



ORGANISATION  
FOR ECONOMIC  
CO-OPERATION  
AND DEVELOPMENT



# IRTAD

## Road Safety

# 2009

Annual Report

International Traffic Safety Data  
& Analysis Group

[www.irtad.net](http://www.irtad.net)



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# *IRTAD ANNUAL REPORT 2009*

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International Traffic Safety Data and Analysis Group  
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# *IRTAD ANNUAL REPORT*

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## **Abstract**

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This first Annual report of the IRTAD Group comprises:

- A presentation of the IRTAD Group and its activities.
- A synthesis of the main trends in the year 2008, in terms of the evolution in the number of traffic deaths and crashes. It also presents longer term trends in order to better understand the evolution taking place in the different countries.
- Detailed reports from 27 countries, focusing on :
  - Latest data for the year 2008 and in some cases preliminary data for 2009.
  - Analysis of safety trends by road user category, by age group and by road type.
  - Analysis of specific safety issues such as: speeding, drink driving, and the wearing of seat belts and helmets.
  - The national strategies in place in IRTAD countries, including targets and performance towards meeting the targets.
  - Measures implemented in 2007-2009 to improve safety.
  - Recent safety research.

## Foreword

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It is with great pleasure that I present the first edition of the IRTAD Annual Report. This report provides an overview of safety trends for the year 2008 in IRTAD countries.

2008 was marked by an overall decline in the number of traffic casualties; and we can only welcome this. The Report contains detailed information on how each IRTAD country performed and on road safety measures implemented over the past five years to reduce the number of traffic casualties. It is a mine of information for all those interested in safety.



This volume includes data and information from 28 countries, which are either full members of the IRTAD Group or which provide regular data. We hope to include progressively more countries in the IRTAD annual reports. Indeed, the IRTAD Group is engaged in a policy to widen its geographical coverage, including in low- and middle-income countries. In 2008, IRTAD signed a Memorandum of Understanding with the World Bank to promote knowledge transfer in the field of safety data collection and analysis. This Memorandum includes the implementation of twinning programmes between an existing IRTAD Member and low- and middle-income country. The first twinning project was launched this year with Spain and Argentina.

IRTAD is not only a database, it is first and foremost a group of safety experts and statisticians dedicated to sharing their knowledge. IRTAD is therefore a forum of exchange on a wide range of subjects related to safety data. Recent work has focused on the issues of underreporting and linking different sources of safety data to better estimate the real number of traffic casualties. The IRTAD Group will release a final report on this issue in 2010.

To conclude, I would like to extend my deep gratitude to all those IRTAD members who contributed to this report and who contribute all year round to the richness of exchange which makes the IRTAD Group an invaluable and unique forum on safety issues.

Prof. Fred Wegman

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# INTRODUCTION

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## The IRTAD Group

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The International Traffic Safety Data and Analysis Group (IRTAD) is a permanent working group of the Joint Transport Research Centre of the OECD and the International Transport Forum. It is composed of road safety experts and statisticians from renowned safety research institutes, national road and transport administrations, international organisations, universities, automobilist associations, car automobile industry, and others from OECD and non OECD countries. Its main objectives are to contribute to international co-operation on road accident data and its analysis. The objectives of the IRTAD Group are to:

- Be a forum of exchange on road safety data collection and reporting systems and trends on road safety policies.
- Collect accident data and conduct data analysis to contribute to the work of the ITF/OECD, as well as to provide advice on specific road safety issues.
- Contribute to international co-operation on road accident data and its analysis.

Currently, more than 50 institutes from 28 countries—representing a wide range of public and private bodies with a direct interest in road safety—are members of IRTAD (see list of members at the end of the report).

The ambition of IRTAD is to include new countries and to build and maintain a high-quality database on road safety information. IRTAD offers a mechanism for the integration of prospective member countries while assisting—where appropriate—to improve their road safety data collection systems. The IRTAD Group, in co-operation with the World Bank's Global Road Safety Facility, has also engaged in a strategy to involve low- and middle-income countries, so that they can benefit from the experience of the most advanced countries.

## The IRTAD Database

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The most visible product of the IRTAD Group is the International Road Traffic and Accident Database. The IRTAD database includes aggregated data on injury accidents, road fatalities, injured and hospitalised road users, as well as relevant exposure data such as population, car parks, network length, vehicle kilometrage and seat belt wearing rates from 30 countries covering every year since 1970. Moreover, key road safety indicators are compiled on a monthly basis. The IRTAD Group is currently developing a set of new variables to be progressively included in IRTAD.

## IRTAD Programme of Work

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The current Programme of Work covers the period 2009-2011. It includes the following activities:

- Exchange of information on current trends and newly implemented road safety policies and methodologies. This includes the preparation of IRTAD's first Annual report (this report) and regular discussion and exchanges during the biannual IRTAD meetings.
- Data analysis: Linking hospital and police data on road deaths and injuries. Based on its previous work on *The availability of hospitalised road user data in OECD member countries* and *Underreporting of Road Traffic Casualties*, the IRTAD Group is actively pursuing ways to improve the quality and reliability of data. To achieve this, it is important to review and compare data available from different sources, including police and hospital data, and set up methodologies to link various data sets. The IRTAD group will publish a report on this issue in 2010.

- Development of the IRTAD database. The IRTAD Group is working permanently on improving the database. Following a survey among IRTAD members in 2008-09, a set of new variables will be included as of 2010.
- Enlargement of the IRTAD Membership. The IRTAD Group is engaged in a process to enlarge its membership, including within non OECD member countries. The IRTAD Group is open to any organisation, through annual subscription, providing that it is willing to co-operate on road safety issues. The ambition of IRTAD is to include new countries and to build and maintain a high-quality database on road safety information. The intention is to offer a learning environment for new IRTAD members when they cannot fulfill IRTAD standards to the full extent.

A Memorandum of Understanding between the JTRC and the World Bank Global Road Safety Facility<sup>1</sup> was signed in 2008. This will provide twinning arrangements with existing IRTAD members and selected countries so that they can learn from the experience of IRTAD members and progressively improve data reporting systems.

#### 4th IRTAD Conference, Seoul, 16-17 September 2009

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The Korean Transportation Safety Authority and the Korean Ministry of Land, Transport and Maritime Affairs hosted the 4th IRTAD Conference in September 2009, focusing on the collection and analysis of road safety data for target setting and monitoring performance. 120 leading safety experts from 33 countries attended the Conference and discussed key issues and challenges regarding data collection and analysis as an essential tool to improve road safety.



1. The World Bank's Global Road Safety Facility was launched in November 2005. The Facility is a direct response to the global call for action by the United Nations General Assembly Resolutions and World Health Assembly Resolution. The Facility aims to generate and catalyze increased funding to support initiatives aimed at reducing deaths and injuries in low and middle-income countries.



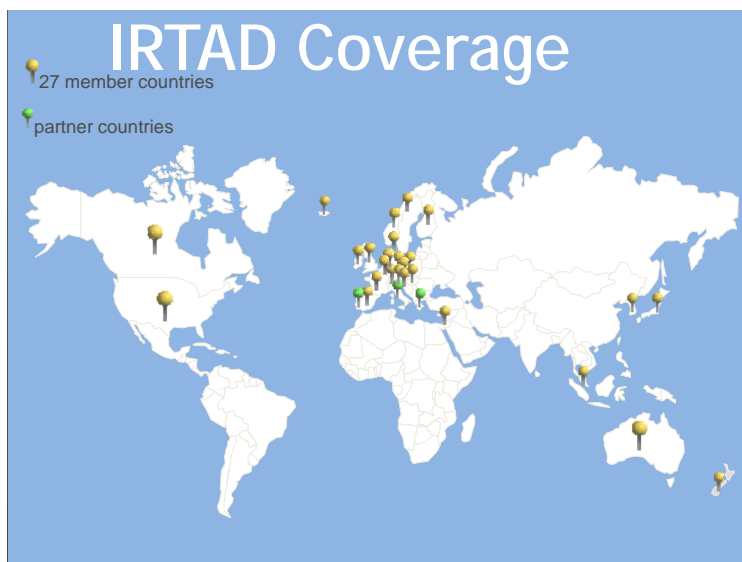
## 4<sup>th</sup> IRTAD Conference – Key Recommendations

- The development of a comprehensive road accident data system should be fully integrated into national road safety plans. At the same time, objectives for investments in improving data collection systems need to be clearly established.
- Systematic exchange and sharing of safety data among key agencies (including transport authorities, police, local government, health authorities) involved in road safety is critical to developing effective road safety policies and interventions. Where necessary, governments should improve the institutional framework to facilitate data exchange and analysis.
- Public authorities should be accountable for road safety records and inform the public on progress by regularly publishing key safety indicators.
- International definitions should be adopted in all countries. Participants encourage continued efforts in IRTAD and the WHO to develop guidelines for road safety data collection and analysis.
- Data quality can be improved in all countries. In particular, methodologies should be established to compare police collision reports with comparable hospital data and to link these records to improve data quality and consistency, especially with regard to serious injury crashes.
- Consistent with the recent ITF/OECD report *Towards Zero: Ambitious Road Safety Targets and the Safe System Approach*, participants recommend that all countries adopt road safety targets to drive improved performance and accountability. These targets should include an ambitious vision backed by realistic interim targets that are based on the analysis of data and modeling of the potential benefits of planned program and policy interventions to improve safety performance. Monitoring progress in meeting targets is important and useful for informing the public of the challenges to be met. This includes studies to evaluate the effectiveness of implemented policies.
- International co-operation and knowledge transfer should be pursued. International benchmarking is a useful tool to raise road safety issues on political agendas. Initiatives to involve more low and middle-income countries in the IRTAD network, including cooperation with the World Bank Global Road Safety Facility, were welcomed as a tool for the effective transfer of knowledge on data collection and analysis.

See also, [www.irtad.net](http://www.irtad.net)

## IRTAD Members

IRTAD currently includes members from 27 countries. A full list of Members is attached in Annex A. The ambition of IRTAD is to include new countries and to build and maintain a high-quality database on road safety information.



## SUMMARY OF TRENDS IN 2008

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After a slowdown in the pace of improvement in road safety in 2007, road fatalities in most countries for which data are available show a large reduction in 2008 compared to the previous year (see [Table 1](#) and [Figure 1](#)). A number of countries recorded further sharp decreases in road fatalities in the first half of 2009 (see [Table 2](#)).

This reflects both improved road safety interventions in many countries and the economic downturn, which has depressed traffic volumes in some countries.

Trends over a somewhat longer timeframe are more relevant to policy analysis. [Table 1](#) shows developments decade-by-decade since 1970. It can be seen that the average annual reduction in road deaths from 2000 to 2008 is already larger than in any previous decade for most countries. This suggests that improved road safety policies are bearing fruit.

Clearly the economic downturn has had a significant short term impact on traffic volume in some countries, but the relative importance of traffic volume and policy interventions in reducing fatalities cannot yet be disentangled with certainty. Figures from the [International Transport Forum](#) for six countries provide information on fatalities per vehicle-kilometre travelled (see [Table 3](#)). This shows improvement in 2008 and indicates the significance of factors other than traffic volume in reducing fatalities, including policy interventions.

Table 1. Road safety development

Road Fatalities <sup>1</sup>							
Country	Recent data			Long-term trends – Average annual variation			
	2008	2007	Evolution 2008-2007	2000-2008 <sup>4</sup>	1990-2000	1980-1990	1970-1980
Australia	1 466	1 603	-8.5%	-2.6%	-2.5%	-3.3%	-1.5%
Austria	679	691	-1.7%	-4.4%	-4.6%	-2.5%	-2.5%
Belgium <sup>2)</sup>	922	1 067	-13.6%	-5.7%	-2.9%	-1.9%	-2.4%
Canada <sup>2)</sup>	2 371	2 769	-14.4%	-2.6%	-3.0%	-3.2%	0.7%
Czech Republic	1 076	1 222	-11.9%	-4.0%	1.4%	0.2%	-4.4%
Denmark	406	406	0%	-2.5%	-2.4%	-0.8%	-5.4%
Finland	344	380	-9.5%	-1.7%	-4.8%	1.7%	-6.3%
France	4 275	4 620	-7.5%	-7.6%	-3.2%	-1.8%	-2.0%
Germany	4 477	4 949	-9.5%	-6.3%	-3.8%	-3.0%	-3.4%
Greece	1 553	1 612	-3.7%	-3.3%	-0.1%	3.6%	2.8%
Hungary	996	1 232	-19.2%	-2.3%	-6.8%	4.1%	0.0%
Iceland	12	15	-20.0%	-11.5%	2.9%	-0.4%	2.3%
Ireland	279	338	-17.5%	-4.8%	-1.4%	-1.6%	0.4%
Israel	412	382	7.9%	-1.2%	0.8%	-0.2%	-2.0%
Italy	4731	5 131	-7.8%	-4.9%	-0.1%	-2.5%	-1.8%
Japan	6 023	6 639	-9.3%	-6.6%	-3.3%	2.5%	-6.3%
Korea <sup>2)</sup>	5 870	6 166	-4.8%	-6.7%	-3.2%	8.2%	6.2%
Luxembourg	35	43	-18.6%	-9.2%	0.7%	-3.2%	-2.9%
Malaysia <sup>3)</sup>	6 527	6 282	3.9%	1.0%	-	-	-
Netherlands	677	709	-4.5%	-5.7%	-2.4%	-3.7%	-4.6%
New Zealand	366	421	-13.1%	-2.9%	-4.5%	2.0%	-0.9%
Norway	255	233	9.4%	-3.6%	0.3%	-0.9%	-4.3%
Poland	5 437	5 583	-2.6%	-1.8%	-1.5%	2.0%	5.7%
Portugal <sup>2)</sup>	885	974	-9.1%	-8.9%	-3.5%	0.3%	4.8%
Slovenia	214	293	-27.0%	-4.7%	-4.9%	-0.8%	-1.0%
Spain	3 100	3 823	-18.9%	-7.5%	-4.4%	3.3%	1.8%
Sweden	397	471	-15.7%	-4.9%	-2.6%	-0.9%	-0.3%
Switzerland	357	384	-7.0%	-6.1%	-4.4%	-2.6%	-3.0%
United Kingdom	2 645	3 059	-13.5%	-3.7%	-4.0%	-1.3%	-2.3%
United States	37 261	41 259	-9.7%	-1.5%	-0.6%	-1.3%	0.3%

Source: IRTAD, see www.irtad.net

1. Police-recorded fatalities. Death within 30 days unless otherwise indicated.
2. Provisional data for 2008.
3. Source: MIROS

