the bottom of the league table, Korea, were over five times that in the leading country, Sweden. A number of factors may have a role in explaining the differences between countries – differences in the quality and quantity of exposure to traffic in the road environment; differences between countries relating to demographic and socio-economic factors; and measures that individual countries adopt including policies, practices, legislation and research to tackle the problem of childhood traffic deaths and injury. Following the UNICEF study, a number of articles have called for further investigation of such factors (Langley (2001), Ramsay (2001), Chalmers and Pless (2001) and Towner and Towner (2002)) in relation to childhood injury deaths.

A strength of this study is that it is a systematic attempt to account for international differences in child traffic accidents. Some of the data sources are readily available but in this study they have been analysed for specific types of traffic injury: pedestrian, bicycle and car occupants and for different age groups of children. Road traffic accident data have also been analysed over a period of time, and do not just provide a snapshot of one particular period. To obtain information about policies, practices, legislation and research a series of 5 questionnaires were developed, piloted and administered to key informants in the different countries and this has

provided new data. The listing of initiatives on road safety in different countries has provided a useful resource for other countries to use.

A particular strength of this study is that it has included exposure data. This has been based on the questionnaire sent to key informants on children's travel. The travel survey yielded both quantitative and qualitative data on exposure, with the latter including information on the degree of accompaniment of children.

The need for information on exposure was identified twenty years ago by the OECD report, Traffic Safety of Children (OECD 1983). Information on the amount of walking, bicycling and travelling in cars that occurs in different age groups of children is essential before we can really understand whether countries can be classified as relatively 'safe' or 'unsafe'. This is particularly important in relation to bicycling where there is a very great range in bicycling activity between different countries. When exposure is included, the countries which can be classified as relatively 'safe' or 'unsafe' are very different from league tables based on injury death rates. Countries with low levels of bicycling emerge as relatively unsafe for bicyclists.

This study however reveals how difficult it is to incorporate exposure data. Although many countries do collect children's travel data, it is often not produced in a standardised form that facilitates international comparisons. We recommend that an international standard should be developed so that travel information can be collected more consistently.

11.2. Limitations/constraints

The questionnaire survey to key informants in the OECD countries provides a snapshot of current policy and practices but it has not been able to capture how policies have evolved within different countries. Future research could attempt to do this for specific countries. Macro-level policies cannot normally be subjected to controlled experiments and tools and methodologies to study these are underdeveloped.

Furthermore the survey tools did not tap into cultural differences in attitudes to safety. Some countries may have greater compliance with legislation or greater willingness to adopt protective behaviours such has wearing a seat belt or a bicycle helmet. The area of cultural attitudes to safety warrants further investigation.

The survey also focuses on primary and secondary safety. Primary safety is concerned with the prevention of accidents and secondary safety is concerned with the use of protective strategies such as wearing a seat belt or bicycle helmet that are devised to limit injuries once an accident has occurred. The study does not look at tertiary safety, that is practice and policy directed at the consequences of injury such as the organisation of emergency services, medical treatment and rehabilitation

services that deal with road traffic casualties. There may be real differences between countries in tertiary safety that means that some children are more likely to die or survive once an accident has occurred.

The survey of policies and practices was much easier to accomplish in smaller unitary countries than in larger federal ones. For the United States, in particular, with enormous variations between states in legislation and programmes, this was a very difficult task.

The questionnaire survey to key respondents was completed wholly or partially by 21 countries, representing a response rate of 70%. The absence of the contribution from 9 countries may have influenced the comparison of countries. However, the countries that did participate did provide a good range of the best, moderate and less good performers.

The countries that provided some exposure information were 20 out of the total of 30 countries. There were considerable variations in exposure information provided by the 20 countries and given these data limitations, the analysis has focused on the 10-14 age group of children for 10 countries with comparable data.

Raw data were extracted from the IRTAD database. Data were found to be missing for some fields eg. population data or accident data. In Chapter 3 we describe how such missing data were dealt with. As can be seen from the diagram in Chapter 3 a number of countries do not have common data for the period 1981 to 2001.

11.2.1. Approaches to prevention

Within the questionnaire we examined how individual countries adopted measures to reduce child car occupant injuries, bicycle and pedestrian injuries, which involved legislation, environmental modification and education and training and how these approaches feature in the policies of the OECD countries. Below we discuss each of these approaches in turn and examine how each are used within the countries and the manner in which they are used in combination in the policies adopted. We are particularly interested in what distinguishes top-performing countries from those lower down in the league table.

11.3. Legislation

Law is the primary tool of government, and a basic function of government is to protect the public's health, safety and general welfare. Legislation can thus play a role in the development of effective strategies in injury prevention. Legislation can encompass different conceptual approaches: statutory commands can either ***require*** or ***prohibit*** and can be directed at individual behaviour (people), products (things) or environmental conditions (places) (Christoffel and Tenet 1993).

In our study we have examined the adoption of five main areas of legislation: (1) In relation to car occupant injuries, this includes legislation related to child car restraints and seat belts in private and public vehicles. (2,3) In relation to bicycle injuries, these include bicycle helmet legislation and legislation aimed at child bicyclist behaviour. (4,5) For pedestrian injuries these include legislation relating to driver responsibility in an accident involving children and legislation relating to child pedestrian behaviour.

Bicycle helmet and child car restraints and seat belt legislation require people to adopt certain behaviours. Legislation related to child pedestrian and bicyclists require actions such as the completion of a proficiency test or prohibit actions such as unaccompanied children under a certain age walking in the road. Legislation on driver responsibility includes a cultural change away from the idea of blame assigned to the child.

It is not just the specific nature of legislation that is important but the range of legislation within a particular country that may give some indication of the political will of a country to address the burden of injury. The process of legislation is also important and legislation can still mean different things in different countries. One example that demonstrates this is the contrasting manner in which bicycle helmet legislation has been introduced in Australia and the United States. In the former, for example, vigorous promotional campaigns have preceded the introduction of legislation which led to high wearing rates before legislation came in. In contrast in states in the United States, legislation has been used as a lever to disseminate the idea of bicycle helmets to a wider public and has been introduced when wearing levels are low (Towner *et al.* 2002). Political culture in different countries has an important impact on the public acceptability of legislation. Following seat belt legislation, wearing rates have been much higher in Britain than the United States for example where there are considerable variations between states. Cultural differences, the length of time that legislation has been in place and how actively enforcement of legislation takes place, are also important.

11.3.1. Legislation and vehicle occupants

Seat belts reduce the likelihood by 40-50% of drivers and front seat passengers being killed and the likelihood of rear seat passengers being killed by approximately 25% Elvik *et al*. (1997). In our study we found that most OECD countries have introduced some form of seat belt/safety seat legislation for children travelling in private vehicles. Even so, seat belt wearing rates vary widely across OECD countries. Countries with the lowest rates of child vehicle occupant injuries have all achieved high wearing rates of seat belts by children; indeed this was a shared characteristic of top performers which distinguished them from those performing less well in the league table.

It is clear that the role of legislation in encouraging seat belt use amongst children varies significantly between OECD countries. How have some countries achieved much higher wearing rates than others? Enforcement does not seem to offer the complete answer because few countries report strong enforcement of legislation, instead most report that enforcement is variable or weak. To reinforce legislation, what appears to be required is the active promotion of seat belt wearing through education and publicity. Some specific initiatives include child seat loan schemes, seat belt clinics and outreach programmes to reduce the costs of safety equipment amongst disadvantaged groups.

In relation to children travelling in public vehicles, the presence of legislation for seat belt wearing on school buses was a shared characteristic of the top performers which distinguished them from countries doing less well. In some countries, such as the USA, school buses are purpose built and thus legislation may be easier to introduce. In contrast, in countries such as the UK, children travel to school on public service vehicles which are not exclusively designed for the school journey. However, when being transported by coach or minibus, seat belts are provided.

11.3.2. Legislation and bicyclists

Our survey identified nine countries which had bicycle helmet legislation nationally or in some states and these countries generally reported that legislation was enforced either variably or weakly. Sweden and Norway had achieved high rates of helmet wearing without introducing legislation. We have already discussed that bicycle helmet legislation has been introduced in different ways in different countries, but again, as in the seat belt wearing, the active promotion of helmet wearing is important. It may be more difficult to enforce a law for one particular age group. The majority of states, provinces or countries have enacted legislation relating to children or young people, laws which target all ages are less frequent.

Other studies have found some evidence of disadvantages of compulsory bicycle legislation. In some countries mandatory helmet wearing had led to a decrease in bicycling activity (for example, Victoria in Australia, Vulcan *et al*. 1992).

There was some legislation related to the age that children could bicycle on the road, licensing and competence.

