How safe are children in cars on European roads?

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Introduction

SafetyNet is an Integrated European project co-funded by the European Commission, which began in 2004 and will end in 2008. The overall objective of the project is to build the framework of a European Road Safety Observatory (www.erso.eu), which will be the primary focus for road safety data and knowledge, as specified in the Road Safety Action Plan 2003. 22 institutes from 17 countries co-operate in the SafetyNet project.

The first work package is developing and exploiting the European road accident database - CARE. CARE is a Community database of road accidents resulting in death or injury (no statistics on damage only accidents are kept). The major difference between CARE and most other existing international databases is the high level of disaggregation, i.e. CARE is based on detailed data of individual accidents as collected by the Member States. This structure allows for maximum flexibility and potential with regard to analysing the information contained in the system and opens up a whole set of new possibilities in the field of accident analysis.

National data sets are integrated into the CARE database in their original national structure and definitions, with confidential data blanked out. Transformation rules are implemented in order to increase data compatibility and thus enhance the functionality of the system.

The data in CARE are reported in a series of Basic Fact Sheets (SafetyNet, 2006) annually during the SafetyNet project, and this paper discusses data published in the 2006 Children Basic Fact Sheet, along with some additional data retrieved from the CARE database in 2007.

As the CARE database is a collection of National databases, the data from different countries are available at different times. Therefore the data presented below are not complete up to the latest year for all countries. When one year of data is presented, this is 2005 data or the latest available year for each country before 2005. That is, at the time of writing, for most countries 2005 data are available; latest available data from Italy are for 2004; Ireland and The Netherlands are represented by data from 2003; and data from Luxembourg are for 2002. There are new data for 2005 reported this year for the first time from new member states Hungary, Malta, Estonia and Poland. When overall results are presented for all 18 countries, this is defined as an EU-18 total for the purposes of this paper.

The safety of children on European roads

In this paper ‘Children’ are defined as those who are aged below 16 years. The age at which people are allowed to drive a motor vehicle varies across the EU, but 14 and 15 year olds appear, on the whole, to fit into this group. Children tend to be thought of as innocent victims of road accidents more often than is the case for adults.

Table 1 presents the number of children killed in each of the EU-18 countries for each year for which the data are available over the last six years. The total of latest available data for all EU-18 countries is 1,215, of which 494 (41%) were travelling in cars.

EU-14 countries are defined as countries where data exists from 2000 in the CARE database. The EU-14 total of number of children killed in road traffic accidents fell from 1,427 in 2000 to 958 in 2005[1]; a fall of just less than a third. Similarly, the last row in Table 1 shows the total number of children fatally injured in cars in the EU-14 countries has decreased consistently since 2001, replicating the pattern of all child fatalities.

Table 1: Fatalities aged <16 per country 2000-2005[2]

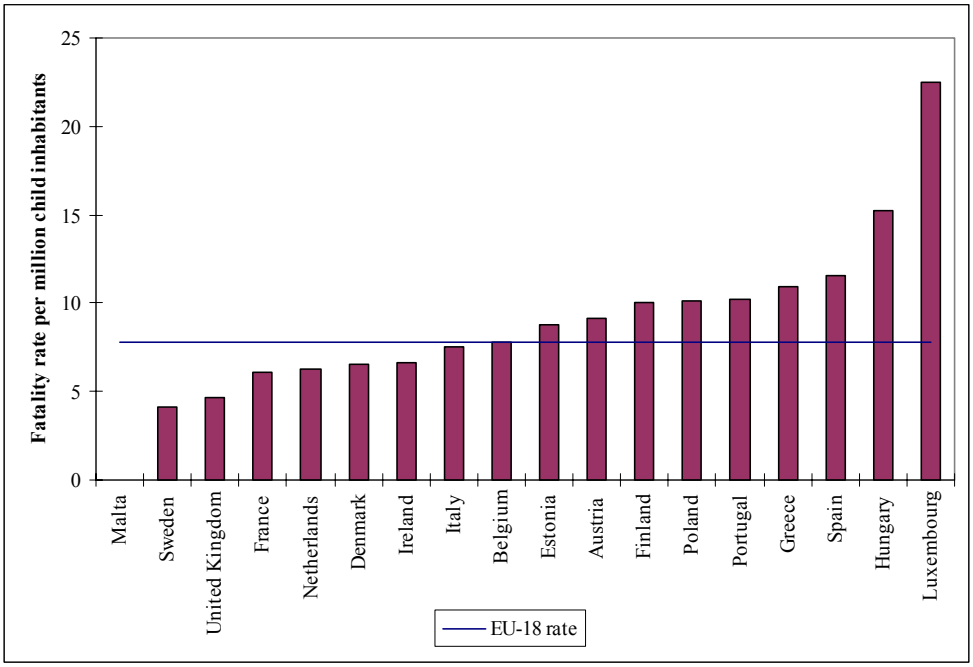
	2000	**2001**	**2002**	**2003**	**2004**	**2005**
Austria	35	34	33	45	30	35
Belgium	67	71	45	37	35	39
Denmark	31	29	16	25	22	15
Estonia	-	-	-	-	-	13
Finland	23	24	20	24	15	26
France	414	347	288	244	209	168
Greece	54	56	51	59	62	49
Hungary	-	-	-	-	-	43
Ireland	24	33	23	17	-	-
Italy	165	199	228	173	159	-
Luxembourg	3	6	3	-	-	-
Malta	-	-	-	-	-	3
The Netherlands	66	61	55	71	-	-
Poland	-	-	-	-	-	198
Portugal	89	65	72	63	55	39
Spain	228	208	189	189	162	149
Sweden	24	25	27	28	24	19
UK	204	229	192	186	177	156
EU-14[3]	1,427	1,387	1,241	1,164	1,041	958
EU-14 children in cars	559	655	545	521	435	396