Figure 1. Short-term development  
Road fatalities – 2008 in comparison to 2007

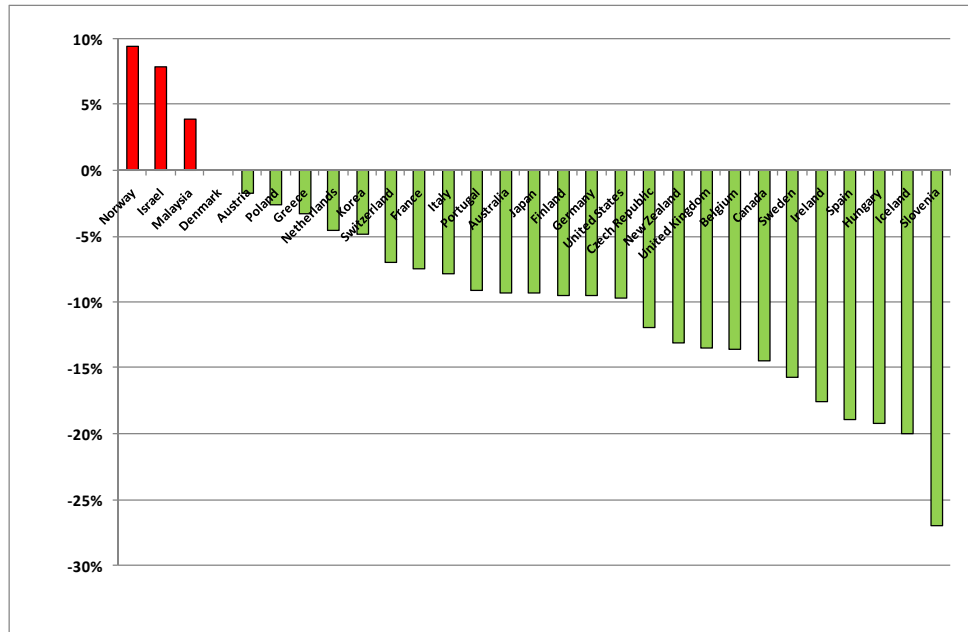


Table 2. Road fatalities: 1st Half 2009 – 1st Half 2008  
(provisional data)

Country	1st Half 2009	1st Half 2008	Variation 2009-08
Norway	96	137	-29.9%
Israel	152	206	-26.2%
Poland	1 888	2 443	-22.7%
Sweden	150	192	-21.9%
Denmark	164	194	-15.5%
Czech Republic	402	473	-15.0%
Spain	1 266	1 476	-14.2%
Iceland	7	8	-12.5%
Switzerland	148	167	-11.4%
Germany	1 968	2 198	-10.5%
Ireland	128	142	-9.9%
Austria	284	309	-8.1%
Slovenia	93	100	-7.0%
Finland	130	138	-5.8%
Japan	2 596	2 698	-3.8%
Great Britain	1 140	1 184	-3.7%
Hungary	393	406	-3.2%
Belgium	399	400	-0.3%
France	2 008	1 998	0.5%
Netherlands	345	340	1.5%
New Zealand	215	198	8.6%
Australia	795	699	13.7%

Table 3. Evolution in distance travelled and fatality rates

Country	Distance travelled <sup>1</sup> (million veh-km)			Fatality rate Fatalities / billion veh-km		
	2008	2007	Evolution 2008-2007	2008	2007	Evolution 2008-2007
Australia	224 350	223 208	0.5%	6.5	7.2	-10%
Belgium*	97 770	98 790	-1.0%	9.4	10.8	-13%
Canada*	325 611	332 275	-2.0%	7.3	8.3	-13%
Czech Republic	55 322	53 624	3.2%	19.4	22.8	-15%
Finland	52 980	53 250	-0.5%	6.5	7.1	-9%
France	186 316	188 277	-1.0%	22.9	24.5	-6%
Hungary	43 247	41 419	4.4%	23.0	29.7	-23%
Japan	911 957	921 650	-1.1%	6.6	7.2	-8%
New Zealand	40 051	40 022	0.1%	9.1	10.5	-13%
Sweden	52 255	52 751	-0.9%	7.6	8.9	-15%
United Kingdom	508 900	513 000	-0.8%	5.2	6.0	-13%
United States	4 665 201	4 831 722	-3.4%	8.0	8.5	-6%

1. Source: ITF

2. Provisional data

## Evolution in deaths rates

This section presents the performance of IRTAD countries in relation to various safety rates.

### Box 1. How to measure risks?

The relative progress in road safety depends somewhat on what one uses as a measure of exposure to risk (i.e., population, registered vehicles, distance travelled). There has been considerable debate in the past about which measure is most appropriate as an exposure measure. Those in the health sector prefer the use of population as the denominator, since it permits comparisons with other causes of injury or with diseases. As the health and transport sector increase their level of co-operation, fatalities per 100 000 population are becoming more widely used. In the transport sector it has been common, where data are available, to use fatalities per distance travelled (e.g. fatalities per million vehicle-kilometres) as a principal measure or fatalities per 10 000 vehicles. Fatalities per distance travelled has traditionally been favoured by road transport authorities, as it implicitly discounts fatality rates if travel is increased.

**Fatalities per 100 000 population.** The number of inhabitants is the denominator the most often used, as it is easily available in most countries. This rate expresses the risk for an inhabitant to be killed in traffic. It can be compared with other death causes like heart diseases, HIV/Aids etc. It is a useful indicator to compare risk in countries with the same level of motorisation; it is, however, not at all adapted to comparing safety levels between industrialized countries and countries where the level of motorization is very low.

**Fatalities per billion vehicle –kilometres (or fatalities per billion vehicle-miles).** It expresses the risk for vehicle occupants to be involved in a fatal crash. This is the most objective indicator to describe risk on the road network. However, only a limited number of countries collect data on distance travelled.

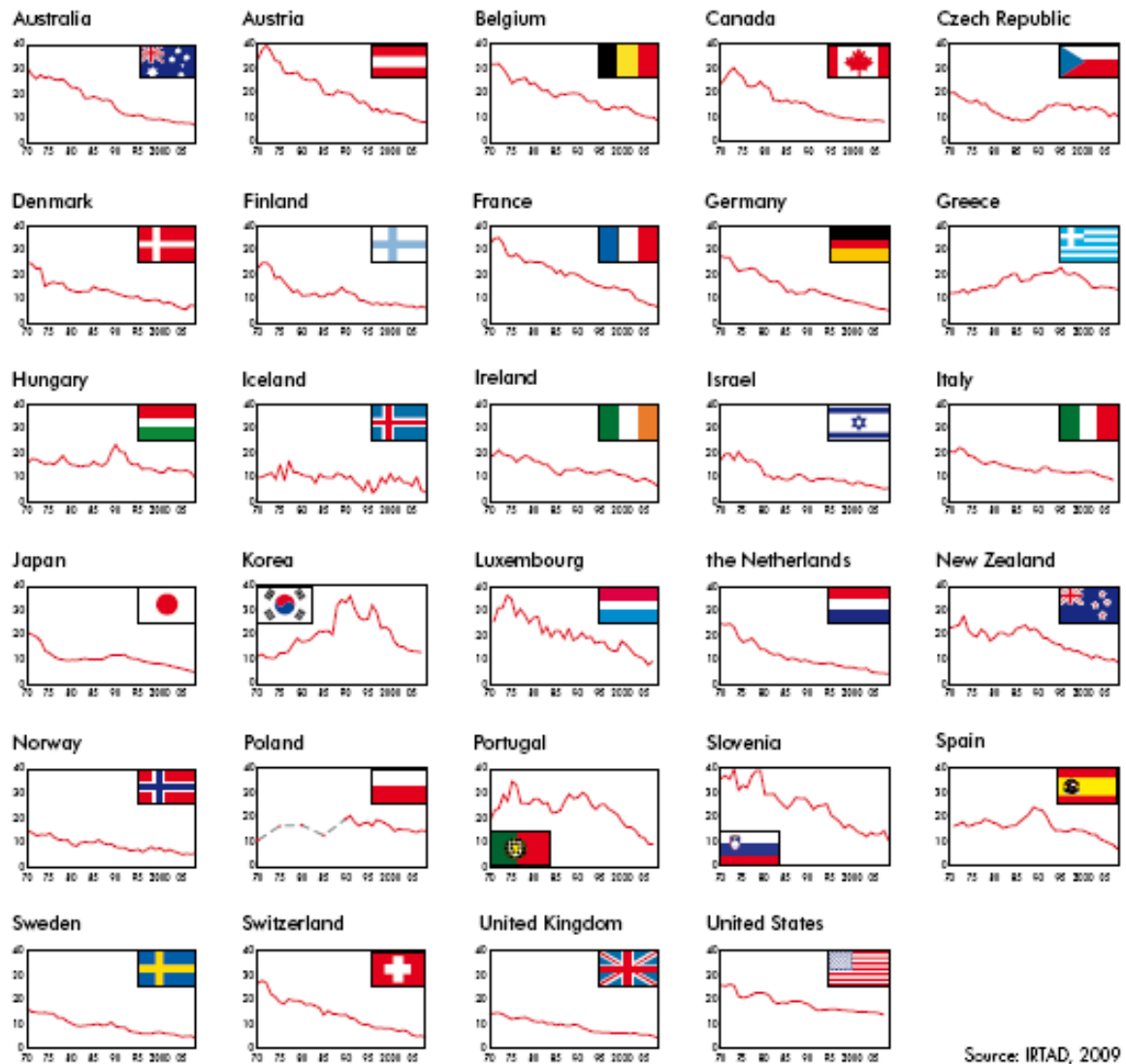
**Fatalities per 10 000 registered vehicles.** This rate can be seen as a replacement for the previous one, in that the annual distance travelled is unknown. However this indicator can only be used to compare the safety performance between countries with similar traffic and car use characteristics. It requires reliable statistics on the number of registered vehicles. In some countries, scrapped vehicles are not systematically removed from the registration database.

Ideally, it would be desirable to analyse the three risks described above in order to compare the safety levels in different countries.

❖ Risk expressed in killed / 100 000 population

Figure 2 and table 4 shows the evolution in risk expressed in terms of deaths per 100 000 population since 1970. Table 4 also includes the evolution in risk expressed in terms of deaths per billion vehicle-kilometres.

Figure 2. Traffic deaths per 100 000 population since 1970



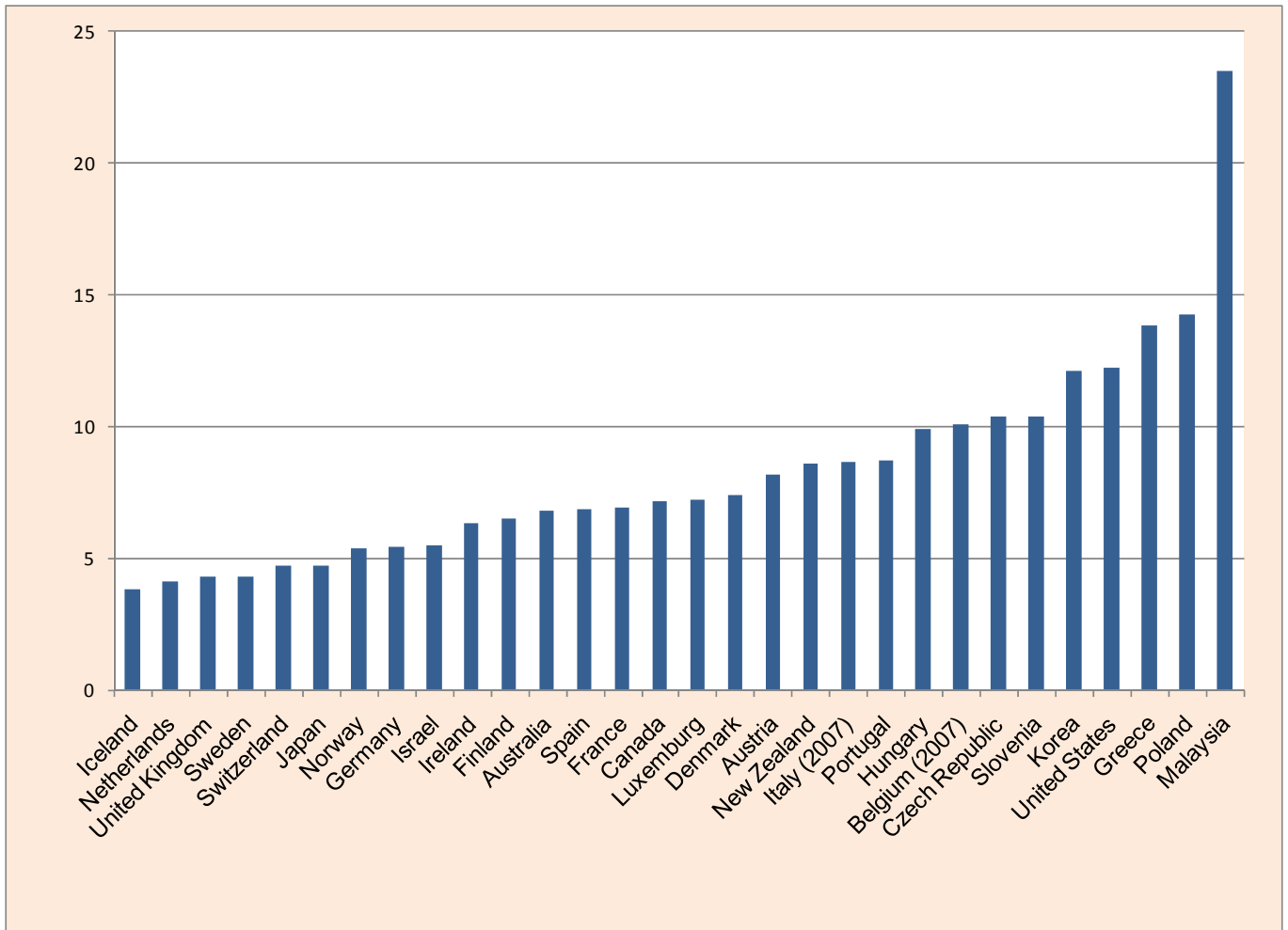
Source: IRTAD, 2009

Table 4. Traffic deaths per 100 000 inhabitants / per billion veh-km  
1970, 1980, 1990, 2000 and 2008