11.3.3. Legislation and pedestrians

The presence of legislation that assumes driver responsibility in an accident involving a child pedestrian was a shared characteristic of the top performing countries and distinguished them from countries which performed less well in terms of pedestrian safety. This legislation places the responsibility and culpability on the driver and the burden of proof is placed on the driver of the vehicle. It may be possible that the presence of such a law has modified driver behaviour in residential

areas and has created a more child-centred approach to safety. Legislation of this nature may, however be easiest to introduce in some countries rather than others. At present, less than a third of countries have such legislation on driver responsibility and when other countries introduce legislation there may be an opportunity to carry out detailed pre-post evaluations of its impact.

Legislation relating to the specific behaviour of child pedestrians was not a shared characteristic by the top performers. For pedestrians, legislation mainly referred to the use of reflective materials and was not strongly enforced.

11.4. Environmental modification

By environmental modification or engineering involved the design of products or of the built environments to reduce the potential for injury, humans can alter and control their physical environment to make it less hazardous. For summaries, see for example, Christoffel and Gallagher (1999) and Towner and Ward (1998).

There is a considerable body of evidence that shows that changes to the road environment which reduce the speed of vehicles lead to significant casualty reductions (Mackie *et al*. 1988; Mackie *et al*. 1990; Webster and Mackie 1996; Grayling *et al*. 2002). The location of houses, schools, health, shopping and leisure facilities affect how children travel around and thus land use policy has a potential role to play in reducing childhood injuries on the roads. Terraced housing with little or no gardens and few garages can generate considerable on-street parking and fewer safe places for children to play. The size of school catchment areas can affect children's journey time and mode of travel to and from school. When planners and developers are laying out new housing estates, there is the opportunity to separate pedestrians and bicyclists from traffic and to reduce the need for children to cross busy roads. Large scale measures adopted in urban traffic safety schemes can include measures to redistribute traffic, measures to reduce unsafe manoeuvres (for example, banned right hand turns, roundabouts, medians in the centre of the road) and measures to reduce the speed of traffic through speed bumps, road narrowing etc.

Good practice often involves engaging all stakeholders from professionals such as engineers, educators and enforcers to members of the community including both adults and children.

11.4.1. Child-centred approach

A child-centred approach to the environment distinguished top performing countries from those performing less well. Child safety needs to be embedded in environmental planning procedures. Most of the top performing countries have advisory environmental planning guidance for the safety, security and freedom of movement of children and this feature distinguishes them from countries performing

less well. The top performing countries also pay attention to the need to provide play space for children in most residential areas. In Norway, for example, environmental standards require that children's play and activities are protected from pollution and dangers from the noise of traffic. Norway also has legislation that requires each local authority to appoint a senior member of staff who has specific responsibility for the design and implementation of area plans and buildings with children's interests in mind.

11.4.2. Range and extent of infrastructure safety measures

The range and extent of infrastructure safety measures which make the environment safer for vulnerable road users was a shared characteristic of top performing countries and distinguished them from countries performing less well. In particular top performers introduced measures which reduced the speed of vehicles in the road environment generally and to a lesser extent outside schools and this distinguished them from the countries that performed less well.

Places that children use and where they congregate are targeted not just in relation to traffic safety, but for many other reasons, such as social safety and independence but these are not the primary focus of this report. Even though the school journey only accounts for one fifth to a quarter of all traffic accidents in most countries, the school journey has become a focus of attention. In Korea, for example, the area of 300 metres radius around schools has been designed as school zones by Road Traffic Law. In these school zones, the police have the authority to enforce parking restrictions and speed limits of 30 km per hour.

It should be noted that few accidents on school journeys occur directly outside schools. But perceived risks need to be identified and addressed. Action outside schools may help to raise the profile of road safety and encourage more widespread positive attitudes to speed reduction, traffic calming measures and road safety training. Many countries are attempting to make the whole route from home to school safer for children when they are walking or bicycling. Such area wide or whole route treatments would benefit all pedestrians and bicyclists not just children.

The top performing countries tend to be the more wealthy OECD countries. Modification of the environment is a costly process and resources and capability are required in order for this approach to be adopted.

11.5. Education and training

Injury prevention education can be considered as a process with three sequenced goals: the provision of information about injury risks and how to avoid them, changing attitudes towards risk and safety, and altering behaviour (Christoffel and Gallagher, 1999).

Training can include the development of clearly defined pedestrian, bicyclist or driver skills through guidance by a more skilled individual and practice in the road environment.

In addition to the individual focus of education, it also encompasses the education of professionals and policy makers and can include lobbying and advocacy. Education can thus underpin both legislative and environmental measures by creating a climate of opinion that enhances a culture of safety .

11.5.1. Compulsory road safety education

Compulsory road safety education was reported in many OECD countries but its presence did not distinguish top performers from those countries performing less well. Sweden, in its Vision Zero policy, has modified its educational approaches to child road safety. Sweden has moved away from the view that the young child must be educated and trained to cope with the traffic environment, to the concept that the environment must be adapted to protect the child. The Vision Zero policy has only been adopted since 1997 and cannot wholly account for Sweden's position in the league table. The adoption of this policy however does offer the opportunity for its impact to be tracked over the next few years.

11.5.2. Educating children in the school setting

Many OECD countries promote child road safety education and training initiatives nationally or in most states, although this did not distinguish top performers from countries performing less well. Our survey does not address the quantity or quality of these initiatives. Top performing countries, however, did share a number of approaches to safety such as teaching pedestrian skills at the roadside, in playgrounds or traffic parks and providing materials and advice for parents. In some top performing countries participant approaches are being utilised, where children are consulted about traffic safety or encouraged to research and learn about traffic themselves (for example, The Netherlands and Sweden).

11.5.3. Educating professionals

There is widespread use of education that is solely directed at children and their parents in different countries. But education can also be directed at professionals. In some countries the mechanisms of delivering road safety interventions are well developed. In the UK, Road Safety Officers have a remit to deliver education, publicity and training to the child population in their local authority. In some countries such as Norway and Australia, children's traffic safety is an integral part of initial teacher training. Norway, for example, educates local authority planners to be aware of child-centred approaches to planning (see Section on environmental measures above).

11.5.4. Wider publicity campaigns

Publicity can contribute to the holistic approach to children's traffic safety. Evidence from our survey suggests that it is important. Conducting national pedestrian road safety campaigns once a year or more was a shared characteristic of the top performing countries and distinguished them from other countries performing less well.

11.6. Road safety policy

The previous sections on legislation, environmental modification and education and training shows that there are many areas of overlap and that individual measures cannot be considered in isolation. Best practice will thus incorporate a variety of different measures whose effect in combination is important. How do OECD countries deal with this complexity in their development of national policy and what distinguishes the high performing countries in terms of their child road safety policy?

11.6.1. National plans

Most OECD countries have had national plans for reducing child traffic accidents for longer than 10 years. But the top performing countries appear to be those which favour a holistic approach. These countries have national implementation plans which comprise a wide range of measures: low speed limits, speed reduction measures, promotion of secondary safety and publicity aimed at both children and their parents and drivers.

11.6.2. Ministerial responsibility

In most countries road safety is the responsibility of the Ministry for Transport but other Ministries, such as Health, share some responsibility for safety. The policies of all Departments could have an impact on child road safety directly or indirectly. Policies on school travel, school location, provision of leisure facilities and more investment in disadvantaged communities could all have an impact on children's mobility, social development, health and safety.

11.6.3. Targets

Targets are often integrated into national plans to improve child road safety. They can be used to assess the size of the problem, to motivate stakeholders and monitor progress. In our survey over half the countries had a national plan to reduce road casualties but less than half of these set specific targets for casualty reduction. Many countries identified a reduction of killed and seriously injured road traffic casualties amongst children (up to 50% reduction) over a period of time (usually 10 years).

Some countries have identified specific road user groups in their targets such as vulnerable road users or pedestrians. The UK, in particular, has identified as a target those who live in disadvantaged communities.

Some countries have identified behaviour related targets, for example the USA and Canada have targets to increase seat belt wearing and in the USA some states have targets about bicycle helmet legislation.

Targets are not confined to road safety. Over half the countries in our survey have policies on increasing walking and bicycling amongst children, driven by concerns about improving children's physical activity and increasing children's independence and mobility.

11.6.4. Targeted versus universal approaches

As part of a holistic approach to child road safety, both targeted and universal approaches are possible. There has been considerable debate about universal (or population based) versus targeted (or high-risk approaches) in relation to health and welfare. Universal approaches are non-stigmatising and affect greater numbers, but it has been argued that these will only exacerbate the problems of the disadvantaged. Both approaches can co-exist: a nationwide programme to reduce traffic speed could be complemented by greater funding for road safety measures targeted in more disadvantaged communities.