[1] Or latest available year
[2] Source: CARE database/ EC. Query November 2007
[3] Total of EU-14 countries (countries with year 2000 data available) may not add up to the sum of the individual country data due to transformation rules.
The total is the sum of the data from the latest available year (i.e. Luxembourg 2002, The Netherlands and Ireland 2003 and Italy 2004)

Children in cars on European roads

Figure 1 displays the fatality rate of children in cars in each of the EU-18 countries. The number of child car occupant fatalities is shown in Table 3. The fatality rate is the number of children fatally injured in a car divided by the number of children in the country for the latest available year. Most countries have few child fatalities; in particular Estonia, Ireland, Luxembourg, Malta and Sweden all recorded fewer than 10 child fatalities in cars per year, so these results are sensitive to random fluctuations. The overall fatality rate of children in cars in these 18 European countries is 7.7 per million children, and by country, the rate varied from 4.1 child fatalities in cars per million children in Sweden (Malta had no recorded child fatalities in cars in 2005) to 15.2 in Hungary in 2005 and 22.5 in Luxembourg in 2002 (only two child fatalities in cars).

Figure 1: Fatality rate[4] per million children of children in cars



The overall EU-18 child fatality rate shown in Figure 1 is compared in Figure 2 with other groups of the population: young people (aged 16-24), adults (25-59) and older adults (aged 60+). The lowest overall rate is for children, followed by older adults, then adults and finally young people, and the rates vary substantially from 8 child car occupants per million children to 109 young people in cars per million population of young people. These figures do not account for the proportion of each age group that uses a car.

In Table 2, the national fatality rate for children and the fatality rate for each nation's population as a whole are shown. In all cases the children's fatality rate is lower than the overall fatality rate meaning that children are at a lower risk than the overall population.

The relative risk is defined as child fatality rate divided by the fatality rate for the full population. Overall, this shows that children are, on average across the EU-18 countries, at less than one fifth of the risk of dying when travelling by car than the average person. This varies from less than an eighth (0.12) in France to a quarter in Hungary.

[4] Source of population data: EUROSTAT

Figure 2: EU-18 fatality rate of car occupants (latest available year) by age group

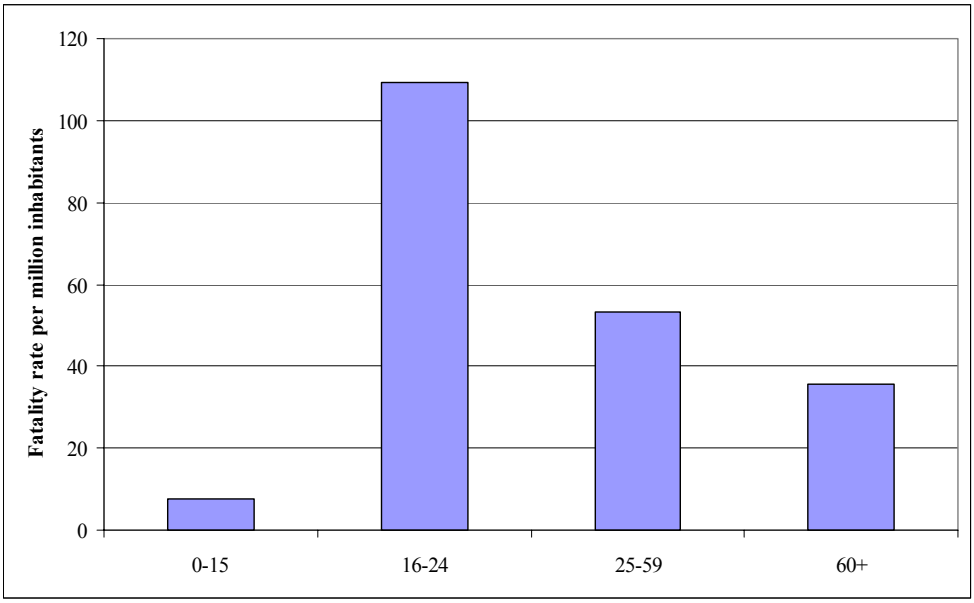


Table 2: Fatality rate and relative risk of child and all car occupants per million population