Country	Killed per 100 000 inhabitants					Killed per billion veh-km				
	1970	1980	1990	2000	2008	1970	1980	1990	2000	2008
Australia	30.4	22.3	13.7	9.5	6.8	49.3			9.3	6.51
Austria	34.5	26.5	20.3	12.2	8.15	109	56.2	27.9	13.2	
Belgium	31.8	24.3	19.9	14.4	10.08	105	50.0	28.1	16.3	
Canada	23.8	22.7	14.9	9.5	7.18				9.5	
Czech Republic	20.0	12.2	12.5	14.5	10.37		53.9	48.3	37	19.45
Denmark	24.6	13.5	12.4	9.3	7.37	51	25.0	17.3	10.7	8.22
Finland	22.9	11.6	13.1	7.7	6.49		20.6	16.3	8.5	
France	32.6	25.1	19.8	12.9	6.91	90	43.6	25.7	15.1	8.12
Germany	27.7	19.3	14.0	9.1	5.45		37.3	20.0	11.3	6.49
Greece	12.5	15	20.1	18.7	13.84					
Hungary	15.8	15.2	23.4	12	9.92					
Iceland	9.8	11	9.5	11.5	3.81		21.1	13.5	16.0	3.87
Ireland	18.3	16.6	13.6	11.0	6.34		28.4	19.2		5.66
Israel			8.67		5.5					
Italy		16.4	12.4		8.68					
Japan	21.0	9.3	11.8	8.2	4.72	96	29.3	23.2	13.4	6.6
Korea		17.2	33.5	21.8	12.1				49.5	20.14
Luxemburg		27.0	18.8	17.5	7.23					
Malaysia					23.5					17.3
Netherlands	24.6	14.2	9.2	6.8	4.13		26.7	14.2	8.5	
New Zealand	23.0	18.9	21.4	12.1	8.57				12.4	9.13
Norway	14.6	8.9	7.8	7.6	5.38		19.3	12.0	10.5	
Poland	10.6	16.8	19.2	16.3	14.26					
Portugal	18.6	27.7	28.3	18.1	8.7					
Slovenia	35.8	29.2	25.9	15.8	10.4	167	96.1	65.1	26.7	
Spain		17.7	23.2	14.5	6.85					
Sweden	16.3	10.2	9.1	6.7	4.32	35	16.4	12.0	8.5	7.6
Switzerland	26.6	19.2	13.9	8.3	4.7	56.5	30.9	18.5	10.4	5.59
United Kingdom	14.0	11.0	9.4	6.1	4.31				7.4	5.2
United States	25.8	22.5	17.9	15.3	12.25	29.7	20.9	12.9	9.5	8.0

Since 1990 remarkable progress has been made in all countries and for most countries the risk has been reduced by more than 40%. Greatest improvements were found in Spain (-70%), Portugal (-67%), Switzerland (-66%) and France (-65%). In 2008, the lowest risks were found in Iceland (3.81), the Netherlands (4.13), the United Kingdom (4.31), Sweden (4.32), and Japan (4.72), which all had rates below 5.0 (see figure 3).

Figure 3. Risks of road fatalities per 100 000 population in 2008 (or 2007)

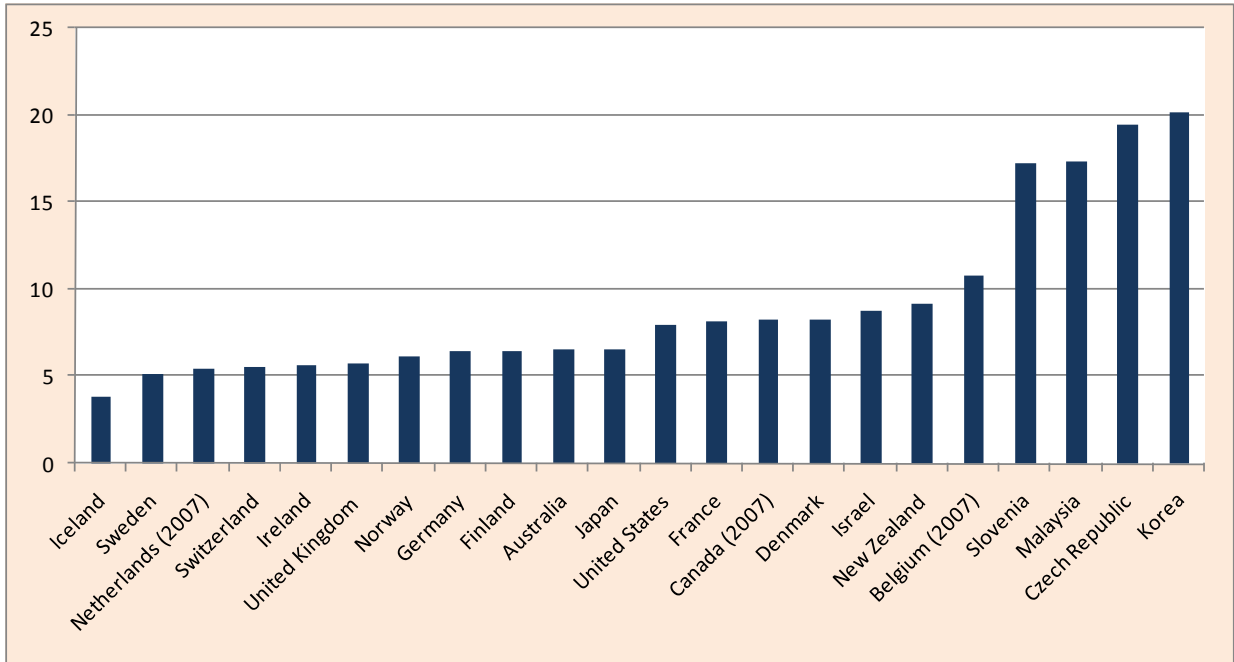


❖ Risk expressed in killed / billion veh-km

Data on risks expressed in terms of deaths per billion vehicle-kilometers are included in Table 4. Analysis risk in terms of fatalities per distance traveled is a very useful indicator to assess the risk of travelling on the road network. However, only a subset of IRTAD countries collects regular data on vehicle-kilometres. Based on this risk indicator, the situation has improved substantially between 1990 and 2007/2008. In 2007-08, the indicator ranged from 4.8 to 19.5, while in 1990 it ranged from 12 to 65. In all countries, the risk has diminished by more than 50%. Slovenia is the country showing the widest variation and the risk has been divided by four (from 65 to 17). In 2008, the best performing countries have risk below 6 deaths per billion vehicle-kilometers (Iceland, Sweden, the Netherlands, Switzerland, Ireland and the United Kingdom) (see figure 4).



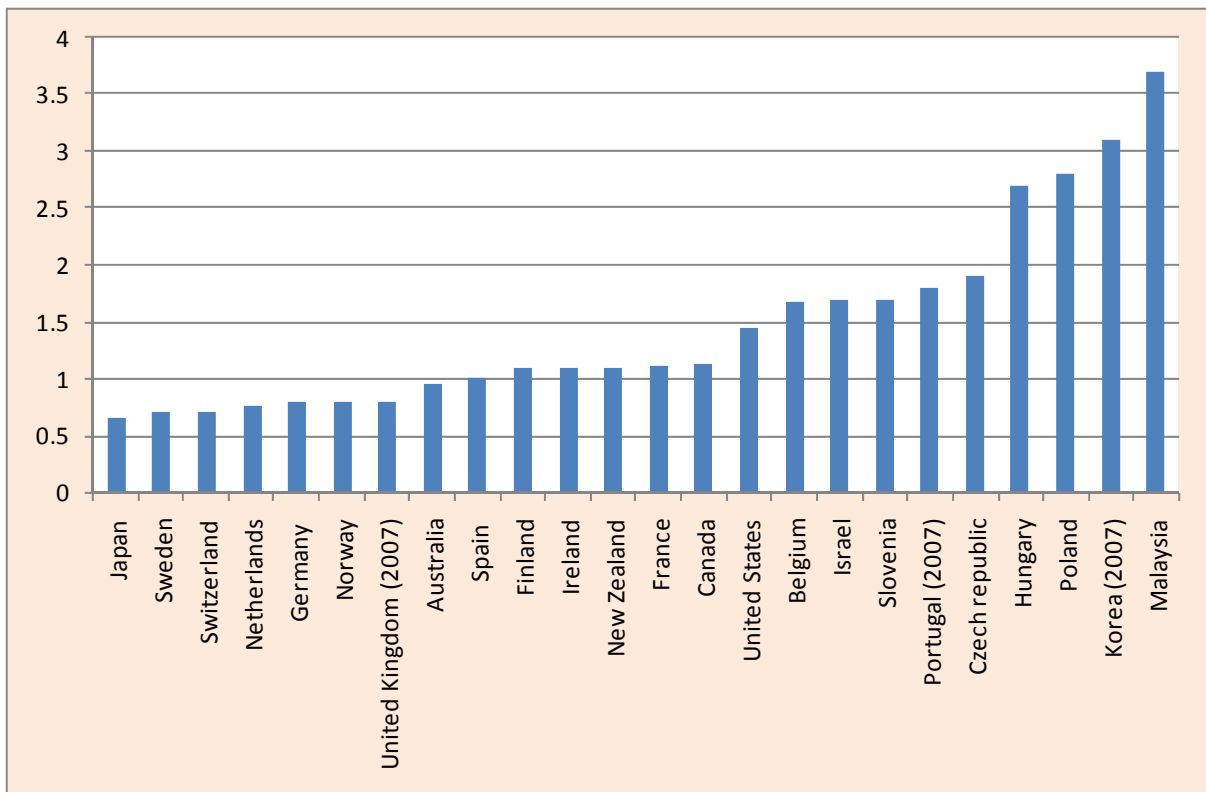
Figure 4. Deaths per billion vehicles-kilometres in 2008 (or 2007 when indicated)



❖ Deaths for 10 000 registered vehicles.

Figure 5 illustrates the rate expressed as the number of deaths per 10 000 registered vehicles.

Figure 5. Deaths per 10 000 registered vehicles





# COUNTRY REPORTS

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# AUSTRALIA<sup>1</sup>

## 1. General comments on trends for the year 2008

Like many countries, Australia observed a substantial drop in road fatalities during 2008 (down 8.5% on 2007), which may have been partly related to increased fuel prices and other local economic factors. This relatively large 12-month reduction followed several years when there was little overall change (between 2003 and 2007). However, the decline appears to have been short-lived, with deaths increasing by 7.6% during the first 10 months of 2009.

## 2. Long term trends

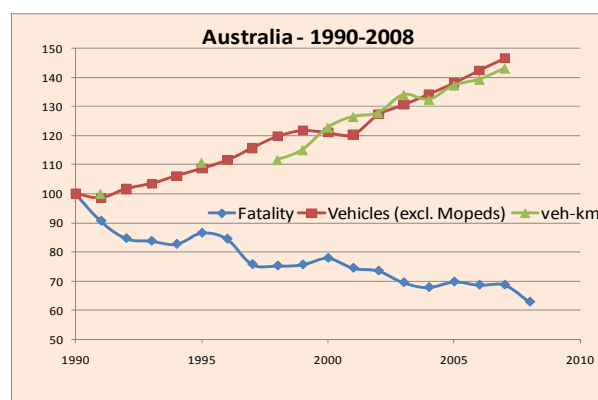
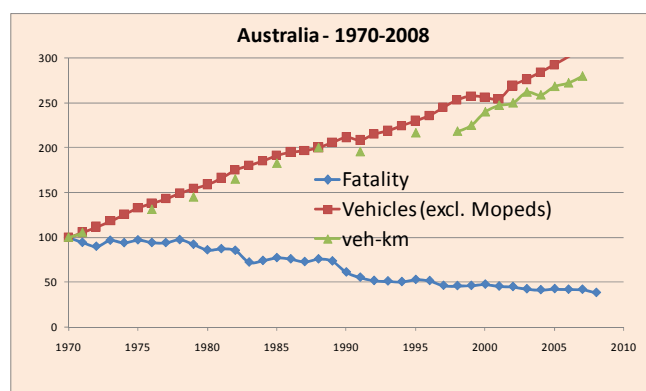
### ❖ Evolution in the number of fatalities and injury crashes

Between 1970 and 2008, the number of fatalities decreased by 61%, while the number of vehicles and the distance travelled was multiplied by 3. In recent years (2000-2008), the number of fatalities decreased by 19%. Since the middle of this decade, there has been little overall change in the total number of Australian road fatalities.

Table 1. Number of road fatalities  
1970-2008

	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	2008-07	2008-00	2008-1970
Fatalities	3 798	2 331	1 817	1 737	1 715	1 621	1 583	1 627	1 602	1 603	1 466	-8.5%	-19.3%	-61.4%

Figure 1. Evolution in the number of road fatalities, injury crashes and vehicles  
1970-2008 and 1990-2008



1. Source: IRTAD, Department of Transport

### ❖ Time series for key risk indicators

In the last 38 years the mortality rate (in terms of deaths per 100 000 population) decreased by 77% and fatality risk (in terms of deaths per billion vehicle-kilometres) declined by 87%.

Table 2. Risk indicators

	1970	1990	2000	2008	Evolution 2000-2008	Evolution 1970-2008
Deaths per 100 000 pop	30.38	13.66	9.49	6.86	-28%	-77%
Deaths per 10 000 motor vehicles	7.96	2.31	1.47	0.96	-35%	-88%
Deaths per billion veh-km	49.27		9.84	6.53	-34%	-87%

## 3. Recent development in accident trends

### ❖ Road users

Since 1970, substantial reductions have been recorded in all road user categories except motorcyclists (+42%).

Since 1990, the percentage reduction in pedestrian fatalities (-54%) has been considerably larger than that for vehicle occupant fatalities (-36%). There is evidence that reductions in urban travel speeds have been particularly important in cutting pedestrian fatalities. There is also some evidence that speed enforcement measures have been more effective on urban arterial roads than on rural roads. Although there is no national exposure data for pedestrians, it is likely that pedestrian traffic has not increased to anything like the same extent as vehicular traffic. Increasing urban congestion and development of urban motorways may have benefited pedestrian safety even more than vehicle occupant safety, though there is no direct evidence to that effect.

**Cyclist** fatalities have dropped by 66% since 1990. Reduced urban travel speeds and introduction of **compulsory helmet laws** for cyclists have contributed to this improvement.

Changes in **motorcycle fatalities** have been influenced by exposure changes (number of active riders and age profile, as well as total distance travelled); there is concern that automated speed enforcement may have had less influence on motorcycle speeds than on speeds of other vehicles, partly because of the absence of motorcycle front number plates.

In 2008, motorcycles accounted for:

- 1.0% of vehicle-kilometres (and a lower proportion of person-kilometres), but:
- 20% of motor vehicle user road deaths
- 30% of motor vehicle users hospitalised after road crashes<sup>1</sup>
- 42% of male motor vehicle users hospitalised after road crashes.

Between 2000 and 2008, the annual number of motorcycle deaths in Australia increased by 29%, and as a proportion of total road deaths they increased from 10.5% to 16.7%. As the chart below illustrates, motorcyclists are the only road user group to have shown an increase in fatality numbers since the start of the decade. The increase in rider casualties can be largely attributed to a growth in motorcycling activity: between 2000 and 2007, the number of motorcycle vehicle-kilometres travelled in Australia increased by 37%.