It may be important to target particular socially deprived groups or children from certain ethnic minority groups because the factors that influence their risk are different to those of the general populations. In relation to socially deprived groups these factors include:

- lack of money (ability to buy safety equipment)
- exposure to hazardous environments (for example, facilities for safe play, lack of gardens, heavy traffic densities and speed)
- ability of parents/carers to supervise children (single parent families, parental maturity, depression and family illness)
- children's attitudes and behaviour (for example, risk taking).

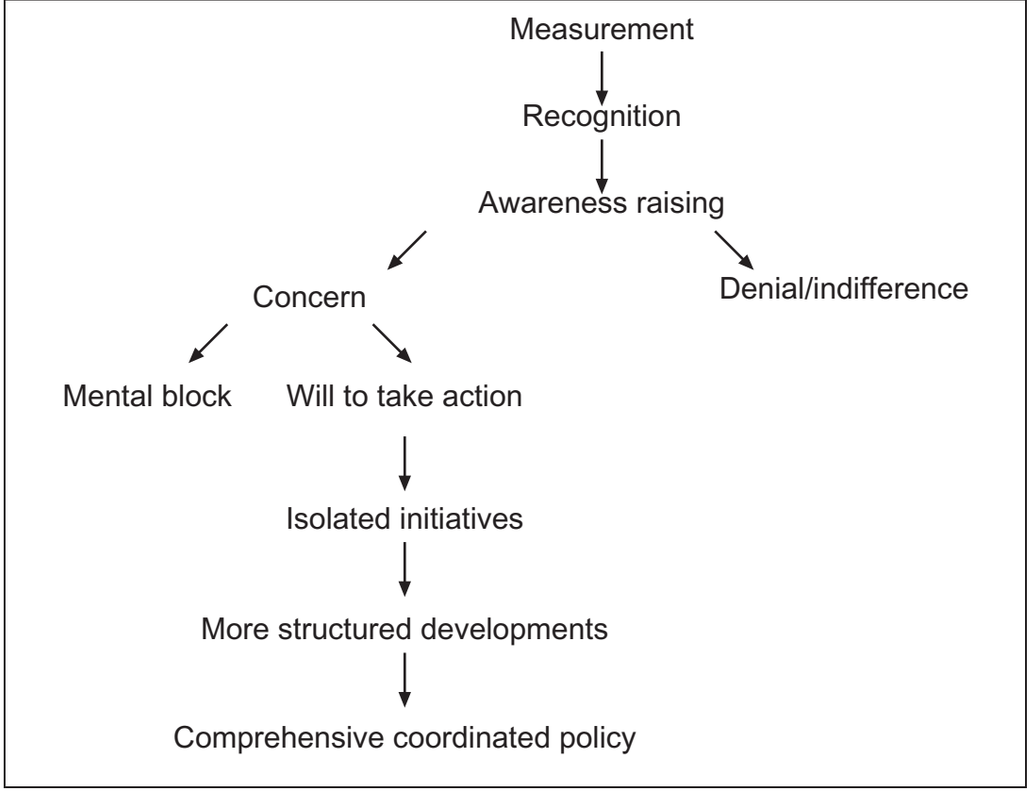
In relation to ethnicity, these factors include:

- exposure to different environment (for example, different travel patters)
- access to information and services
- barriers related to language
- ability of parents/carers to supervise children (lack of familiarity with traffic conditions for first generation immigrant families) (Thomson *et al*. 2001).

11.6.5. Action spectrum of road safety in OECD countries

One approach which has been applied to international comparisons of policies comes from the field of inequalities in health. Margaret Whitehead has proposed an 'action spectrum' (see Figure 47) to describe the process by which different European countries have dealt with the issues of socio-economic inequalities in health . Here we apply the idea of an action spectrum to the adoption of child road safety policies, and the measures and research that they encompass, by different OECD countries.

Figure 47: Action spectrum on inequalities in health (Whitehead 1998)



Whitehead describes a range of indicators in relation to inequalities in health which include the establishment of national research programmes or commissions of enquiry, official modification of national information system to facilitate measurement and monitoring of the issue, publication of government reports and, particularly, statements or bills. A whole spectrum of readiness and receptivity to the subject of social inequalities in health is found when these indicators are applied to different countries. At one end of the spectrum are countries that do not even measure. Then come the stages of measurement, recognition, awareness raising, denial/indifference, concern and will to take action. Following these are isolated initiatives, more structured developments and a comprehensive co-ordinated policy

to address the problem. The action spectrum should not be regarded as a linear process and countries will not necessarily go through all stages

In this field the pivotal role of good data is identified. The adoption of child road safety policies builds on a strong foundation of good mortality and exposure data. The top performing countries in our study of OECD countries are those with a comprehensive co-ordinated policy to address the problem of child traffic injuries and those which adopt a holistic approach.

Korea is an example of a country which is attempting to progress through the 'action spectrum' very quickly. Starting from a very low base, it has recently adopted a wide range of methods.

The 'action spectrum' framework could be used to monitor changes over time of the road safety policies, practices, legislation and research of the 30 OECD countries from this baseline study conducted in 2003.

In their study of countries that have adopted policies related to inequalities in health, Whitehead *et al*. identified the importance of recent international networks of researchers who stimulated the rapid dissemination of ideas between countries. This report about children's traffic safety offers many examples of good practice that other countries may wish to adopt. What is missing, however, is the formal mechanism to facilitate this adoption of innovative ideas.

Here we attempt to summarise what makes the difference between top performing countries in the Child Road Safety League and those lower down the league table.

In relation to children as ***pedestrians,*** top performers:

- have speed reduction measures (including environmental modification and low speed limits) and signalised crossings in ***most*** local authorities or municipalities
- have these measures outside ***many*** schools
- have outside play areas such as parks or playgrounds in ***most*** residential areas
- conduct national publicity campaigns aimed at child pedestrian safety
- have legislation that assumes driver responsibility for accidents involving child pedestrians in residential areas.

In relation to children as ***bicyclists***, our conclusions are limited, for reasons given earlier in the discussion related to exposure to bicycling.

In relation to children as ***vehicle occupants***, top performers:

- achieve high seat belt wearing rates (around 90% or higher) in the front or rear of private vehicles.
- know who are the high-risk groups
- have compulsory seat belt wearing on school buses
- measure seat belt wearing rates.

In relation to policy on children's travel, top performers have the following characteristic:

- many children aged 6-9 are accompanied by adults whilst travelling.

In relation to policy on children's traffic safety, top performers have the following characteristic:

- have advisory environmental planning guidance for the safety, security and freedom of movement of children.

11.7. The way forward

It is hoped that the contents of this report will provide a focus for the future development of road safety policies, practices, legislation and research in OECD countries. An international action group is required to co-ordinate activities.

A range of safety initiatives have been identified by individual countries and these are summarised in the report. A good practice guide could be developed from this with additional information provided on contacts, websites etc.

The importance of exposure data in understanding child road safety has been reiterated by this report. We recommend that travel data should be collected by all countries using a standardised format to allow international comparisons to be made.

This report has only been able to include mortality data for international comparison. In future a data system where a consistent international definition of non-fatal injuries is used will provide a broader and richer basis from which preventive activities can be developed.

This survey in 2003 can provide baseline data from which to measure change over the next 5, 10 and 15 years.

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APPENDIX A: METHOD OF CALCULATING TRENDS

The raw data was extracted from the IRTAD database. The parameters that were chosen were to extract the data on a country-by-country basis, selecting the three age groups (0-5, 6-9 and 10-14) and three accident types (pedestrian, bicyclists and car passengers). This data was converted into Excel format for each country. The extraction parameters can be seen in the Table 65 below.

The raw accident data for all age groups and accident types was amalgamated on a country basis with the corresponding population data. This was done using an excel spreadsheet, adding the population data into extra columns with the accident data. Two 'logic checks' were run on this data to make sure that the correct data was being imported from the population file to the accident data file. These two checks were run on the age columns and the year columns to make sure that they corresponded to each other. Some gaps were identified in the data following these checks.

On a country-by-country basis, data that was missing for only some of the fields i.e. no population data for a year or no accident data, a 'nonsense' number was inputted (999999) so that the fields that held missing data could be identified and eliminated, otherwise calculations would be made using limited data and would therefore not be representative. Data that was not present at all, for example no data for Australia was available up until 1990, was left out, as it is possible to detect this in the pivot Tables as they are represented by blank spaces.

If population data was missing for a year that was in the middle of two years that had data, an average of the two adjacent years was taken and this information was used.

Table 65: IRTAD selection parameter

Field or database	Selection parameters	Selection value
Data		
Accident data by year		
Casualties by age and traffic participation		
Country	=	(i.e. Australia)
Years	in	1981-2001
Age groups	in	00-05, 06-09, 10-14
Traffic participation	in	Passengers in cars + station wagons, pedestrians, bicyclists
Type of injury	=	Killed
Output format		Excel
Max rows		200

If data was missing for a year at the beginning or end of countries information i.e. 1981 or 2001, then the data from the closest year that had this information was used.