	Child	All	Relative risk
Austria	9.1	52.6	0.17
Belgium	7.8	59.3	0.13
Denmark	6.5	31.3	0.21
Estonia	8.8	62.4	0.14
Finland	10.2	44.1	0.23
France	6.1	49.2	0.12
Greece	11.5	73.2	0.16
Hungary	15.2	61.3	0.25
Ireland	6.6	41.8	0.16
Italy	7.5	46.5	0.16
Luxembourg	22.5	117.1	0.19
Malta	0.0	7.5	0.00
The Netherlands	6.2	29.8	0.21
Poland	10.0	65.0	0.15
Portugal	10.1	45.2	0.22
Spain	10.9	54.4	0.20
Sweden	4.1	29.9	0.14
UK	4.6	29.0	0.16
EU-18	7.7	47.3	0.16

Children of different genders and ages

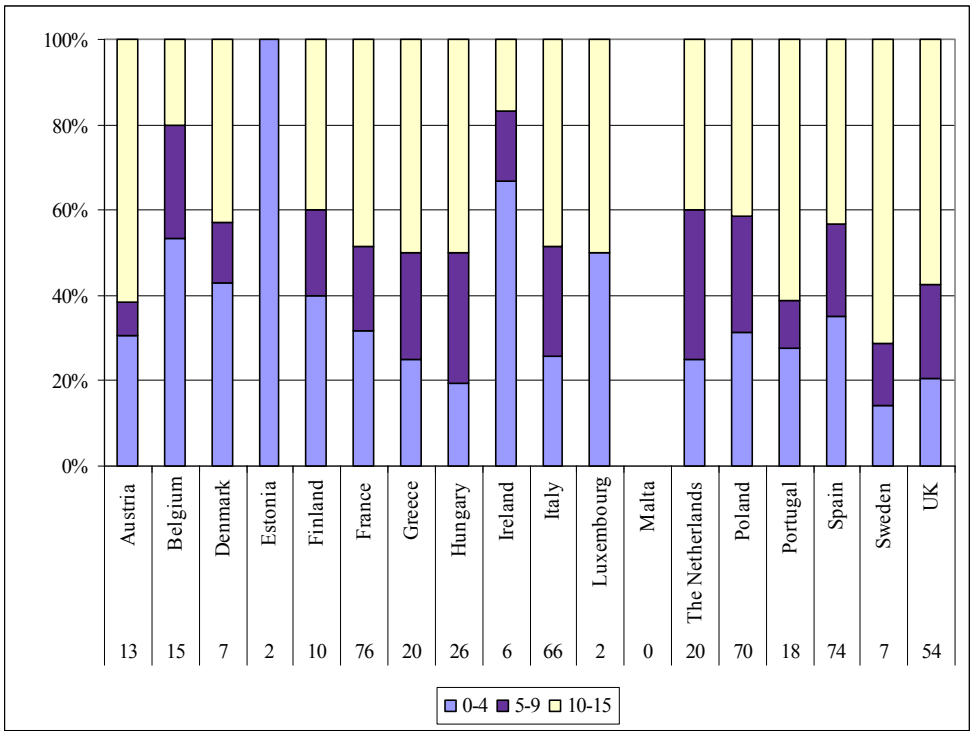
Table 3 provides details about the gender of child fatalities in cars for the latest available year for each country. Fatally injured children whose gender was not recorded are not included in the proportion calculation. Overall, just over half of child fatalities in cars were male. This is more equally distributed than all the child fatalities in these countries (including other modes of travel), of which 62% are male.