1. Hospitalisation figures are for 2006-07, which are the latest available.

Figure 2. Relative evolution in fatalities by user group  
January 2000 = Index 100

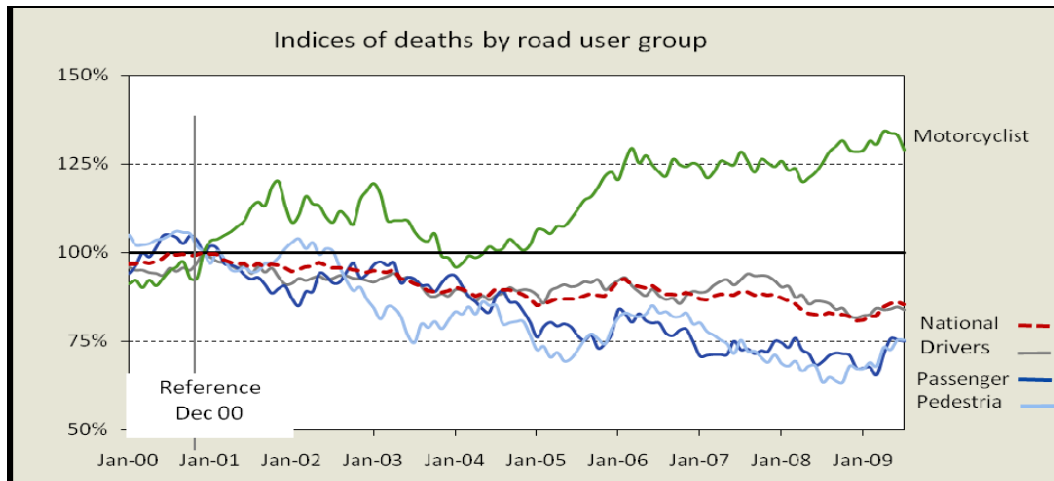


Table 3. Fatalities by road user groups in 1970, 2000, 2007 and 2008

													% change over			
	1970	%	1980	%	1990	%	2000	%	2007	%	2008	%	2008-07	2008-2000	2008-1990	1970-2008
Bicyclists	98	3%	93	3%	80	3%	31	2%	41	3%	27	2%	-34%	-13%	-66%	-72%
Motorized 2-wheelers	173	5%	442	14%	262	11%	191	11%	237	15%	246	17%	4%	29%	-6%	42%
Vehicle occupants	2 693	71%	2 078	64%	1 569	67%	1 302	72%	1 121	70%	997	68%	-11%	-23%	-36%	-63%
Pedestrians	822	22%	644	20%	420	18%	287	16%	204	13%	193	13%	-5%	-33%	-54%	-77%
Other	12	0%	15	0%	0	0%	6	0%	0	0%	3	0%				
<b>Total</b>	<b>3 798</b>	<b>100%</b>	<b>3 272</b>	<b>100%</b>	<b>2 331</b>	<b>100%</b>	<b>1 817</b>	<b>100%</b>	<b>1 603</b>	<b>100%</b>	<b>1 466</b>	<b>100%</b>	<b>-9%</b>	<b>-19%</b>	<b>-37%</b>	<b>-61%</b>

#### ❖ Age groups

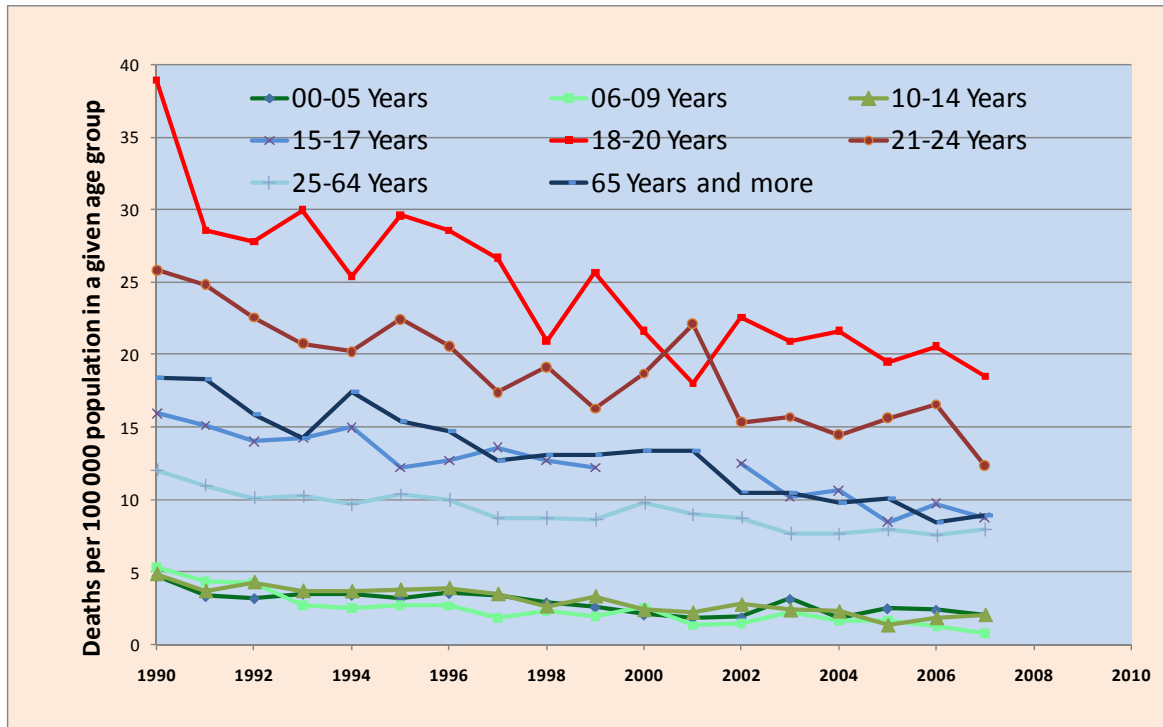
The highest road fatality rates (in terms of fatalities per population) are among young adults (17-24 years) and elderly people (over 70); children aged 0-16 have the lowest fatality rate.

In percentage terms, the biggest fatality reductions since 1990 have been among infants and young children (ages 0-9): -68%. Pedestrian and cyclist fatalities in this age group have dropped dramatically (by 90%), though vehicle passenger fatalities are also down (by 45%). Exposure changes may have contributed to the drop in child pedestrian and cyclist fatalities; other factors contributing to reduced pedestrian and cyclist deaths are discussed above.

Among older children and adolescents (ages 10-17) there have been substantial reductions in passenger, pedestrian and cyclist fatalities, which are the bulk of road deaths in this age range; motorcycle deaths have also dropped (from 28 to 6), but driver fatalities have only dropped slightly (from 34 to 27).

Among young adults (18-24), the majority of fatalities are drivers or passengers; these fatalities have dropped by 52% since 1990, while young adult fatalities in other road user groups are down by 57%.

Figure 3. Deaths per 100 000 population in a given age group 1990-2007



❖ Accident locations

Road fatality rates are higher for people who live in rural areas (particularly remote ones) than for people living in major cities. People living outside cities tend to do more of their driving at highway speeds, more driving on lower standard rural roads and more driving overall. Effective enforcement of speed limits, alcohol restrictions and belt use is more difficult in rural areas.

Only a small proportion of the rural road network linking major cities in Australia is divided road, and an even smaller proportion is motorway standard.

National and state road safety strategies emphasise the importance of road infrastructure improvements, including relatively low-cost measures applicable to single-carriageway roads.

4. Recent development of accident behaviour

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❖ Drink driving

In Australia, the maximum authorized BAC is 0.5 g/l (for all drivers) and 0.0 or 0.2 g/l for novice drivers and for truck, bus and taxi drivers.

All jurisdictions have had considerable success in reducing the contribution of alcohol to road trauma, but about 29% of driver and rider fatalities still have a blood alcohol concentration above the legal limit.

This figure varies significantly among jurisdictions, which suggests that there is considerable scope for further gains through identification and application of best practice approaches to deterrence.

#### ❖ **Speed**

Statistical series and other evaluation studies in individual jurisdictions indicate that speed management measures have made an important contribution to reducing road fatalities and injuries. National data on speed distributions are not available. Improvement of speed monitoring systems has been identified as a priority in the National Road Safety Action Plan.

#### ❖ **Seat belts and helmets**

**Seat belt use** has been compulsory in all states since the 1970s. In most states there are licence demerit point penalties as well as fines for unbelted drivers, and in some states demerit points apply to drivers with unbelted passengers (in addition to fines for unbelted adult passengers).

Objective nationwide data on usage rates is not available, but non-national observational surveys, and self-report data from national surveys, indicate front seat rates generally in excess of 95% and rear seat rates above 80%.

Despite high general usage rates, the rates of non-use among fatally injured vehicle occupants are still estimated at 28%. Analysis indicates that this high figure is the result of a high crash involvement rate among those who do not wear belts, as well as the fact that they are more likely to be killed if involved in a crash.

**Helmets are compulsory for motorcycle and moped riders and bicyclists.** There is no national data about helmet usage rates.

## 5. National road safety strategies and targets

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#### ❖ **Current national road safety strategies**

In November 2008, the Australian Transport Council (made up of federal, state and territory transport ministers) released the **National Road Safety Action Plan 2009 and 2010** ([http://www.atcouncil.gov.au/documents/actionplan\\_0910.aspx](http://www.atcouncil.gov.au/documents/actionplan_0910.aspx)). The Action Plan sets out a comprehensive range of policy measures and supporting activities for priority implementation. Key items in the plan include:

- Development of a national best practice speed management strategy.
- Creation of a systematic crash risk assessment model for major parts of the road network.
- Stronger focus on safe system practice in road design, construction and maintenance.
- Actions to improve consumer awareness and uptake of vehicle safety features, including stability control, side impact head protection, seat belt reminder systems and intelligent speed adaptation.
- Renewed focus on effective enforcement of drink and drug driving laws, teamed with targeted public education.

With the current National Road Safety Strategy ending in 2010, work has commenced on the development of a new 10-year national strategy for 2011-2020. A data modelling project is being undertaken to provide a quantitative basis for strategic measures and outcome targets.

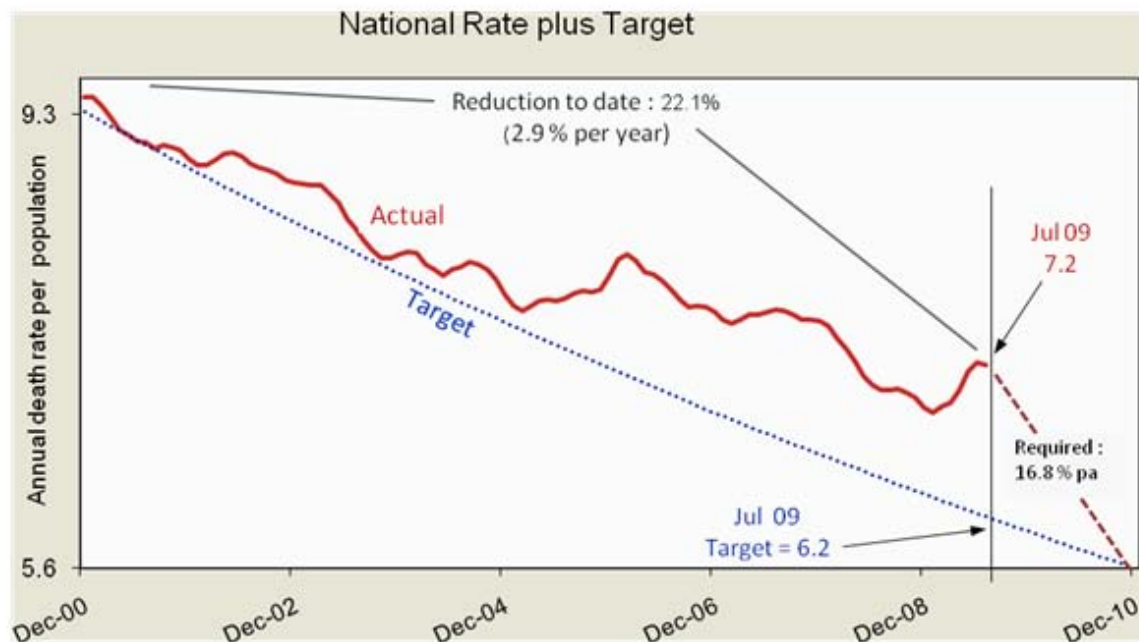


## ❖ Safety targets and progress towards targets

The target adopted for Australia's current National Road Safety Strategy was to reduce the annual road fatality rate to 5.6 deaths per 100 000 population by the end of 2010. This represented a 40% reduction relative to the 1999 benchmark rate of 9.3 deaths per 100 000 people. Up to the end of 2004, the fatality rate was essentially on track to reach the 2010 target. However, a substantial gap has since developed between projected progress and actual outcomes, and there is now little prospect of achieving a rate of 5.6 by the end of next year. In the 12 months to July 2009, the fatality rate stood at 7.2 deaths per 100 000 people.

The reasons for the slower than expected progress are not entirely clear, though Australia's strong economic performance through most of the decade – reflected to some extent in measures of travel activity – is thought to have played a part.

Figure 4. Progress towards national targets



## 6. Recent safety measures (2007-2009)

### ❖ Speed management

- A national speed management vision is being prepared as a central component of the new National Road Safety Strategy, scheduled for the approval of transport ministers in 2010. This part of the strategy is expected to cover all aspects of speed management, including speed limit setting, “best practice” enforcement, infrastructure design and upgrade, and public communication.
- Some states have carried out demonstration trials of intelligent speed assist (ISA) technology, and work has started on the development of a national policy framework to support the future adoption of ISA technology.

#### ❖ **Measures against drink and drug driving**

- Most states have introduced random roadside testing programmes for cannabis, methamphetamines and ecstasy.

#### ❖ **Vehicle standards and equipment**

- In June 2009, Australia mandated the installation of electronic stability control in all new model cars, passenger vans and off-road vehicles from November 2011.
- A proposed vehicle standard for pedestrian protection was to be assessed in 2009.

#### ❖ **Infrastructure**

- In 2009, the federal government announced significant increases in funding for transport infrastructure, including safety-targeted programmes for:
  - black spot road treatments;
  - new and upgraded highway rest areas for heavy vehicle operators;
  - treatment of high-risk railway level crossings.

#### ❖ **Child restraints**

- States and territories have begun to implement nationally agreed changes to seat belt laws requiring:
  - all children aged under 6 months to be in an approved rearward-facing child restraint;
  - all children aged at least 6 months and under 4 years to be in an approved child restraint;
  - all children aged at least 4 years and under 7 years to be in an approved forward-facing child restraint or booster seat.