Once this missing data routine had been completed for all of the countries, all of the data was amalgamated onto one spreadsheet, placed on top of each other in one long list (4186 rows). This data was then converted into a pivot table.

The pivot Tables were built using the countries and years as the two areas to be commented upon. Data on age groups and the mode were then added. Two pivots were developed out of this data, one measuring accidents and one measuring population. By using pivot Tables the variables could be changed to measure different combinations of age and mode variables.

Once the two Tables were constructed, a simple formula was carried out between them to create a third table providing the data for the final charts.

This formula was: (Number of accidents/(Number of population/100)). This provided us with the number of deaths per 100,000 children based on all the relevant variables.

Once this data are produced in each pivot table it is already formatted in such a way that the countries are compared for each year providing the results. Before this is converted into charts the data are sorted for ‘nonsense’ values that we manipulated in the first stage. These values were deleted and no data was input for this year in the table. This had the effect of a break in the chart line. This can then be lifted straight into a chart and the source data changed according to each country.

All the charts were formulated by changing the variables, i.e., age and accident type. Small changes were then made to axis numbering according to the maximum value for each Section type. Each Section type (i.e. 0-14 Bicyclists) had the same axis values for each country for easy comparison.

APPENDIX B: CHILDREN'S TRAVEL INITIATIVES

School journey

CANADA

The national Active and Safe Routes to School programme encourages the use of active modes of transportation to and from school. The benefits include: increased physical activity for children and youth, less traffic congestion around schools, safer, calmer streets and neighbourhoods, and improved air quality and cleaner environment.

Initiatives include:

- walking school bus for young children with adult supervision
- biking school bus for older children
- no idling zone for cars around schools
- central school bus pick-up and drop-off points
- physical infrastructure changes to increase safety.

Partners include government and non-profit organizations.

DENMARK

Public school Act 1977:

The Municipality shall provide transportation in bus or taxi from and to school

1) longer route than 2.5 km for children for grade 0 to 3
2) longer route than 6 km from grade 4. to 9 and 7 km for grade 10
3) Less than 2.5 km if traffic situation demands transportation.

School journey safety

DENMARK

About 80% of Danish municipalities carry out special measures targeted to school children's travel and road safety. In the period 1995-2000 the special measures have predominantly consisted of:

- school route studies
- physical measures to improve school child road safety, management of car traffic at schools and increased level of service for walking and bicycling

– reduced school bus fares

– road safety campaigns and campaigns to discourage car travel of children to and from school.

NEW ZEALAND

One project currently operating that seeks to influence children's travel is "Walking School Buses". "Walking School Bus" initiatives are set up by schools for a number of reasons. They seek to encourage children to walk to school, make it safer for them to do so, reduce the "chaos" at the school gate and promote the school in the wider community. Essentially, a network of walking "school buses" are established, where each "bus" walks along a set route and an adult (usually a rostered volunteer parent) "driver" picks up and drops off children at designated stops and walks them to and from school.

Land Transport Safety Authority and others fund a range of community projects that seek to address road safety issues relating to children and youth. Such projects focus more on promoting safe road user behaviours among children (for example promoting bicycle helmet wearing, encouraging the wearing of safety belts in motor vehicles), or making it easier for parents to keep their children or others safe on the roads (for example, child seat rental schemes, reducing "Chaos at the School Gate").

One safety oriented project that can also potentially influence travel behaviour is "Safe Routes to Schools". The "Safe Routes to School" programme seeks to improve the safety of children in the road environment in high risk communities (especially child pedestrians, but also child bicyclists) through a model which brings stakeholders together; collects relevant data and information to inform and develop action plans; and then implements a series of initiatives (engineering, education, policy and enforcement) to identify and make routes to school safer for children to utilise.

Road safety programmes are also undertaken in many schools, with a new Road Sense programme for primary and intermediate schools recently having been introduced that integrated road safety into the broader curriculum.

NORWAY

There is a national campaign about active school children focusing especially on school travel www.aktiveskolebarn.no (Ministry of Health and Social Affairs, National Public Roads Administration, Police and National Traffic Safety organisation). The campaign supplies free material for schools

	including a general pamphlet, a PowerPoint presentation for use in the classroom with advice for the teacher and workbook sheets for pupils.
UK	Provision of bursary funding to local authorities to enable them to employ dedicated co-ordinators to work with schools and help them to develop and implement school travel plans. (School travel plans are packages of measures designed to reduce car use and improve safety on the journey to school.) 56 full-time posts and 16 combined schools/workplace posts funded until end of 2003/04 financial year.
	Programme of free consultancy advice for schools wanting to develop a school travel plan. Schools can receive up to five days free consultancy advice to help them develop and implement their plan. Present programme continues to end of 2003/04 financial year.
	Funding for the development and implementation of safe routes to schools schemes provided through the local transport plan settlement.
	Range of best practice guidance for local authorities, schools and parents. Covers developing school travel plans and strategies and increasing bus use for journeys to school.
USA	The initiatives are at the state level. Several states and local communities have undertaken Safe Routes to School efforts to encourage more children to walk or bicycle to school. The state of California set aside a proportion of its surface transportation funds for infrastructure improvement to encourage walking and bicycling to school. Communities had to compete for the funds, and the funds could only be used for capital improvements.

APPENDIX C: CHILD PEDESTRIAN INITIATIVES

School journey safety

CANADA	The national educational programme "Be Bright – Think Right", launched in 2002, includes a component on safety in and around school buses for the many children in Canada who ride a yellow school bus to and from school. This is an interactive video presentation with accompanying material for educators and parents, and website. Includes information on getting to the school bus (walking to the bus stop, crossing streets, waiting away from the road), and after riding on the school bus (staying away from danger zones around the bus, crossing in front of the bus if required, what to do if something is dropped near the bus). The programme was created in a partnership of Government of Canada, Scouts Canada, and the Royal Canadian Mounted Police (RCMP), mainly for use in schools. http://www.scouts.ca/bbtr/ba.html. Alberta's "Walk the Talk" programme focuses on improving education on child traffic safety issues and is profiled during the months of August and September when kids go back to school. Walk the Talk is designed to educate families on traffic safety practices. Alberta "Walks the Talk" Day encourages families to walk through their children's route to school, providing them with practical safety tips on how to avoid any dangers they may encounter. Programme materials include an interactive workbook, a card game, an internet website with material for kids, educators and parents http://www.saferoads.com/safety/community/whatiswtt.html
CZECH REPUBLIC	Safe Way to School Project on child participation in creating safe road Environment.
FINLAND	The method to map out children's views about danger spots along school route has been used in Finland especially after the campaign Secure Child's School Route. For the schools the message has been to identify dangerous spots along the school routes, to pass safely these tricky areas and to report the discovered trouble spots to the technical sector for improvements. The campaign material has been sent to schools and posters relating to the campaign have been visible alongside streets to focus also drivers' attention more on the children's safe passage to school. The material including ready made

	forms for mapping out the hazardous spots are also available in the Internet www.liikenneturva.fi.
NEW ZEALAND	"Walking school bus" "Kea" crossings [see Factsheet 26: http://www.ltsa.govt.nz/factsheets/26.html] "Safe routes to school" (in high risk communities) "Chaos at the school gate"
THE NETHERLANDS	Especially near primary schools many initiatives are taken to protect children (playing zone, kiss and ride strip, coloured tiles indicating safe route to school, flashing warning lights when school starts or when school is over, closing down through road, and the like).
NORWAY	Since the 1970s there has been an investment programme for "Safe routes to school". Since 1998 it has been required that municipalities provide traffic safety plans to apply for grants. The police organise traffic controls near school each autumn when school starts after summer vacation (late August, beginning of September). In many counties school starters (6 year olds) receive caps, vests or school bags in bright colours and reflective materials as a contribution to make the young road users more visible. Check of bicycle infrastructure on way to school and pupils bicycle (safety) equipment in the Rogaland county (National Public Roads Authorities).
TURKEY	For the purpose of ensuring the safe entry into and exit from schools by primary and secondary schools' students attendants in front of the schools and on crossings who are licensed by the traffic police and who wear special clothing and carry special signs are employed and authorised to direct and control traffic at these places during the course of duties. At primary and secondary schools, teachers, parents, and pupils over the age of eleven may become school crossing attendants if they wish.
UK	Good practice booklets have been prepared on safer routes to school including aspects of pedestrian safety and training.
USA	The "Walk to School" initiative began in 1997 as a "Walk your Child to School" event under the auspices of the Partnership for

a Walkable America. From a small programme involving two jurisdictions, it has now grown to an international effort. The "Walk to School" initiative is promoted by the both Departments of Transportation (DOT) and Health and Human Services (DHHS), as well as a host of private and non-profit organizations and state health and traffic safety departments. The initiative is often used do "kick off" other pedestrian safety initiatives such as Safe Routes to School.