Table 3: Proportion of male child car occupant fatalities

	% Male	Fatalities
Estonia	0%	2
Denmark	29%	7
Greece	30%	20
Ireland	33%	6
Finland	50%	10
Italy	50%	66
Poland	51%	70
Belgium	53%	15
France	54%	76
UK	57%	54
Sweden	57%	7
Spain	58%	81
Hungary	62%	26
The Netherlands	65%	20
Portugal	67%	19
Austria	77%	13
Luxembourg	100%	2
Malta	n/a	0
EU-18	54%	494

The distribution of child car occupant fatalities by age is shown in Figure 3, split into three child age groups: 0-4, 5-9 and 10-15 years. The number of child car occupant fatalities per country is displayed at the bottom of the figure. Overall, 30% of child car occupant fatalities are 0-4 years old, 23% are 5-9 years old and the remaining 47% are 10-15 years old. Many of the countries have small numbers of child fatalities which causes the age distribution of those countries to be far more susceptible to random fluctuations. Of the countries with a larger number of child car occupant fatalities (more than 15 fatalities) Hungary has the smallest proportion of 0-4 year old child car occupant fatalities, and The Netherlands has the smallest proportion of 10-15 year olds fatalities.

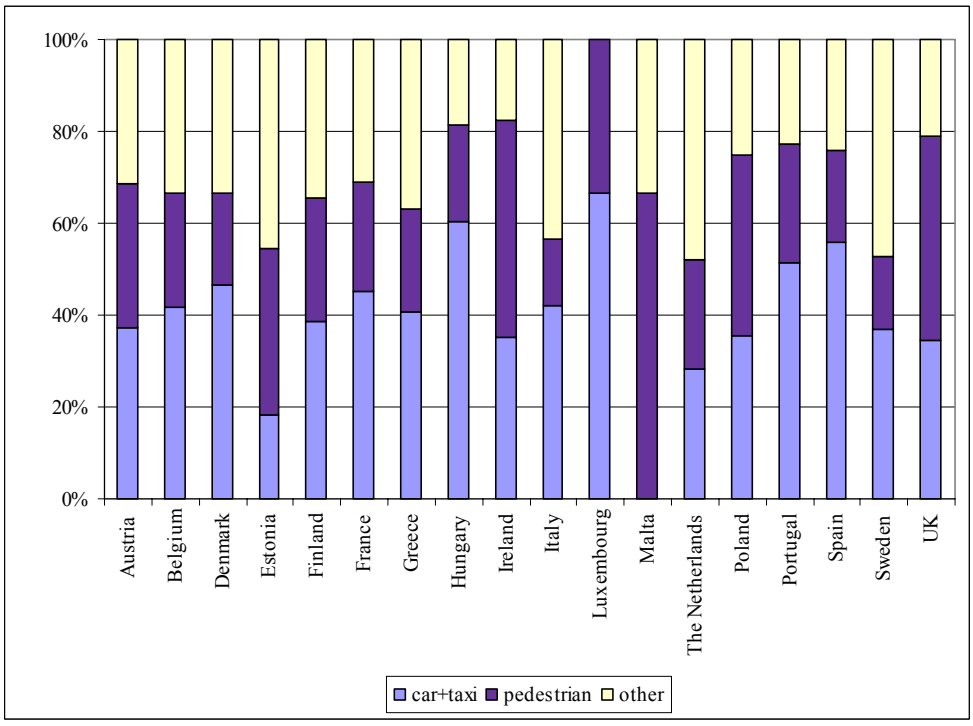
Figure 3: Distribution of age groups of child fatalities in cars



Modes of transport

Figure 4 shows the distribution of child fatalities by mode of transport. For simplification these modes are divided into three groups: car and taxi, pedestrian, and other, where 'other' includes all other types of vehicle.

Figure 4: Distribution of mode of transport of child fatalities



Overall in the 18 EU countries 41% of fatally injured children are travelling by car or taxi, 28% are pedestrians. A large proportion of the remaining child fatalities are riding pedal cycles and mopeds.

Malta (with only three child fatalities in 2005), and then Ireland have the highest proportion of child pedestrian fatalities. Luxembourg (with only three child fatalities in 2002) and then Hungary have the highest proportion of car or taxi child fatalities.

Summary

The results presented in this paper are a combination of information from a SafetyNet Basic Fact Sheet (Children) and data retrieved from the CARE database in 2007.

This analysis has shown that the total number of fatally injured children in EU-14 has decreased from 1,427 in 2000 to 958 in 2005[1]. A similar pattern has occurred since 2001 for children in cars (an increase was observed between 2000 and 2001): from 655 in 2001 to 396 fatally injured children in cars in EU-14 in 2005[1]. The data from four more European countries are available in CARE for 2005. When these are included in the calculations the proportion of children fatally injured that were in cars in 2005[1] was 41%.

It was also shown that children in cars are, on average, at less than a fifth of the risk of dying at a road accident than the average person in a car. Children in cars and taxis make up 41% of all child fatalities, with an additional 28% being fatally injured as pedestrians. Specific countries with higher children accident fatalities for particular accident types were also identified.

The results of the analysis allow for an overall picture of the safety level of children in cars in Europe, providing thus useful support to all decision makers working for the improvement of safety in the European road network.

Acknowledgement

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References

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