#### ❖ **Education, training, communication**

- The federal government is funding a new national education programme for learner drivers. The programme, known as keys2drive, is designed to help parents supervise the driving practice of young learner drivers before they graduate to a solo licence. It includes a free professional driving lesson for learners accompanied by their non-professional supervisor, as well as educational materials.
- The Victorian Government is leading the development and trial of an education programme designed for newly licensed (provisional) drivers.

## 7. Major research undertaken in 2007-2009

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Several multidisciplinary research organisations collectively carry out most of Australia's major road safety research projects (often funded by government road transport agencies). The following web links provide direct access to the latest reports published by these organisations:

<http://www.monash.edu.au/muarc/reports/index.html>

<http://www.carrsq.qut.edu.au/publications/research.jsp>

<http://casr.adelaide.edu.au/publications/researchreports/>

[http://www.thegeorgeinstitute.org/research/injury-&-musculoskeletal/studies/road-traffic-injury/road-traffic-injury\\_home.cfm](http://www.thegeorgeinstitute.org/research/injury-&-musculoskeletal/studies/road-traffic-injury/road-traffic-injury_home.cfm)

<http://www.onlinepublications.austroads.com.au/script/home.asp>

## 8. References

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❖ List of useful websites and references

National Road Safety Action Plan 2009 and 2010	<a href="http://www.atcouncil.gov.au/documents/actionplan_0910.aspx">http://www.atcouncil.gov.au/documents/actionplan_0910.aspx</a>
Road Deaths Australia, 2008 Statistical Summary	<a href="http://www.infrastructure.gov.au/roads/safety/publications/2009/pdf/rsr_04.pdf">http://www.infrastructure.gov.au/roads/safety/publications/2009/pdf/rsr_04.pdf</a>

# AUSTRIA<sup>1</sup>

## 1. General comments on trends for 2008

In 2008, Austria observed a 1.7% reduction in fatalities, which is a moderate reduction in comparison to other European countries. Bicyclists paid a very heavy price in 2008, with 62 killed — a 67% increase in comparison to 2007.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Between 1970 and 2008, the number of fatalities decreased by 74% and the number of injury crashes by 24%. Yet, in the same time period, the number of vehicles and the distance driven tripled. In recent years (2000-2008), the number of fatalities declined by 30.4%.

This progress is directly related to the various safety measures implemented since 1970 and illustrated in Figure 2. These include the adoption of general speed limits on federal roads and on motorways (1973-1974), the mandatory use of seat belts (1984), the introduction of driving licence probation (1992), speed surveillance with laser (1992), compulsory child restraint systems (1994) and multiphase driving licence (2003).

Table 1. Number of road fatalities and injury crashes  
1970-2008

												% change over		
	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	2007-08	2000-08	1970-2008
Fatalities	2 574	1 558	976	958	956	931	878	768	730	691	679	-1.7%	-30.4%	-73.6%
Injury crashes	51 631	46 338	42 126	43 073	43 175	43 426	42 657	40 896	39 884	41 096	39 173	-4.7%	-7.0%	-24.1%

1. Source: IRTAD, Kuratorium für Verkehrssicherheit.

Figure 1. Evolution in numbers of road fatalities, injury crashes, distance travelled and vehicles 1970-2008

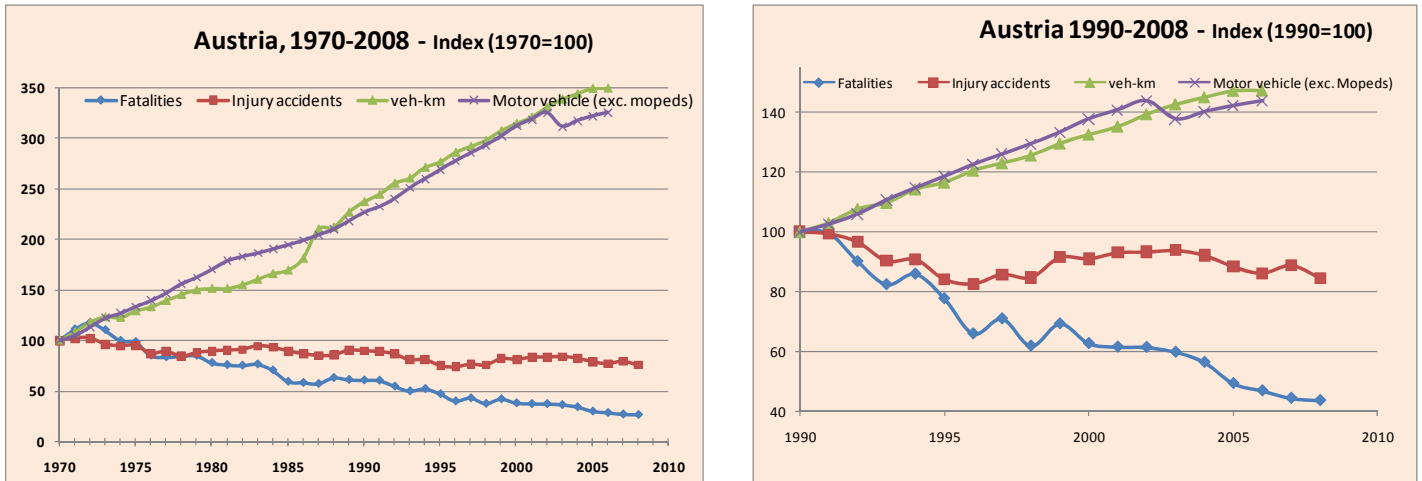
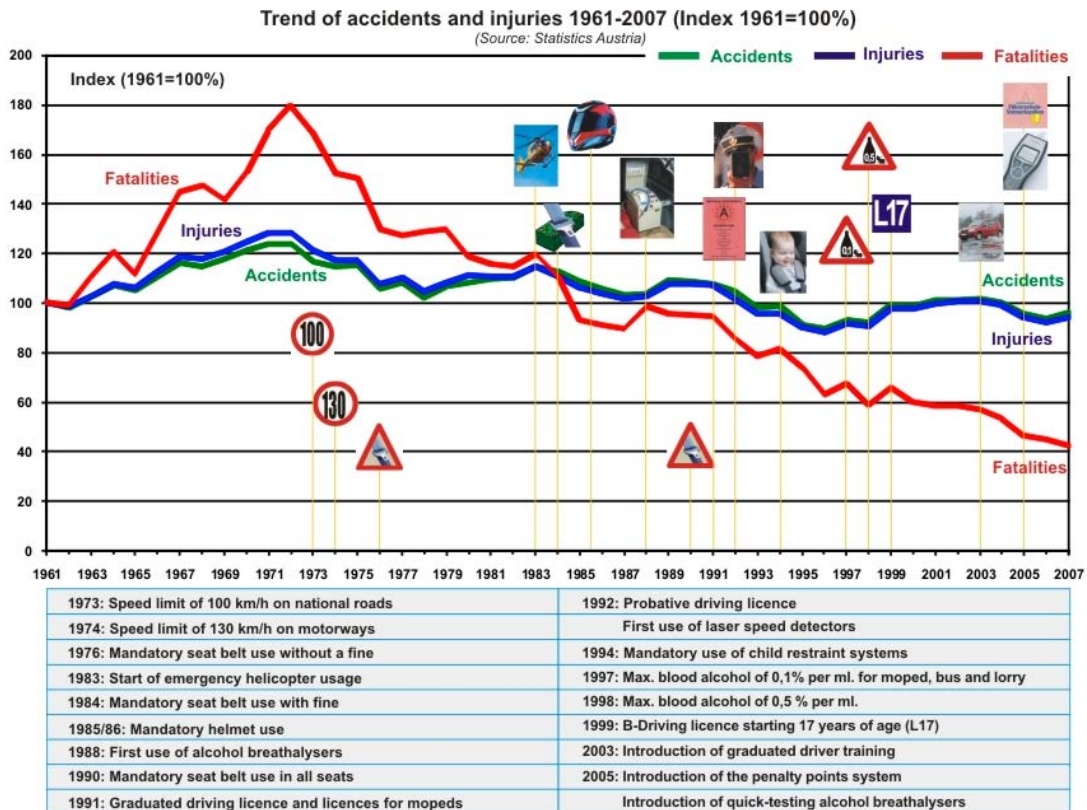


Figure 2. Impact of safety measures on road safety performance



❖ Time series for key risk indicators

Between 1970 and 2008, the mortality rate, expressed in terms of deaths per 100 000 population, decreased by 33%.

Table 2. Risk indicators  
1990, 2000, 2008

	1970	2000	2008	Change over	
				2008-2000	2008-1990
Deaths/100 000 population	34.53	12.18	8.15	-33%	-76%
Deaths/billion veh-km	109.26	13.18	8.87 (2006)		
Deaths/10 000 vehicles	3.28	1.75	1.16		
Motorisation (number of vehicles/1 000 inhabitants)	552	697	705	+1.1%	+28%

### 3. Recent development of accident trends

#### ❖ Road users

Since 1970, all road users except motorcycle riders have benefited from the improvement of road safety. Motorcycle fatalities increased by 15% between 1970 and 2008.

It is interesting to observe that since 1970, mopeds and mofas have lost some of their popularity, which explains in part the good results represented by the decrease in numbers of moped riders killed. The number of motorcycles and scooters in traffic has increased in the same period by a factor of three.

In 2008, the number of bicyclist killed increased by 68%. The reasons for this dramatic rise have not yet been fully analysed. Estimated numbers for 2009 indicate the numbers are likely to drop to the 2007 level.

Table 3. Fatalities by road user group  
1970, 2000, 2007 and 2008

									% change over		
	1970		2000		2007		2008		2008-2007	2008-2000	2008-1970
Bicyclists	202	8%	62	6%	37	5%	62	9%	67.6%	0%	-69%
Mopeds	298	12%	44	5%	24	3%	25	4%	4.2%	-43%	-92%
Motorcycles and scooters	79	3%	112	11%	96	14%	91	13%	-5.2%	-19%	15%
Car occupants	1 005	39%	549	56%	378	55%	367	54%	-2.9%	-33%	-63%
Pedestrians	817	32%	140	14%	108	16%	102	15%	-5.6%	-27%	-88%
Other	202	8%	62	6%	37	5%	62	9%	67.6%	0%	-69%

Figure 3. Relative evolution of the number of motorised two-wheelers in traffic and the number of moped riders and motorcyclists killed in traffic

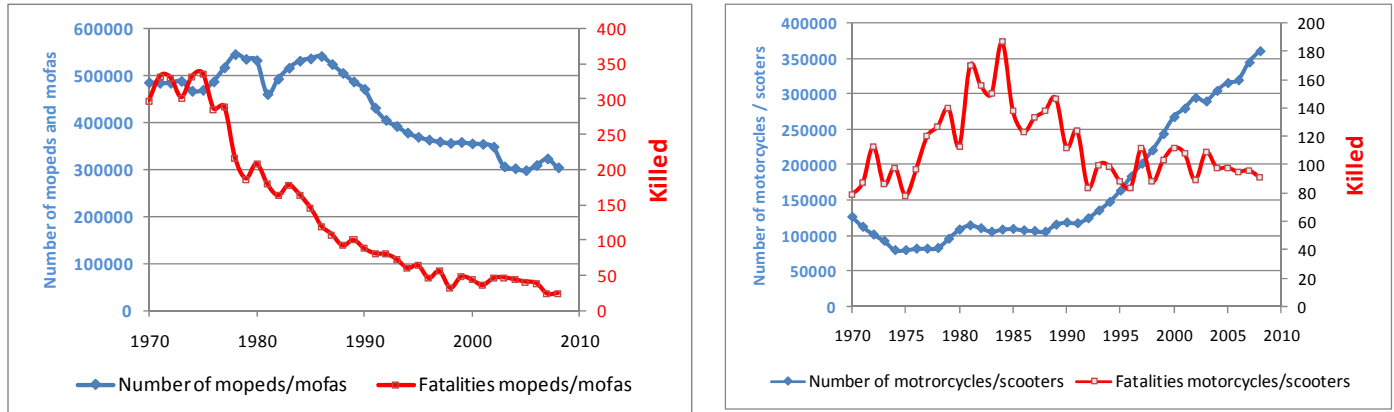


Table 4 illustrates the relative fatality risk for the different road user groups. For a motorcyclist, the risk of dying in a traffic crash is 15 times higher than that for a car occupant.

Table 4. Relative fatality risk by road user group (average 2004-2008)

	Fatalities (annual average 2004-2008)	Deaths (inside or on the vehicle) per million vehicles	Average kilometrage per vehicle	Deaths (inside or on the vehicle) per billion vehicle/km
Pedestrians	110	-	-	-
Bicycles	50	-	-	-
Mopeds	35	121.5	1 000	118.2
Motorcycles	95	290.8	2 800	102.9
Car and van occupants	408	97.6	14 200	6.8
Heavy goods vehicles	32	89.2	50 000	1.3

#### ❖ Age groups

The number of fatalities varies with age. Inexperienced riders and drivers are killed more often in traffic.

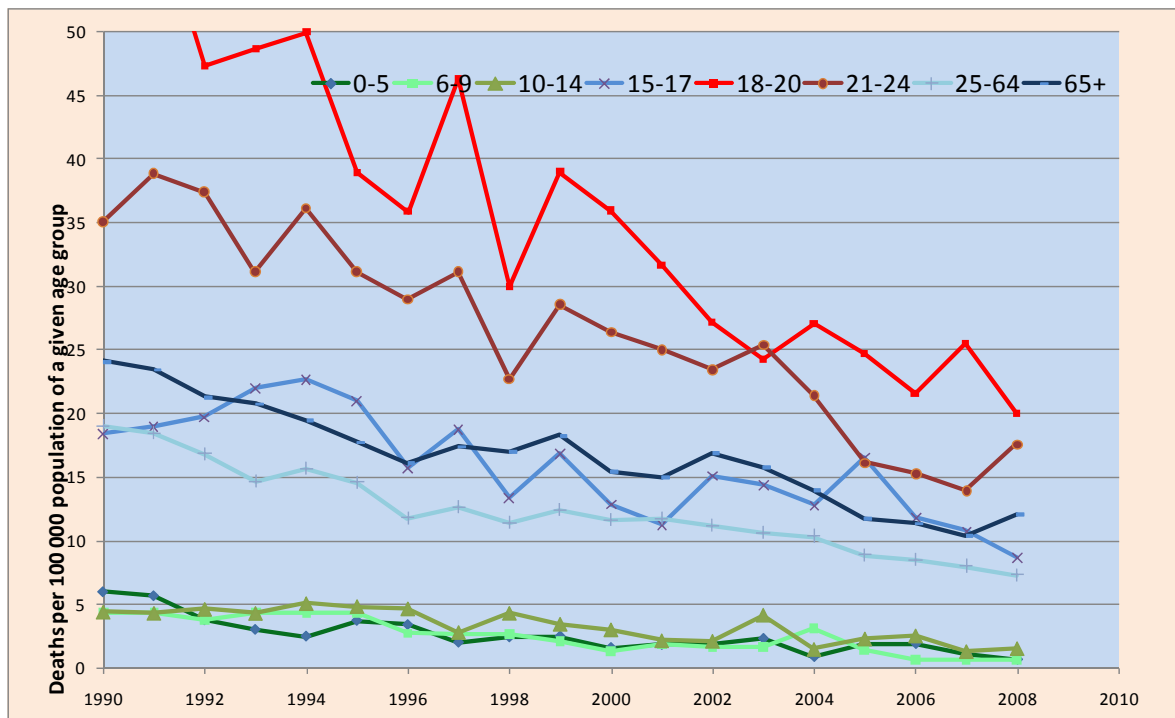
Since 1980, the reduction in fatalities has benefited all age groups, but the most impressive reduction concerns the youngest age group (0-14), for which fatalities decreased by 91%.