The State of California set aside a percentage of its surface transportation funds for infrastructure improvements for "Safe Routes to School" initiatives. Communities had to compete for the funds, and funds could only be used for capital improvements. The programme was aimed at increasing walking and bicycling to school, although there was a heavy concentration on walking. The initial programme was for two years; it was so successful that the California legislature renewed it for an additional two years.

ARIZONA:

Back to School Enforcement Program students with safety tips, letters to school districts, school zone safety courses, and school bus driver training.

GEORGIA:

In 1999, the State of Georgia HSO partnered with the NHTSA Region IV office to conduct a Pedestrian Forum that consisted of a panel of experts discussing the pedestrian problem in Atlanta and surrounding areas. National experts in pedestrian safety also presented countermeasures that resulted in a campaign called Drive Civilized. The target audience was the general population, law enforcement, health professionals, and public and private sector.

OREGON:

A programme has been implemented that includes:

Distribution of "Ped Bee" pedestrian safety curriculum (developed in Washington, but adapted for Oregon) to all school districts and all major pedestrian safety advocates.

Distribution of "Ped Bee" to every city's mayor with cover letter and NHTSA's "Getting to School Safely Community Action Kit" Development and expansion of pedestrian safety enforcement operations targeting crosswalks (including school

zones); uses overtime grant funds to fund local police agencies to do two to four hour operations where a decoy pedestrian attempts to cross in a crosswalk and if motorists don't stop and yield, they are cited or warned.

Development and subsequent revision of "A Guide to School Area Safety" by Oregon's Department of Transportation Traffic Management (supported by the Safety Division and federal funding.).

Education

CANADA	In some areas the school curriculum includes teaching modules and resource material on traffic safety as part of a kindergarten to senior level active and healthy lifestyles programme.
FINLAND	In Finland parents get information about child pedestrian safety primarily on two different phases; during the four-year check-up at the child health centre and during the registration for school. These channels cover almost the entire age group, about 40-50,000 families each year.
NEW ZEALAND	"Safe Start/Small steps" programme For more information see: http://www.ltsa.govt.nz/publications/safety_education.html)
UK	Scotland provides a free pre school traffic club for all 3-5 year olds – it is available for a fee in other parts of the UK and a small number of authorities subsidise the scheme for target groups. "Hedgehogs" is the name of the current education and publicity campaign run by the UK Department for Transport. The campaign has an interactive website and other reminders of the TV messages via posters and postcards. DfT also has a schools website with lesson plans for primary and secondary schoolteachers.
USA	Two years ago, NHTSA developed a pedestrian safety education programme for young children between the ages of 5-9 that was associated with a substantial-crash reduction when tested in three cities. Another programme targeted children ages 7-11. This study focused on appropriate crossing behaviour at intersections. The study, implemented by the Insurance Institute

for Highway Safety, found a substantial reduction in intersection crashes. During the intervening years a number of education/ skills training programmes were implemented. NHTSA will initiate a new research study in 2003 that will examine various education approaches for their crash reduction potential.

NEW JERSEY:

Safety Education on the Move – In an effort to decrease traffic safety injuries and fatalities, the New Jersey Division of Highway Safety transformed a transit bus into a mobile traffic safety educational classroom that comes fully equipped with TV/VCR, educational materials, car seats, videos, bike helmets, and other related equipment. The bus is taken throughout the state. As much as possible staffed with personnel that reflect the demographic make-up of the community where education is being given. A primary focus is proper child restraint use, pedestrian safety, and bike safety.

Audience – primary – children of all ages; secondary – adults

Messages: rules of the road for bicyclists and pedestrians, wear a helmet, the 4 steps to child passenger safety – infant seats, forward facing seats, booster seats and seat belts.

NEW YORK:

In 1997, under the auspices of the National Safety Council, the Partnership for Walkable America and Walking Magazine, the first annual Walk Your Children to School Day was held in New York State to encourage parents and/or caregivers to walk with their children to school or bus stops for at least one day during the school year.

The New York State Department of Transportation (DOT) in partnership with the Governor's Traffic Safety Committee (GTSC), the Department of Motor Vehicles (DMV), Department of Health (DOH), and traffic safety partners across New York State have participated in the National Walk Your Children to School Day since 1998. On October 2, 2002 schools across NYS will again participate in this annual safety campaign. According to State DOT the number of schools participating in this event has grown from three in 1998 to 19 in 2001. The DOT is projecting more participation for 2002.

Audience: This campaign targets Children K-5.

Messages: The programme encourages children to walk safely

	and encourages parent involvement in teaching children safe walking behaviours.

Vehicle engineering and pedestrian safety

GERMANY	Cooperation with EEVC working group 17: "Pedestrian protection" (with development of a child head impact test procedure and the related protection criteria 2) The programme "Child and Traffic": focus on the parents of pre-school children.
NEW ZEALAND	"Safe Start/Small steps" programme. For more information see: http://www.ltsa.govt.nz/publications/safety_education.html).

Advocacy

NEW ZEALAND	On-going advocacy and awareness raising efforts of non-governmental agencies such as Safekids.
THE NETHERLANDS	Traffic safety label: a regional quality label for schools meeting fundamental safety-quality requirements. Annually the so-called national street playing day is organized, generally in May. During this day organisations of inhabitants close down some residential streets for motorized traffic, and organize all kinds of social and playing activities (for children, but also adults). Many municipalities are involved in this activity. It is co-ordinated by the national traffic safety organisation 3VO.

Environment

THE NETHERLANDS	Child ribbon: a path through a green area for children connecting important destinations, like houses, schools, shops; safe and secure, provided with playing objects. Create extra playing space by reducing crossing surface for cars.
UK	Home zones are being promoted and evaluated, a £30 million Home Zone Challenge was launched in July 2001. A demonstration project is underway to improve the environment of busy main through roads for pedestrians.

Pedestrian training

UK

Setting firm foundations of sound pedestrian skill are very important and practical child pedestrian road side training schemes have been developed for example, Kerbcraft and Let's Decide Walkwise. However, children's pedestrian risk increases with age and peaks in the early years of secondary school. DfT commissioned BITER to develop and evaluate materials for the age group transferring from primary to secondary school. Making Choices has been produced and widely distributed via RSOs. IT addresses travel safety and personal safety issues and includes a booklet for parents, a resource booklet for schools and a journey planner for children.

With support from DfT, RoSPA has produced guidelines on the management of practical child pedestrian training schemes.

A national pilot child pedestrian training scheme is underway involving £10 million made available over 5 years.

USA

NEW YORK:

Safety City is a realistic simulated street environment where children can learn and practice pedestrian and bike safety skills. The Safety City comes fully equipped with traffic signs and signals, crosswalks and other street markings. Children begin with classroom instruction and then progress to the Safety City streets to practice what they have learned. The six Safety Cities in New York City also double as child seat fitting stations and the most recent city, called Access City will provide classes to children with special needs. Safety Cities are currently located in Manhattan, Queens, Bronx, Staten Island, Brooklyn, and Washington Heights (Access City). There is also one in Nassau County.

Audience: primarily third graders.

Messages: rules of the road for bicyclists and pedestrians, always use a helmet, proper child restraint use.

Education and enforcement

USA

An ongoing NHTSA-sponsored research study is investigating approaches for reducing vehicle speeds in local neighbourhoods where many child-related crashes occur. In Phoenix and Peoria Arizona, we are examining the effects on vehicle speeds of education and enforcement on calmed and non-calmed roadways.

Driver education and publicity

DISTRICT OF COLUMBIA, MARYLAND, & VIRGINIA METRO AREA:

Street Smart is aimed at young drivers who are involved in the majority of pedestrian collisions, and features Metrorail and Metro bus ads, radio ads, television public service announcements, and posters. The campaign materials urge drivers "Imagine the Impact" on the lives and families of both pedestrians and drivers resulting in a traffic accident. The ads feature real people telling their stories and stress the rules for driver and pedestrian behaviour at crosswalks.

Data

NORWAY — The National Public Roads Administration has appointed separate inter-disciplinary groups to look into traffic accidents concerning pedestrians, bicyclists and other road user groups as motor bicyclists and heavy traffic.

APPENDIX D: CHILD BICYCLIST INITIATIVES

Bicycle helmet wearing and legislation

CANADA	Bicycle Helmet Use in British Columbia, Effects of the Helmet Use Law, RD Foss and DJ Beirness, April, 2000. Use the following link to see the study report. http://www.injuryresearch.bc.ca/bc_bike_helmet_rpt.pdf The report presents the results of a population-based survey of helmet use in 17 communities in B.C. Commuters, recreational bicyclists and children were observed at a total of 116 sites. Helmet use increased from 1995 to 1999 (legislation was effective in 1996). However, the 6-15 age group was the least likely to be wearing a helmet.
NEW ZEALAND	Promotion leading up to, and subsequent legislation making helmet wearing compulsory.
FINLAND	In Finland we have now a proposal in the Parliament that all bicyclists are recommended in our legislation to use bicycling helmets (without any kind of punishment if not used).
USA	NHTSA undertook a study to investigate the effectiveness of bicycle helmet laws, in particular, whether the laws were enforced and whether there were any evaluation studies on the laws. This was not an experimental study; it was primarily a case study of six jurisdictions. However, we did find that law enforcement was not a particularly strong component for a variety of reasons. Since most laws apply only to children (generally under 16), law enforcement is reluctant to be punitive. Law enforcement prefers to play a more educational role. NHTSA will be initiating a research study in 2002 to evaluate bicycle helmet laws and ordinances. The study will: 1) review recent literature on the injury-reduction effectiveness of bicycle helmets; 2) assess the effects of publicity alone on bicycle helmet usage and mobility in a jurisdiction or state where legislation was not enacted; 3) assess the combined effects of publicity in combination with law enforcement intervention on bicycle helmet usage and mobility in a state that enacted helmet legislation.

Education

GERMANY	Development of multimedia software for learning bicycling in primary school. All children visit a traffic garden in school, so almost every child gets a basic bicycle education in the 3rd and 4th class (ages 8-11) The German Road Safety Council and the German Traffic Guard offer courses for parents to teach their pre-school children.
NORWAY	Establishing of a Closed Traffic Course for bicycle education and an educational programme for traffic education including a visit at the Traffic Course. Contact: Erik Jølsgard, Norwegian Public Roads Administration, County of Sør-Trøndelag.
UK	CTC are preparing a curriculum for adult and young people's bicycle training. DfT has funded a project by the Bicycle Helmet Initiative Trust to try and increase education and publicity about bicycle helmets through schools using health professionals. Based on their experience guidelines have been set up for local health promotion campaigns to promote bicycle helmet wearing.
USA	NEW JERSEY: The New Jersey Division of Highway Safety in conjunction with the Brain Injury Association of New Jersey developed a bicycle safety educational programme which is being utilized state wide. Although all age groups can benefit, the primary focus is on children. The programme includes bi-lingual educational materials (English and Spanish), an interactive bilingual website, inserts for healthcare newsletters and magazines, posters, and stickers for helmets. Materials are also available to retail stores selling or renting bicycles and helmets. Bicycle Safety PSAs are promoted around the state and media are provided with fact sheets and contacts for interviews. Audience: Primary – children secondary—parents. Message: wearing a helmet reduces the chances of receiving a brain injury.

NEW YORK:

New York State's 4-H Bicycle and Pedestrian Traffic Safety Project at Cornell University: Electronic Education for Bicyclists. The electronic bicycle education programme is in its second year of development. It is designed to provide safe bicycling information to children and parents. The final version of this site will be up and running during fiscal year 02-03. Currently, there are components of this programme available on the gtsc website at this web link: http://www.bike.cornell.edu/HOME.htm

Audience: Primary, children under 14, secondary parents.

Messages: Rules of the road, helmet use.

Bicycling on the school journey

THE NETHERLANDS	Technical: attach child bicycle to parents bicycle, so that child automatically follows parent (trailer bicycle).
	Bicycle pooling (Flanders): children bicycle to school guided by a bicycling adult, wearing special fluorescent blouse.
	Various schools or local sections of the national association of traffic safety: choose safe bicycle routes to school, control of technical aspects of bicycles (brakes, lighting, tyres, etc.).
USA	The State of California set aside a percentage of its surface transportation funds for infrastructure improvements for "Safe Routes to School" initiatives. Communities had to compete for the funds, and funds could only be used for capital improvements. The initial programme was for two years; it was so successful that the California legislature renewed it for an additional two years.
	ILLINOIS:
	The Chicago Bicycle Federation has developed a safe bike way to school programme patterned after the walk safely to school programme. The Chicago Bike Federation is funded through the grant funding. Activities include the safety ride to school programme plus the rules of the road, bicycle maps and bicycle messenger and taxicab bicycle awareness training.

Helmet promotion

USA

MICHIGAN:

Michigan SAFE KIDS chapters and coalitions coordinate bicycle safety efforts thorough helmet distribution.

NEW HAMPSHIRE:

The New Hampshire Highway Safety Office has a state wide helmet distribution programme for children through local police department.

NEW YORK:

Drive Right Campaign. This campaign was promoted through state, county, town and village Traffic Safety Programmes.

Audience: Children under Age 14 in all counties except Onondaga (age 18).

Message: Wear a helmet (proper fit), ride safely, and follow the rules of the road.

Methods Used: helmet distribution, bicycle rodeos, educational material distribution, and a "Drive Right" PSA that was heavily promoted by the New York State Broadcasters.

SOUTH DAKOTA:

Don't Thump Your Melon Campaign targets youth bicyclists wearing helmets. Law enforcement officers award youth wearing helmets with T-shirts. Communities conduct pre-post surveys to measure use and effectiveness.

ARIZONA:

Safety Rules partnered with State agencies in bicycle rodeo public awareness through printed materials safety posters, carnivals, and Diamondbacks (a baseball team). Purchased and distributed bicycle helmet for youth.

Advocacy

USA

UTAH:

Operation Safe Passage:

A state wide programme, in which citizen volunteers to help children cross-dangerous intersection, as well as assisting crossing guards.

Bicycle training

USA

NEW YORK:

The NYS Pedestrian and Bicycle Manual. The New York Bicycle Coalition (NYBC) developed a manual for use by transportation professionals, designed to help communities identify hazardous locations and develop measures to correct problem areas. During 2001/2001 NYBC conducted four regional workshops in areas with high numbers of bicycle and pedestrian injuries and fatalities. Additional workshops are planned for 2002/2003.

Audience: Transportation professionals

** This programme was not developed for children, but impacts on the number of children that are injured or killed.

OREGON:

Oregon has used the Bicycle Education Curriculum, a 10-lesson, 50% on-bicycle, on street course that teaches 12-14 year olds comprehensive bicycle safety. Lessons cover maintenance, rules of the road, bicycle handling, bicycle equipment, signs, traffic patterns and intersection issues. It also includes a number of on-street rides to cover lane position, how to make turns, how to signal, bicycle control, hazard identification and others. This course consistently receives excellent reviews.

PUERTO RICO:

Safety City (PESET) is a replica of a typical Puerto Rico town, including traffic signals, signs, and pavement markings where children practice safe walking, bicycling, and street safety. Students start the programme by attending a one-hour traffic safety instruction class. Under the supervision and guidance of teachers, the students then practice the safety skills within the protected Safety City setting.

Audience: 7-9 year olds.

Messages: helmet use, rules of the road, crossing the street safely.

UTAH:

Bicycle Rodeo Program teaches bicycle skills, hand signals and helmet use to elementary school kids.

VIRGINIA:

Bicycle Walk VA promotes bicycle/pedestrian safety in VA public schools.

Data

NORWAY

At some hospitals accident data are collected systematically and the accidents are mapped geographically. This means it is possible to look into reasons for all bicycle accidents, also accidents where no motorized traffic is involved, and to look at the role of infrastructure.

APPENDIX E: CHILD VEHICLE OCCUPANT INITIATIVES

Education

FINLAND	Parents in Finland receive safety information on how to safely transport the child among maternity care supplies distributed. This channel covers almost the entire age group – about 50,000 families each year.
THE NETHERLANDS	There is a website on which people can ask question about child vehicle safety, discuss items, and offer tips to one another.
NEW ZEALAND	National television advertising aimed at Maori people. Kidsafe week: http://www.ltsa.govt.nz/publications/rsnz/rsnz-2001/2001_oct_01.html Role models: http://www.ltsa.govt.nz/publications/rsnz/rsnz-2001/2001_oct_03.html
PORTUGAL	Faro safe route to school – in this programme the use of crash tests with unrestrained children was very impressive for children and helped the acceptance of a change of attitude in relation to seat belts. Title: Faro Safe School Road Purpose: Educational and enforcement programme to promote a road safety culture in the whole population of Faro and raise the restraint system use rate in cars among primary school children, where this rate was 20%. Method: Joint programme with APSI, Police (PSP), National Institute of Medical Emergency (INEM), General Directorate for Transports (DGV), in primary schools of Faro, from September 2001 to May 2002: 1 Seminar on road safety, open to public where children invited their family, teachers and the police to attend. 2 The rules related to the safety of pedestrians and passengers were taught at school. 3 Workshop at school to raise awareness and teach how to properly use the seat belt and restraint system. 4 Meeting with parents, raising awareness of the importance

and effectiveness of seat belt use as well as respecting road safety rules in general and informing about the beginning of enforcement activities.