Young people (15-24) are still a high risk group in road safety, with a fatality risk nearly two times higher than the general population.

Table 5. Fatalities by age group

						% change over		
	1980	1990	2000	2007	2008	2007-2008	2000-2008	1980-2008
0-5	49	32	8	5	3	-40.0%	-62.5%	-94%
6-9	41	16	5	2	2	0.0%	-60.0%	-95%
10-14	41	19	14	6	7	16.7%	-50.0%	-83%
15-17	146	55	37	32	26	-18.8%	-29.7%	-82%
18-20	250	205	105	76	60	-21.1%	-42.9%	-76%
21-24	196	186	99	59	74	25.4%	-25.3%	-62%
25-64	891	764	518	366	335	-8.5%	-35.3%	-62%
>65	386	278	190	145	172	18.6%	-9.5%	-55%

Figure 4. Evolution of fatality risks by age group (deaths per 100 000 population in a given group) 1990-2008



#### ❖ Accident locations

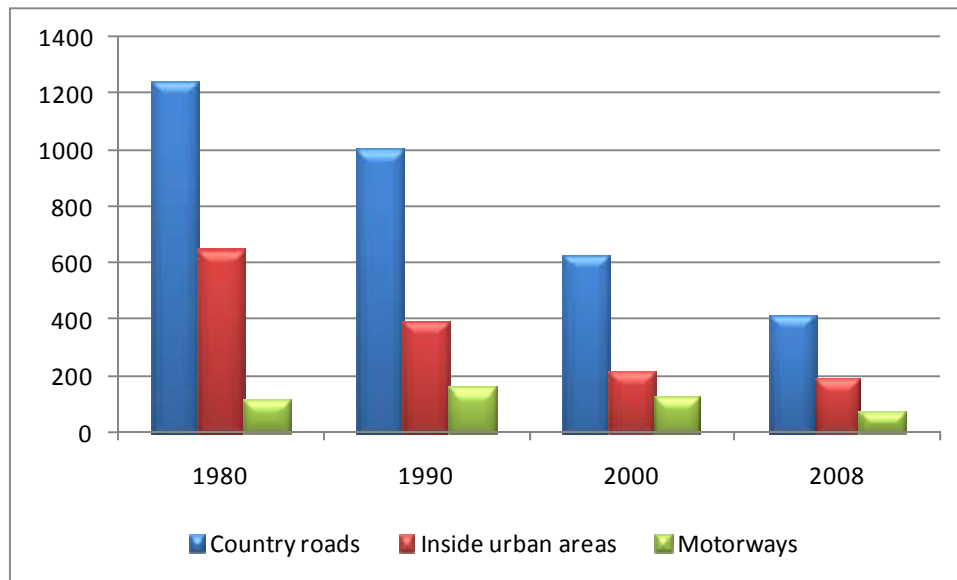
Around 61% of fatal crashes occur on rural roads, 28% in urban areas and 11% on motorways (Figure 4).

Since 1980, there has been a reduction in the number of accidents on urban roads, and especially country roads, which have the highest share of fatalities in Austria. This is why the implementation of road safety programmes on a regional and local level is necessary. Measures such as harmonisation of black spot treatment and implementation of road safety inspection on the secondary road network would improve country, as well as urban, road safety.

A slight reduction in fatalities has been recorded on motorways, although the network has been extended and traffic has greatly increased.



Figure 5. Fatalities by type of road  
1980, 1990, 2000 and 2008



In 2008, the greatest reduction was achieved on rural roads.

Table 6. Fatalities by type of road

	1980	1990	2000	2007	2008	% change over		
						2008-2007	2008-2000	2008-1980
<b>Rural roads</b>	1 243	1 000	626	443	415	-6.3%	-33.7%	-66.6%
<b>Inside urban areas</b>	646	396	215	173	189	9.2%	-12.1%	-70.7%
<b>Motorways</b>	114	161	135	75	75	0.0%	-44.4%	-34.2%

#### 4. Recent development of driving behaviour

##### ❖ Drink driving

The maximum permissible BAC is 0.5 g/l, or 0.1 g/l for moped drivers younger than 20 years, novice drivers (holding a licence for less than two years), drivers of lorries of more than 7.5 tonnes and drivers of buses with more than nine seats.

Since 2002, every driver involved in an injury accident has been tested for alcohol (unless killed or unconscious). However, it is not permitted in Austria to test a corpse, so the estimated number of unreported cases is still high.

Although drink driving remains a predominantly male problem, the percentage of female drunk drivers has increased, and at present is about 11%.

##### ❖ Speed

The problem of speeding has remained at a comparatively high level over the past years. Speed, and especially inadequate speed, is the main cause of accidents in Austria.

Due to a shortage in manpower, there will be less speed surveillance by traffic police in future, but there will be an increase in automatic speed enforcement (e.g. Section Control), as well as private surveillance at the municipal level.

#### ❖ Seat belts and helmets

While restraint systems and the wearing of helmets are compulsory in Austria, the rate of restraint use is still about 10% lower than that of other European countries, although records show an increase in recent years. A clear correlation between restraint campaigns and restraint use is identifiable.

Table 7. Evolution in seat belt use for car occupants

	2000	2005	2008
<b>General</b>	73,9%	81,7%	86,5%
<b>Front seat – driver</b>	74,4%	82,9%	87,5%
<b>Front seat – passenger</b>	78,6%	81,8%	86,5%
<b>Rear seat</b>	44,9%	51,7%	65,5%
<b>Motorway – driver</b>	77,8%	86,1%	91,3%
<b>Rural roads – driver</b>	75,4%	85,3%	88,2%
<b>Urban areas – driver</b>	70,4%	78,0%	83,7%

## 5. National road safety strategies and targets

#### ❖ National road safety strategies

##### *Austrian Road Safety Programme 2002-2010*

This third edition of the programme represents the implementation status in 2009 and shows the challenges ahead till the end of 2010. Many of the measures are already implemented, such as graduated driver training for novice drivers, who are especially at risk, the penalty points system for high-risk drivers, the nationwide introduction of quick-testing alcohol breathalysers and Section Controls.

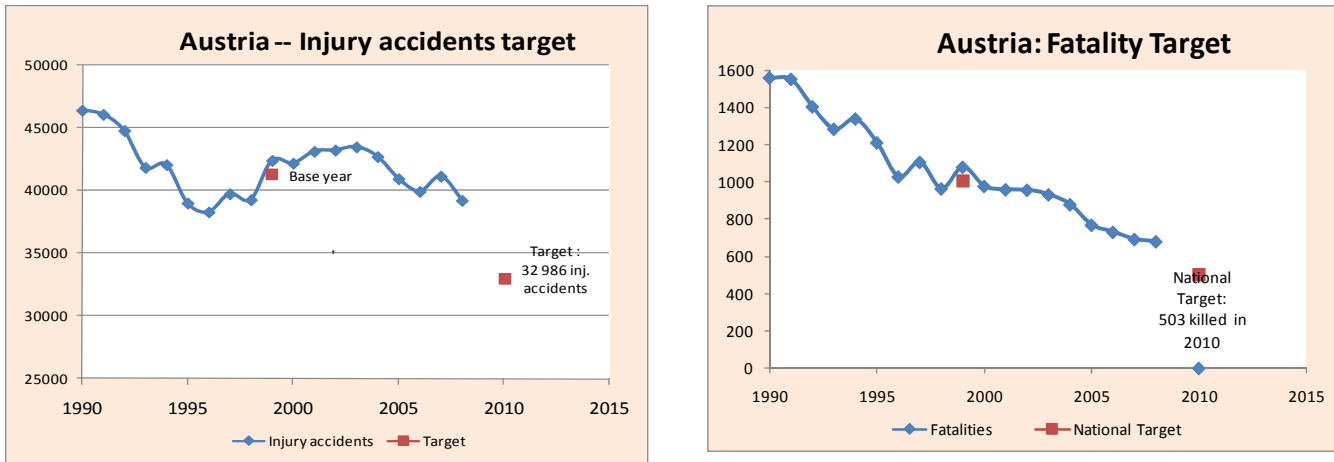
A new Austrian Road Safety Programme will be developed for the upcoming decade (2011-2020). Great importance will be attached to the consideration of all road users, especially vulnerable road users.

#### ❖ Safety targets and sub-targets

In 2002, Austria adopted a number of targets, expressed as a reduction in the number of fatalities and injury crashes. It also adopted targets for particular road user groups:

Type	Targets	Base year	Target year	Base year figure	Current results (2008)
<b>Fatalities</b>	-50%	average 1998-2000	2010	1 006	679
<b>Injury accidents</b>	-20%	average 1998-2000	2010	41 233	39 173
<b>Restraint systems:</b>					
<i>Increase seat belt use</i>	+10%	average 1998-2000	2010	Driver: 72.7%	Driver: 86%
<i>Increase use of child restraints</i>	rate of 95%	average 1998-2000	2010	70.4%	92%

Figure 6. Trend in progress towards road fatality target



## 6. Recent safety measures (2007-2009)

### ❖ Road user behaviour

#### *Drink driving*

- Minimum penalties for drunk driving were raised considerably and driving licenses are revoked for longer periods. Since September 2009, first offenders with a blood alcohol concentration between 0.8% and 1.19% have to attend special “traffic coaching”. This is an obligatory four-hour course at which psychologists and personnel of rescue services try to increase the awareness of the risks of drunk driving.

#### *Speeding*

- Since September 2009, very excessive speeding has been penalised more severely. Exceeding the speed limit by more than 30 km/h now results in penalties between EUR 70 and EUR 2 180.

#### *Seat belt and child restraint systems*

- Children less than 150 cm must use suitable child restraints. These must at least comply with test standard ECE 44 in the version 03 (ECE44/03). Car drivers are responsible for buckling up all children up to the age of 14. Since September 2009, violators have to attend a four-hour course.

### ❖ Infrastructure

- Between 2008 and 2009, the safety of 1 897 level crossings was enhanced with new level crossing barriers, reflective level crossing signs, signal devices and markings. The number of fatalities at level crossings decreased in 2008, with further reduction predicted for 2009.

### ❖ Licensing, regulation, enforcement

- Theoretical and practical training as well as theoretical tests are obligatory for moped licence candidates of all ages. The possibility of riding a moped without any licence at age 25 or over was suspended. A moped licence can be obtained starting at age 15.

## 7. References – Useful websites and references

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<b>Austrian Ministry for Transport, Innovation and Technology</b>	<a href="http://www.bmvit.gv.at">www.bmvit.gv.at</a>
<b>Austrian Home Office</b>	<a href="http://www.bmi.gv.at">www.bmi.gv.at</a>
<b>Austrian Road Safety Board (KfV)</b>	<a href="http://www.kfv.at">www.kfv.at</a>
<b>Statistics Austria</b>	<a href="http://www.statistics.at">www.statistics.at</a>
<b>Information site on child safety in cars</b>	<a href="http://www.autokindersitze.at">www.autokindersitze.at</a>
<b>Automobile, Motorcycle and Bicyclists Club Austria</b>	<a href="http://www.arboe.at">www.arboe.at</a>
<b>Austrian Automobile, Motorcycle and Touring Club</b>	<a href="http://www.oeamt.at">www.oeamt.at</a>
<b>Austrian Road Safety Programme 2002-2007</b>	<a href="http://www.bmvit.gv.at/en/roadsafetyprogramme">www.bmvit.gv.at/en/roadsafetyprogramme</a>

# BELGIUM<sup>1</sup>

## 1. General comments on trends for 2008

No 2008 data had been released when this report was prepared. However, preliminary data show a decreasing trend in 2008.

## 2. Long term trends

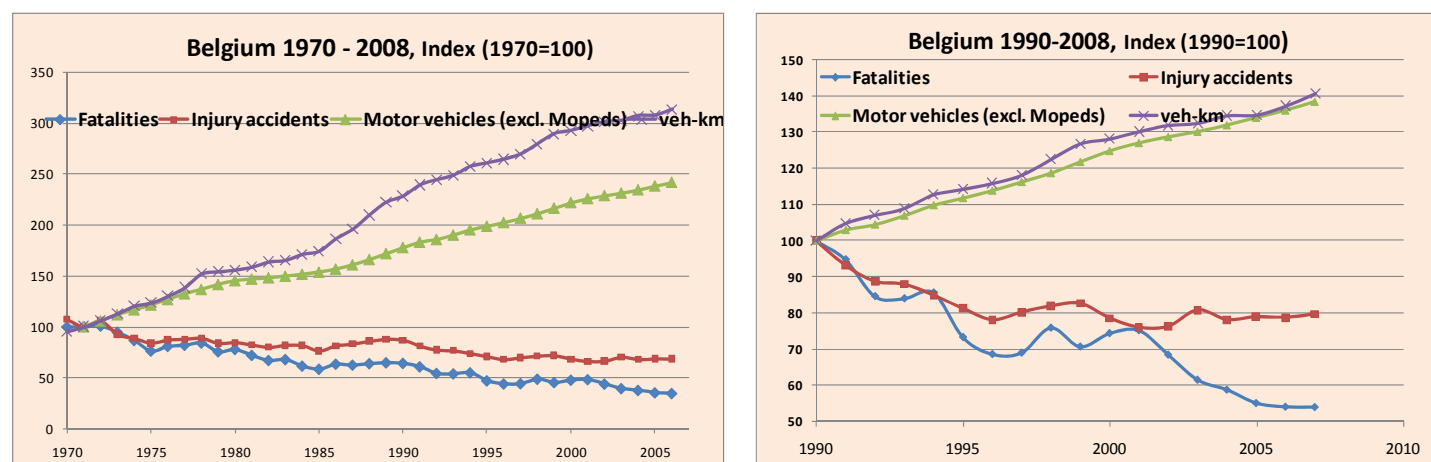
### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Between 1970 and 2007, the number of fatalities decreased by nearly 65%, and the number of injury crashes by 35%. In the same period, the number of vehicles more than doubled while the distance travelled tripled. In recent years (2000-2007), the decrease in the number of fatalities was sustained (-27%).