5 Enforcement by the police.

6 Survey of seat belt and restraint systems use in the car.

7 Exhibition in an open and public space, with real pictures of road accidents – Road Safety Weekend.

Results: This programme was carried out in 7 primary schools, involving a total of 1800 students. The enforcement actions by the police ended up with 243 reports due to inadequate protection of children in the car with an amount of 120 Euros each. In the school population involved, the rate of restraints systems use raised from 20 to 89%. The final exhibition was visited by 1800 children with their teachers in the first day, and by a total of 100 000 persons during the weekend. Apparently, watching the real picture of a road accident had a great positive impact in the population, but these results will have to be evaluated at a later stage.

Conclusions: This programme led to immediate improvement of the protection rate of children in cars. To go on with the work and succeed, other school levels and cities should get in the programme. The engagement/commitment of a lot of people is necessary as well as political involvement.

UK

DfT has information, on choosing a car seat, on the DfT website and in leaflets aimed at adults and parents.

DfT has prepared 2 booklets for new parents called 'One Step Ahead' these are distributed via voucher scheme by a retail chain. These include information on a range of home, leisure and travel safety issues including choosing an appropriate car seat.

USA

The states conduct a variety of child vehicle safety programmes. These generally fall into three categories: educational campaigns/programme; enforcement campaigns; and seat distribution programmes. Most states have some sort of seat distribution programme, so we have not listed particular initiatives for this category. In addition, some states have programmes targeted to ethnic minority populations.

Illustrative examples:

ALASKA:

A state wide child safety seat campaign was run in conjunction with the re-release of "Star Wars" (January 1997) in U.S. movie theatres. The "CARS WARS: May the Belt Be On You" promotion was aimed at highlighting the child passenger safety issue to the public.

ARIZONA:

Governor Office of Highway Safety is actively involved in over 500 seat belt and child passenger safety activities. These state wide activities target local communities through earned media (newspaper, TV, and radio).

DELAWARE:

The Booster Seat Public Information Campaign focuses on increasing booster seat use in the 4-8 years of age population. Primary message: seatbelts generally do not fit children 4-8 years of age properly, leading to greater injuries in crashes. Booster seats work to protect your child from serious injury or fatality.

DISTRICT OF COLUMBIA:

The District has several awareness campaigns focusing on segments of the population deemed at higher risk for fatalities and injuries due to non-use of child safety seats. Community liaisons in the Latino community have been trained in the 32-hour child passenger safety certification course. The liaisons participate in child safety seat events and assist the highway safety office with creating culturally competent child safety seats materials in Spanish. Messages include: importance of booster seats, locations of child safety seats loaner programmes and where/when seats can be inspected.

FLORIDA:

Buckle UP Florida: targets all communities and ages in Florida to buckle up, select the appropriate child restraint, and install it properly.

Minority Youth Occupant Protection Initiative: targets minority teenagers and college students to buckle up, select the appropriate child restraint, and install it properly.

Florida Traffic Safety Resource Center (Previously the Florida Child Passenger Safety Resource Center): targets all communities and ages in Florida to buckle up, select the appropriate child restraint, and install it properly. Provides toll-free number (1-877-KIDSEAT) and website (www.kidseat.org), with multi-lingual staff that are AAA certified technicians and instructors, to answer general questions about laws, provide technical information, and is a fitting station locator service throughout Florida.

Troopers Love Kids Too: targets anyone travelling Florida's roadways to use a child restraint. Billboards and signs are located throughout Florida with a trooper properly installing a child safety seat.

IDAHO:

Idaho's "Busy Bee Booster Seat User" publicity campaign ran in June 2002. The target audience was children and the parents of children who weigh 40 to 80 pounds. The State Highway Safety Office (SHSO) ran a radio advertising campaign during the month featuring a seven-year-old child and Mrs. Beesley. (whose voice sounds like Mrs. Doubtfire) explaining the need for kids to go through three types of seats before they are ready for an adult seat belt. The SHSO also purchased billboard-advertising space with the "Click It!" symbol and it showed a child in a booster seat. Using the same "Busy Bee" theme, an educational growth chart was developed to correspond to the age-appropriate restraint use. Also in support of the campaign, gas stations displayed pump toppers with child passenger check site information. Finally, a television ad ran the same month, featuring an invincible young mother trying to stop her unrestrained child from being thrown around inside the vehicle in a car crash.

MARYLAND:

Maryland's highway safety office (MHSO) in conjunction with Maryland EMS for Children created The Hospital Discharge Policy Assessment Project. Most Maryland hospitals have been reluctant to participate in child passenger safety activities. They are concerned with liability, and others simply don't have the time. MHSO wanted to work with various hospitals on adopting and implementing a CSS discharge policy. To introduce the new programme to hospital personnel, a mailing was sent to all Maternal and Child Health Directors in all 48 Maryland

hospitals. The mailing included information on National Child Passenger Safety Awareness Week, and served as an introduction to the written survey on hospital CSS discharge policies and procedures. Part of the packet included a sample drop-in article about child passenger safety that could be used on any hospital newsletter. Later a written survey was sent. The survey was used to assess the hospitals needs for CSS training, updating educational materials and identifying community resources. Based on the responses to the survey, a more extensive questionnaire regarding discharge policies will be sent to the appropriate contact person at each hospital and training or site visits will be scheduled as necessary.

NEW YORK:

For the past three years the New York State Governor's Traffic Safety Committee (GTSC) has conducted "The Things We Do For Love" campaign promoting proper child restraint use. Included in the campaign are educational materials (English and Spanish), a CPS section for parents on the state DMV website, posters, and TV and radio PSAs .

Audience: parents, caregivers.

Messages: Always use the proper child safety seat, proper placement of the child in the vehicle and children in the backseat.

NORTH DAKOTA:

Boost, Then Buckle a message campaign to encourage parents to use booster seats for children 40 to 80 pounds and up to 4′9′′ tall. The campaign included billboard, posters, placements, buttons, pamphlets, and other educational/incentive items.

Each February, during Child Passenger Safety Week, the North Dakota Department of Health coordinates a car seat/seat belt education campaign. The primary audience is usually pre-school, and K-6 grades. The theme is different each year. Recent slogans have been "Don't Monkey Around . . . Buckle Up," "Bee Smart . . . Buckle Up," and "Elephants Never Forget to Buckle Up."

OHIO:

In Ohio, the child passenger protection programme is conducted on a regional basis through the Ohio Dept. of Public Safety. While not specifically a publicity campaign, they use the theme

Ohio Buckles Buckeyes as a means of promoting the campaign. The theme is used with the parents of infants and children.

OREGON:

A booster seat public service campaign was run in advance of the implementation of the state's booster seat law in July 2001. The audience for the campaign was parents and caregivers whose child seats or boosters for children up to eight years and 80 pounds. The new law required boosters to six years and sixty pounds. The focus of the campaign was correct type of seat for age and weight and correct usage of the seat.

PENNSYLVANIA:

Pennsylvania has developed a correct use child restraint campaign to reach the Hispanic community. An overview of this effort to date is as follows:
The PA Traffic Injury Prevention Project (TIPP) has hired a part-time bilingual staff member. This person will spearhead the effort in the City of Bethlehem, Northampton County. Surveys conducted in that area concluded that most children were either in a seat belt or a car seat Children under 12 who were unrestrained were a total of 6.1% overall but in the Latino community the percentage of children who were unrestrained was 14.4%.

Existing Spanish materials available have been reviewed for language and cultural competency. TIPP is in the process of translating the TIPP Non-Negotiable List of Correct Use of Car Seats and the PA Law Teddy Bear Cut Out. TIPP conducted a meeting of community representatives to support, endorse, or participate in the CSS initiative. The first kick off of the first educational programme was Child Passenger Safety Week 2002.

PUERTO RICO:

Buckle-Up, We're Leaving Museum Exhibit
The Buckle-Up We're Leaving interactive exhibit is a part of the Puerto Rico Children's Museum, a place where children can go to learn by touching, speaking, and asking questions. The exhibit was designed to provide a fun and interactive venue for educating children and parents about seatbelts, car seats and other basic traffic safety issues. The exhibit includes 5 interactive stations related to child restraints, traffic signs, signal lights on school buses, traffic lights, and general safety.

Audience: Primary: children; Secondary: parents.

Messages: Proper use of safety seats and seatbelts, understanding traffic signs and signals, school bus safety.

"Protect Me" Child Safety Seat Program
This campaign, developed by the Puerto Rico Traffic Safety Commission, promotes correct car seat use, the availability of fitting stations, and use of checkpoints. Messages are provided through posters, brochures, banners and various media sources.

Audience: parents and caregivers.

Messages: use child safety seats; have your seat checked by a certified child safety seat technician at one of the many fitting stations.