Table 1. Number of road fatalities and injury crashes, 1970-2007

	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	% change over		
											2008 - 2007	2007 - 2000	2007 - 1970
Fatalities	3 070	1 976	1 470	1 486	1 353	1 216	1 162	1 089	1 069	1 067	NA	-27%	-65%
Injury crashes	76 968	62 446	49 065	47 444	47 619	50 479	48 790	49 286	49 171	49 794	NA	+1%	-35%

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008



1. Source: IRTAD and Institut Belge pour la Sécurité Routière.

### ❖ Time series for key risk indicators

Between 1970 and 2007, the road traffic mortality rate, expressed in terms of deaths per 100 000 population, decreased by 68% and risks (expressed in deaths per distance travelled) decreased by 90%.

Table 2. Risk indicators  
1970, 1980, 1990, 2000, 2007

	1970	2000	2007	Change over	
				2007-2000	2007-1970
Deaths/100 000 population	31.78	14.36	10.08	-30%	-68%
Deaths/billion veh-km	104.59	16.33	10.8	-34%	-90%
Deaths/10 000 vehicles	12.61	2.56	1.68	-34%	-87%
Motorisation (number of vehicles/1 000 inhabitants)	252.4	560.1	601.1	+7%	+138%

### 3. Recent development of accident trends

#### ❖ Road users

All user groups, but especially pedestrians and moped riders, benefited from safety improvement between 1980 and 2007. The number of moped riders killed during the period decreased by 85% and the number of pedestrians killed by 80%.

In recent years (2000-2007), improvements benefited all road users except motorcyclists, who recorded a 15% increase in fatalities. More detailed data reveal that the motorcyclists the most at risk are those whose vehicles have engines of >400cc.

Table 3. Fatalities by road user group  
1980, 2000, 2007

	1980		2000		2007		% change over	
	Number	%	Number	%	Number	%	2007-2000	2007-1970
Bicyclists	241	10%	134	9%	88	8%	-34%	-63%
Mopeds	179	7%	64	4%	26	2%	-59%	-85%
Motorcycles and scooters	170	7%	118	8%	136	13%	+15%	-20%
Car occupants	1 227	51%	922	63%	548	51%	-41%	-55%
Pedestrians	507	21%	142	10%	103	10%	-27%	-80%
Other	72	3%	90	6%	166	16%	84%	131%
<b>Total</b>	<b>2 396</b>	<b>100%</b>	<b>1 470</b>	<b>100%</b>	<b>1 067</b>	<b>100%</b>	<b>-27%</b>	<b>-55%</b>

In 2007, motorcyclists represented 1% of vehicle-kilometres but 13% of road fatalities. Most riders killed are between age 20 and 50, and 95% are male.

Table 4 illustrates the relative fatality risk for the different road user groups. For a motorcyclist, the risk of dying in a traffic crash is 15 times higher than that for a car occupant.

Table 4. Relative fatality risk by road user group

	Fatalities	Deaths (inside or on the vehicle) per million vehicles	Average kilometrage per vehicle	Deaths (inside or on the vehicle) per billion veh-km
Motorcycles	136	364.9	NA	106.9
Car and van occupants	548	108.3	15 172	7.1
Heavy goods vehicles	25	161.6	NA	2.7

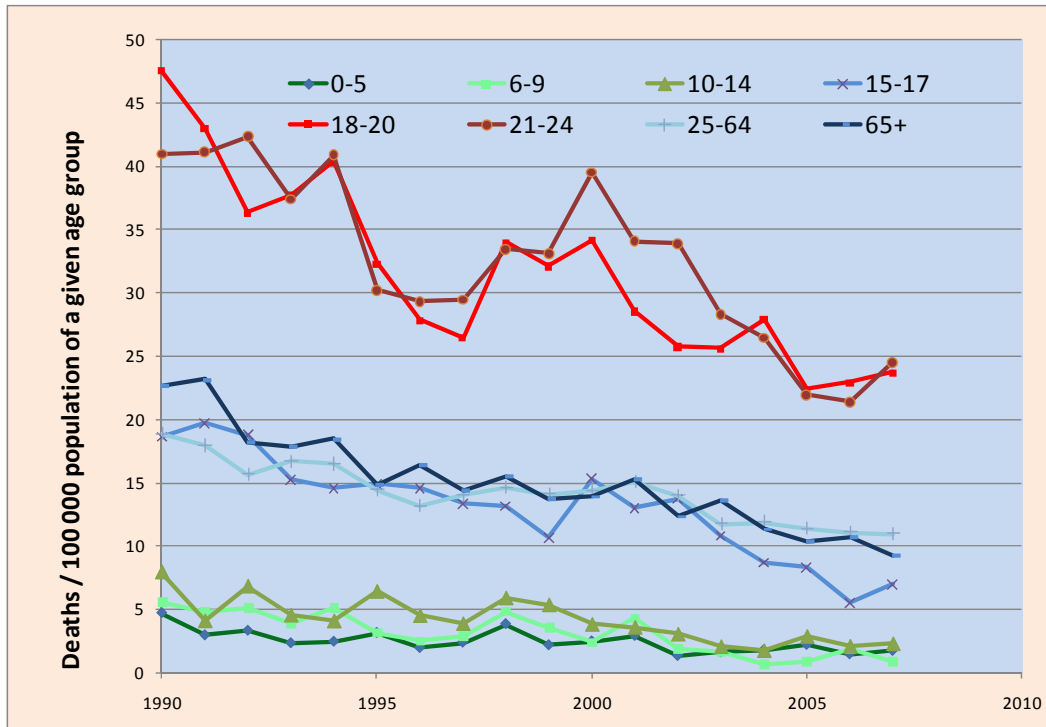
#### ❖ Age groups

Since 1980, the reduction in fatalities has benefited all age groups, but the most impressive reduction concerned children aged 6 to 9 (-91%). Young people (18-24) are still a high risk group in road safety, with a fatality risk twice as high as that of the general population (Figure 2).

Table 5. Reported fatalities by age group

					% change over	
	1980	1990	2000	2007	2007-2000	2007-1980
<b>0-5</b>	33	33	17	12	-29%	-64%
<b>6-9</b>	46	27	12	4	-67%	-91%
<b>10-14</b>	55	48	23	14	-39%	-75%
<b>15-17</b>	125	72	55	27	-51%	-78%
<b>18-20</b>	304	202	130	90	-31%	-70%
<b>21-24</b>	261	245	198	125	-37%	-52%
<b>25-64</b>	1 056	992	784	622	-21%	-41%
<b>&gt;65</b>	494	334	238	167	-30%	-66%

Figure 2. Evolution of fatality risks by age group (deaths per 100 000 population in a given group) 1990-2008



❖ Accident locations

Around 55% of fatal crashes occur on rural roads, 25% in urban areas and 14% on motorways (Figure 3). Since 1980, the greatest reduction in fatalities has occurred on urban roads (-74%). The relative increase in fatalities on the motorways network has to be seen in conjunction with the expansion of the network.

Figure 3. Reported fatalities by type of road 1980, 1990, 2000 and 2007

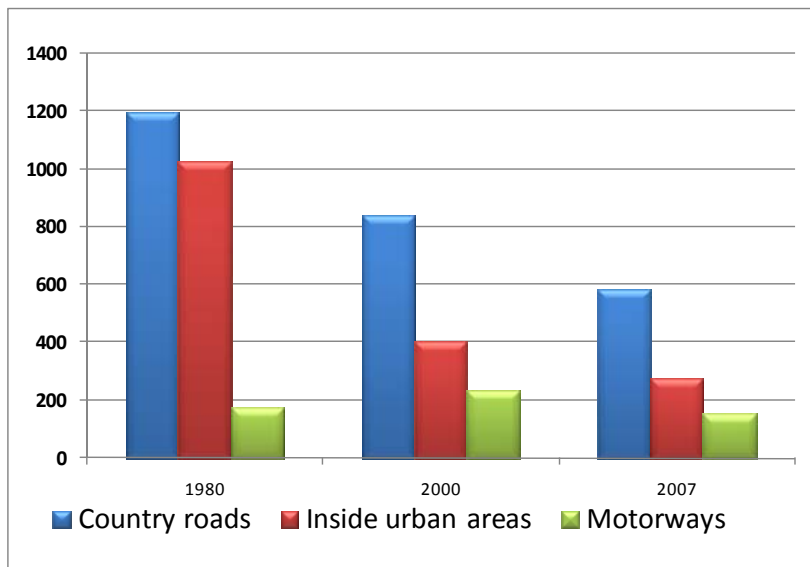




Table 6. Reported fatalities by type of road

	1980	2000	2007	% change over	
				2007-2000	2008-1980
Country roads	1 196	836	585	-30%	-51%
Inside urban areas	1 028	401	271	-32%	-74%
Motorways	172	233	152	-35%	-12%

#### 4. Recent development of driving behaviour

##### ❖ Drink driving

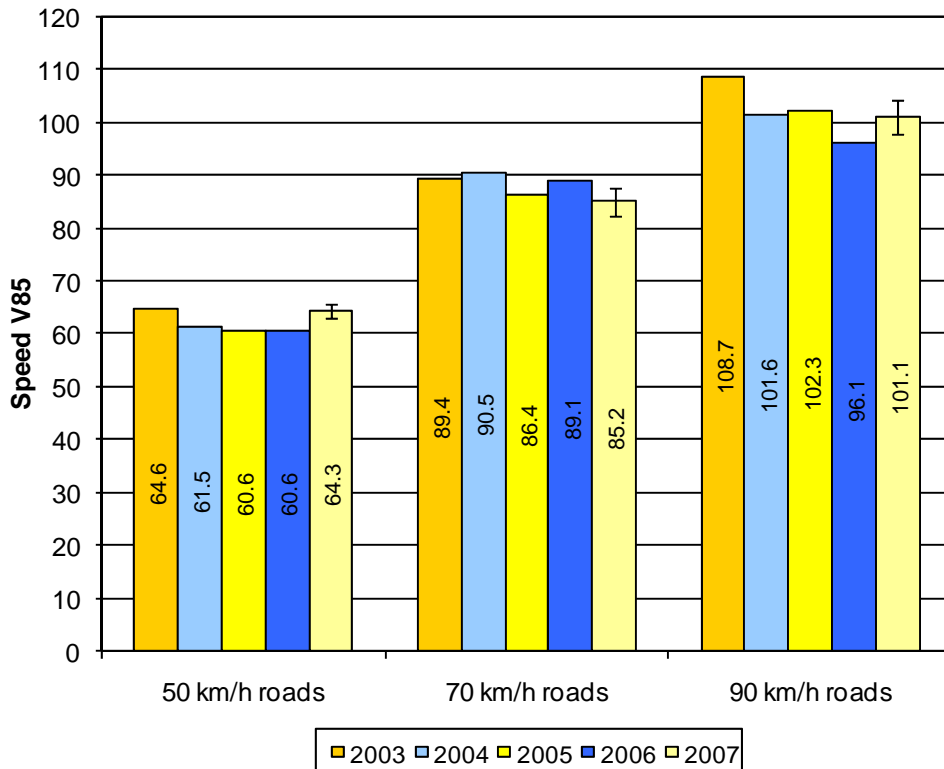
The BAC limit in Belgium is 0.5 g/l for all drivers. There is currently a political discussion about a lower limit (0.2 g/l) for novice drivers (those licensed for less than two years), truck drivers and motorcyclists.

The possibility of allowing police to submit drivers to saliva testing for drug use is also under discussion.

##### ❖ Speed

Figure 5 presents the evolution in the V85 speed (maximum speed of 85% of the drivers). It shows a decrease of speeds on 50 km/h and 90 km/h roads. It also shows that speeding remains an issue for all road categories.

Figure 4. Evolution in the V85 speed  
2003-2007



### ❖ Seat belts and helmets

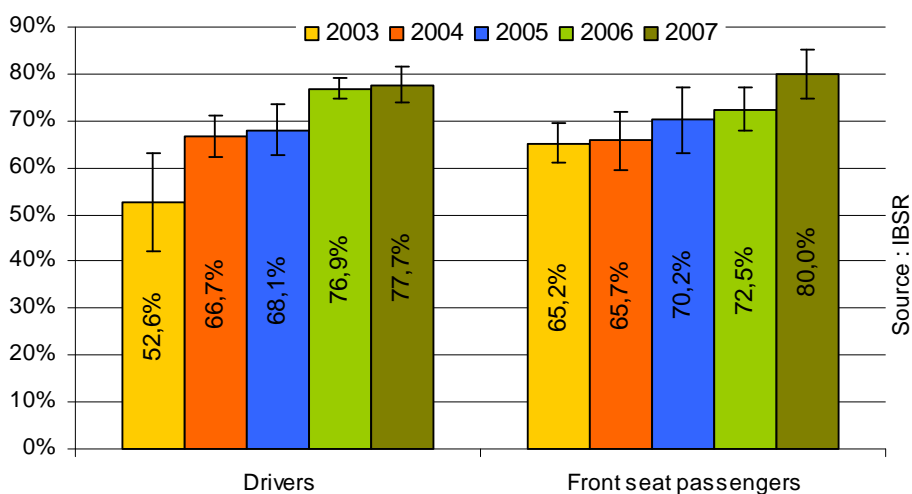
Seat belt use has been compulsory in front seats since 1975 and in rear seats since 1991. The rate of seat belt use is around 79% in front seats in passenger cars. Table 7 shows the progress made in the seat belt usage rate between 2003 and 2007.

Table 7. Evolution in seat belt use for car occupants

	2003	2007
Front seat – driver	52.6	77.7
Front seat – passenger	65.2	80.0
Motorway – driver	66%	81%
Rural roads – driver	62%	75%
Urban areas – driver	49%	80%

Figure 5 illustrates the recent evolution in seat belt use by drivers and front seat passengers.

Figure 5. Seat belt use by drivers and front seat passengers 2003 to 2007



Source: IBSR.

The wearing of helmets is compulsory for all motorcycles and moped riders. The compliance rate is unknown.

## 5. National road safety strategies and targets

### ❖ National road safety strategies

The Belgian Government is committed to continuing the implementation of a solid safety policy whose objective is to reduce the number of traffic casualties. The government has approved the recommendations of the *Etats Généraux de la Sécurité Routière* (see [www.cfsr.be](http://www.cfsr.be)).