Loan schemes

NEW ZEALAND	Plunket child car seat rental schemes. Plunket/Police checks: http://www.ltsa.govt.nz/publications/rsnz/rsnz_2000/2000_dec_05.html Making child restraints available: http://www.ltsa.govt.nz/publications/rsnz/rsnz-2001/2001_nov_05.html
UK	Some hospitals/local authorities run baby seat loan schemes. Britax, a car seat manufacturer, provide a service to retailers on fitting seats correctly and which seats are suitable for which car models.

Standards and testing

UK	Research is underway on the in car safety of child seats in side impact and or collisions and new standard crash test dummies of young children are being researched.
CANADA	Transport Canada researches various aspects of child safety in vehicles including child restraint attachment systems and labelling, and interactions with air bags.

Education and enforcement

USA	In 30 states Click It or Ticket – targets all communities and ages to buckle up, select the appropriate child restraint, and install it properly.

INDIANA:

In the state's' Operation Pullover, one of four annual enforcement "blitzes" conducted is focused on CPS. Also conduct Boost America Campaign, Click It or Ticket, State Farm Insurance CPS Clinics, operate 50 permanent fitting stations in states, Project Love (law enforcement seat vouchers), and local car seat clinics publicized through CBS affiliate. These activities target ages 0-8 (From birth to booster).

MINNESOTA:

Minnesota funds programmes to promote child passenger safety and the state dedicated child-seat fund. The goal of the programme is to get children in car safety seats and ensure that the seats are being used correctly.

NEW JERSEY:

The New Jersey Division of Highway Safety ran an extensive Public Information Campaign to educate New Jersey residents about new Child Passenger Safety Legislation that upgraded the existing law to include a requirement that all children up to 8 or 80 pounds ride in a safety or booster seat. The campaign included radio, TV, and print advertising, as well as informational flyers which not only promoted the law, but also the 4 steps to child passenger safety.

Audience – parents and caregivers

Messages – All children up to age 8 or 80 pounds must ride in a safety or booster seat, passengers between 8 and 18 must wear a seatbelt anywhere in the vehicle and parents should follow the 4 steps to child passenger safety.

NEVADA:

Nevada has facilitated child safety seat and seat belt enforcement events is conjunction with the national Operation ABC Mobilizations, America Buckles Up Children (in May and November of each year). Our seat belt law is secondary, but our primary child restraint law aids our law enforcement agencies in conducting child seat checkpoints, saturation patrols and STEP activities.

The target audience has always been all of Nevada's population of parents and caregivers to children. Most recently we have expanded our effort to focus on the minority segments of our

population, primarily those of Hispanic and Native American origin.

Messages over the last five years have included:
"Why Risk It?"
"Are You Putting Me On?"
"No Exceptions, No Excuses, Buckle Up Nevada"

Joining Forces is a unified state wide effort of collaboration between law enforcement agencies to conduct highly publicized, multi-jurisdictional enforcement events that are intended to increase seat belt use and decrease other traffic violations like impaired driving, speeding, non-use of child restraint, etc.

SOUTH DAKOTA:

Child Safety Seat Check-up Events, educational materials, produced a video titled " Seat Belts Save Lives" and distributed 3500 videos to communities in South Dakota, conduct seat belt surveys.

GERMANY

In July, 1st, 1998 sanctions were introduced to increase usage of child restraints sanctions are:

No usage of safety belt/seat:

– One child : 40 E fine and one penalty point

– More than one child: 50 E and one penalty point

Wrong usage of seat belt/safety seat:

– One child: 30 E fine

– More than one child: 35 E fine.

CANADA

All jurisdictions participate in Operation Impact and some form of Selective Traffic Enforcement Program each year. Operation Impact is a national 24 hour enforcement blitz for seat belts and child restraints, generally combined with public awareness and targeted media interviews.

ALBERTA

THINK, THINK AGAIN, IS YOUR CHILD BUCKLED UP SAFELY PROGRAM – Delivered by Alberta Transportation in partnership with the Alberta Occupant Restraint Program (AORP) – Report and evaluation to follow. This is a two-part programme that emphasizes enforcement and education. Those who receive a ticket for incorrect or non-use of a child safety

seat are given the option of taking an education programme (one time) in lieu of paying the fine.

Child seat fitting inspection

CANADA

Transport Canada has been working with the Canadian Coalition for Child Passenger Safety on the development of a national training programme in children's restraint systems. The programme has been completed and will be delivered by a national safety organization (St John Ambulance) in the form of certified Technician and certified Instructor courses. In conjunction with the new certified training programme, Daimler-Chrysler has recently launched the pilot programme of Fit for a Kid, a programme of permanent child restraint inspection locations at selected Daimler-Chrysler dealers in Canada. Certified Technicians will inspect child restraint systems installed in any make/model of vehicle, by appointment.

Many regions conduct child seat inspections through appointments or "clinics" advertised in the media and stores selling children's items. The clinics are conducted at a variety of locations, with shopping malls as the most common. Information is recorded on child seat inspection forms and generally results on correct use are reported in the media.

Public health, police and fire departments are very active in the child restraint area, and many have received comprehensive training on correct installation and use.

UK

Mother and Baby magazine have worked with the Safeway supermarket chain and local authority road safety officers to set up child seat surgeries where adults can check that their child seats are properly fitted.

Accident data and advocacy

GERMANY

German in-depth accident studies (GIDAS)
In Germany, accident trends are presented annually based on the official accident statistics. In-depth studies collecting more detailed information than available in the police records, for example:

- Injury distribution of restrained children in frontal accidents
- Injury distribution of restrained children in lateral accidents
- Neck injury of children in severe frontal impacts.

NORWAY	Some schools let children go out and count the proportion of bicyclists wearing a helmet and car occupants using belts. As well as being part of math education etc this might influence pupils thinking and attitudes.
SWEDEN	Studies at Swedish Road and Transport Research Institute (VTI) have shown that 3-4 lives can be saved every year if all children in the age 0-14 years used proper child safety equipment in a correct way.

APPENDIX F: CHILD TRAFFIC SAFETY POLICY INITIATIVES

School journey safety

DENMARK

About 80% of Danish municipalities carry out special measures targeted to school children's travel and road safety. In the period 1995-2000 the special measures have predominantly consisted of:

- school route studies
- physical measures to improve school child road safety, management of car traffic at schools and increased level of service for walking and bicycling
- reduced school bus fares
- road safety campaigns and campaigns to discourage car travel of children to and from school.

UK

School Travel Advisory Group (STAG) which brings together safety and sustainable transport issues under the remit of three Government Departments representing Health, Education and Transport.

Consulting children on traffic safety

THE NETHERLANDS

The former Minister, Mrs Netelenbos, initiated a working group of youngsters, advising her on traffic safety and mobility matters, and working as ambassadors for other youngsters, in order to increase safety.

In several municipalities children are consulted on the matter of road safety, and they may bring in solutions (especially when it comes to routes to school). Generally the best solutions are awarded, or applied in practice.

SWEDEN

SNRA has financed a developing project in approx 400 schools – for pupils in the age-group 6-12 years of age – called "research and learn" in the local environment with special emphasis on road safety. This is based on the United Nations Convention of the Rights of the Child.

Strategy

SWEDEN	Vision Zero adopted by the Swedish Parliament 1997 is the base for road safety work in Sweden now. That means that no person shall die or get serious injuries when travelling in the road transport system for example safer crossings, lower speed limits in schools areas.
UK	Targets for accident reduction from the Department of Health.

Environment

UK	Home Zones aim to change the way that streets are used and to improve the quality of life in residential streets by making them places for people (including people who walk and bicycle, and children), not just for traffic.

Inequalities

UK	Policies to target social inequalities in road safety performance.
USA	The Blue Ribbon Panel on Increasing Seat Belt Use among African Americans noted the lack of use of child safety restraints in urban areas. As a result, more child passenger safety technicians are being trained to service urban and African American populations. To increase the number of properly used child safety restraint systems, child passenger safety technician and instructor programmes were established. These programmes also have certification standards and requirements for keeping up certification. In 1998 there were approximately 1000 certified child passenger safety technicians. By October 2002 this number had grown to over 28,000. The 32-hour course has been translated into Spanish in order to better service the Spanish-speaking community, and training has begun using the Spanish-language materials and curriculum. In addition, as of 1 October, 2002 there are over 1200 certified instructors who can offer the course.

Legislation

USA	NHTSA provides model legislation on child passenger safety and bicycle helmet issues to states. We also have an array of public information materials and outreach approaches to increase the use of booster seats for children 4-8 years of age.

The Transportation Equity Act (TEA-21) authorizes highway safety grant programmes for fiscal years 1998-2003. This act, in part, provides funding for states to develop and implement educational and skills development programmes to increase the proper use of child restraints. Activities supported by these funds include training certified child passenger safety technicians, hosting child safety seat checks, developing culturally specific educational and outreach materials and sponsoring child seat distribution programmes for low-income communities. Such funding initiatives allow states and communities to increase focus on child passenger safety issues.