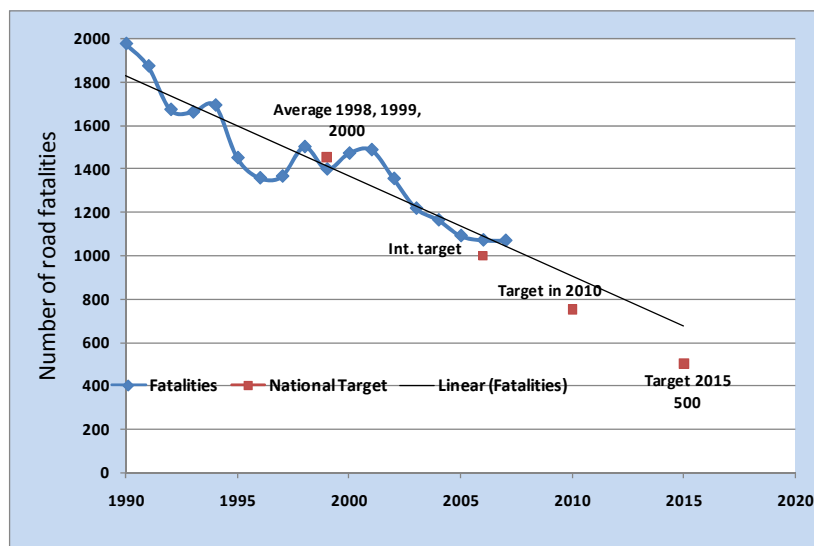
## ❖ Safety targets

Following a major review of road safety in 2001, the government adopted the following targets:

- Less than 1 000 fatalities by 2006
- Less than 750 fatalities by 2010
- Less than 500 fatalities by 2015.

The first intermediate target for 2006 was nearly reached. The other targets are very ambitious and will require major efforts.

Figure 6. Trend in progress towards road fatality target



## 6. Recent safety measures (2007-2009)

### ❖ Road user behaviour, enforcement, licensing, regulation

- 01/02/2007: reduction of maximum speed limit for heavy load trucks weighing over 3.5 tonnes to 90 km/h on highways. Interdiction for trucks above 7.5 tonnes to overtake on motorways in the rain.
- 01/03/2007: revision of the rule on giving way to vehicles coming from the right. Obligation for class B mopeds to use cycle paths in more than 50 km/h areas.
- 12/03/2007: second Etats Généraux de la Sécurité Routière.
- 12/05/2007: new breath tests and analyses.
- 01/01/2008: interdiction for trucks above 3.5 tonnes to overtake on roads with only 2 lanes or less.
- 05/03/2008: creation of the Road Safety Task Force.
- 10/05/2008: issuance of new rule on car transport of children.
- 10/09/2008: issuance of new rule on professional aptitudes for professional drivers.
- 01/01/2009: increase in penalties for hit and run and for repeat offenders.
- 01/06/2009: obligation for fluo vest in each car.
- 12/07/2009: introduction of legislation on alcolock; execution expected in October 2010.
- 31/07/2009: introduction of legislation on saliva test for drugs; execution expected in October 2010.

## ❖ Education and communication

- Regular campaigns on drink driving (on “Bob” the designated driver and on speed, seat belts, mobile phones)

## 7. Major recent or ongoing research (2007-2009)

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- Research report on motorcycling safety, *Les accidents impliquant une motocyclette 2000-2007*, [http://bivvweb.ipower.be/Observ/FR/motards\\_FR.pdf](http://bivvweb.ipower.be/Observ/FR/motards_FR.pdf)
- Research report on HGV safety, *Accidents impliquant au moins un camion, 2000-2007*, [http://bivvweb.ipower.be/Observ/FR/vrachtwagenrapport\\_FR.pdf](http://bivvweb.ipower.be/Observ/FR/vrachtwagenrapport_FR.pdf)
- *Speed roadside survey*, [http://bivvweb.ipower.be/Observ/FR/snelheid\\_fr\\_lowres.pdf](http://bivvweb.ipower.be/Observ/FR/snelheid_fr_lowres.pdf)
- *Alcohol roadside survey*, <http://bivvweb.ipower.be/Observ/FR/Rapport%20ROI%202007%20FR.pdf>

## 8. Useful websites and references

### ❖ Useful websites

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<b>IBSR Belgium Road Safety Institute</b>	<a href="http://www.bivv.be">www.bivv.be</a>
<b>IBSR research reports</b>	<a href="http://bivvweb.ipower.be/observ/observatorium_fr.htm#">http://bivvweb.ipower.be/observ/observatorium_fr.htm#</a>
<b>Statistical report, 2006</b>	<a href="http://bivvweb.ipower.be/Observ/FR/bivv_stat_FR_Lowres.pdf">http://bivvweb.ipower.be/Observ/FR/bivv_stat_FR_Lowres.pdf</a>
<b>Comité Fédéral pour la Sécurité Routière</b>	<a href="http://www.cfsr.be">www.cfsr.be</a>

# CANADA<sup>1</sup>

## 1. General comments on trends for 2008

Like most other countries, Canada had a 2008 preliminary fatality total that was substantially lower than that of the previous year: about 14% fewer road users died than in 2007. The preliminary 2008 toll represents the lowest number of road users killed in crashes in almost 60 years.

Comprehensive analysis of 2008 data will not occur for some time. As a result, it is difficult to assess the impact of several factors on specific road user groups or on the 2008 death toll. These factors include the recent economic downturn and interventions introduced during the first six years of Canada's national road safety programme, in particular recent legislative changes and more focused police enforcement strategies in some jurisdictions targeting high-risk driving behaviour.

It is interesting to note, however, given the large drop in fatalities, that the number of vehicle-kilometres travelled in 2008 was only 1.9% lower than the number driven in 2007.

## 2. Long term trends

### ❖ Evolution in the number of fatalities and injury crashes

Between 1970 and 2008, the number of fatalities decreased by 53%, while the number of injury crashes increased by 13% and the number of vehicles more than doubled. The fatality figures improved despite the fact that overall progress in road safety levelled off during the early 1990s. In recent years (2000-2008), the number of fatalities decreased by 19%, although most of this reduction occurred in 2008.

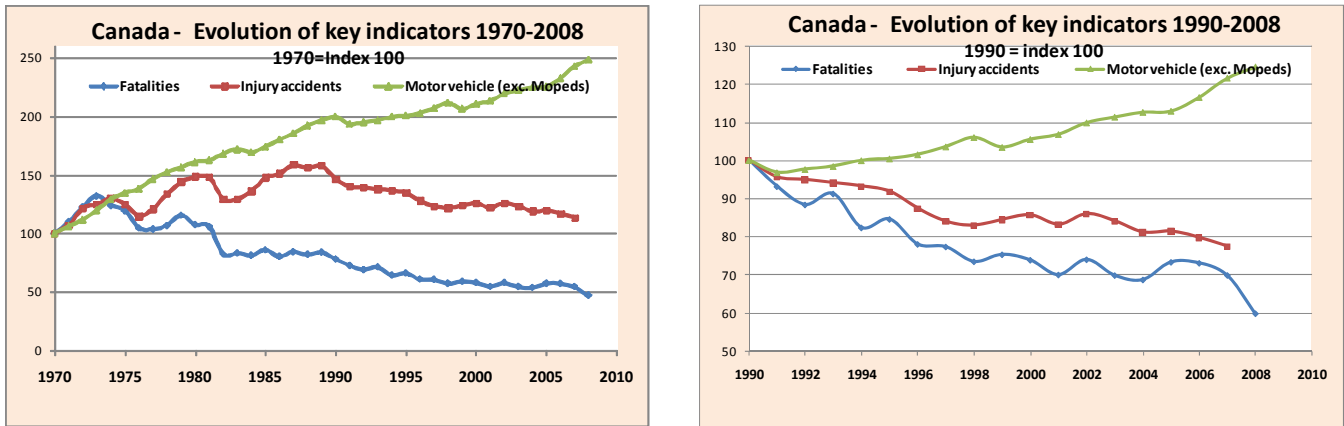
Table 1. Number of road fatalities and injury crashes  
1970-2008

	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	2008-07	2008-00	2008-1970
<b>Fatalities</b>	5 080	3 963	2 927	2 774	2 932	2 768	2 722	2 905	2 895	2 769	*2 371	-19%	-53%	
<b>Injury crashes</b>	124 200	181 960	155 842	151 395	156 444	152 959	147 686	148 162	145 118	140 939		-10%	+13%	

\* Preliminary figure.

1. Source : IRTAD, Transport Canada

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008



#### ❖ Time series for key risk indicators

In the last 18 years the mortality rate (in terms of deaths per 100 000 population) has decreased by 27%.

Table 2. Risk indicators 1990, 2000, 2008

	1990	2000	2008	2008-2000	2008-1990
Deaths/100 000 population	9.79	9.52	7.18	-25%	-27%
Deaths/billion veh-km		9.38	7.18	-23%	
Deaths/10 000 vehicles	2.33	1.64	1.12	-32%	-52%
Motorisation (number of vehicles/1 000 inhabitants)	638.8	581.3	633.0	+9%	-1%

### 3. Recent development of accident trends

#### ❖ Road users

Canadians rely heavily on privately owned motor vehicles for basic transport, due in large part to the size of the country and the lack of public transport outside of urban centres. As a result, motor vehicle occupants account for the large majority of traffic fatalities that occur each year on Canadian roads.

Motor vehicle occupant and pedestrian fatalities have gradually decreased in recent years. The number of motorcyclist fatalities, meanwhile, increased substantially between 1998 and 2005 before levelling off in the subsequent two years.

The recent increased number of deaths among motorised two-wheel riders is largely the result of a substantial increase (by 56% between 1998 and 2007) in the number of motorised two-wheelers registered.

Between 2000 and 2006, the number of bicyclists killed almost doubled.

Table 3 shows the breakdown of road fatalities by user group.

Table 3. Fatalities by road user group  
1990, 2000, 2006

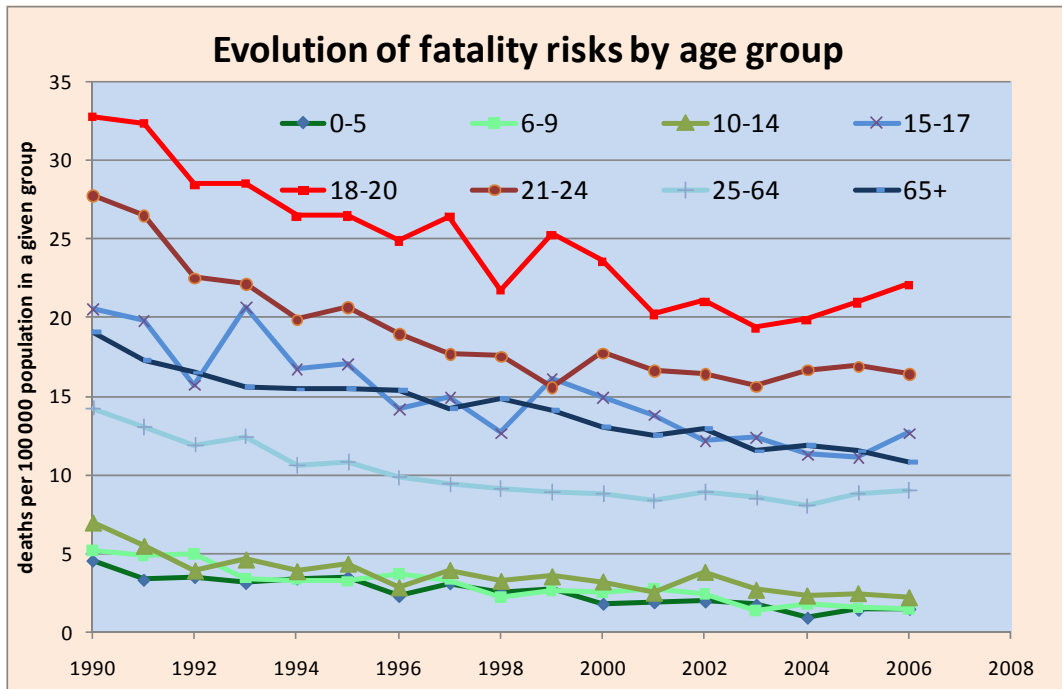
	1990		2000		2006		% change over 2000-2006	% change over 1970-2006
<b>Bicyclists</b>	106	3%	40	1%	73	3%	83%	-31%
<b>Motorised two-wheelers</b>	260	7%	173	6%	211	7%	22%	-19%
<b>Pedestrians</b>	584	15%	372	13%	382	13%	3%	-35%
<b>Car occupants</b>	2 244	57%	1 556	53%	1 447	50%	-7%	-36%
<b>Other</b>	769	19%	786	27%	779	27%	-1%	1%

### ❖ Age groups

The age group most at risk in Canada is 18-20, followed by 21-24. The 18-20 age group has a mortality rate almost three times higher than that of the general population.

In terms of road deaths among 15- to 24-year-olds, motor vehicle occupant fatalities are the principal problem. Despite graduated licensing programmes in most parts of the country, driver inexperience, particularly among those aged 16 to 19, remains a concern and is reflected in this group's higher driver fatality rate per billion vehicle-kilometres travelled. Only very old drivers (75+) have higher fatality rates.

Figure 2. Evolution of fatality risks by age group  
(deaths per 100 000 population in a given group, 1990-2008)



### ❖ Accident locations

Rural roads with posted speed limits of 80-90 km/h are the most dangerous type of location for road users. In 2006, almost half of all traffic fatalities occurred on rural roads.

A study of characteristics of fatal and serious injury collisions on rural roads [(*Rural Road Safety in Canada: Traffic Collision Trends & Recommended Strategies* (Transport Canada, 2006))] identified several types of high-risk driver behaviour that were frequently cited as contributing factors. These included failure to use seat belts, often in combination with drink driving or speeding, particularly among single vehicle night-time fatal crashes.

The large majority of fatalities involving vulnerable road users (pedestrians, motorcyclists, bicyclists) occur in urban areas with posted speed limits of 70 km/h or less. Urban intersections are particularly dangerous, for vulnerable road users and motorists alike.

#### 4. Recent development of accident behaviour

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##### ❖ Drink driving

The Canadian Criminal Code specifies that driving with a Blood Alcohol Concentration (BAC) over 80 mg% (0.8g/l) is a criminal offence, punishable by fine, licence suspension of up to 12 months on first offence, and possibly jail. In addition, most Canadian provinces and territories have administrative sanctions whereby drivers with a BAC between 50 mg% and 80 mg% can have their licence suspended for a short period, ranging from 12 to 24 hours. Most Canadian provinces and territories have graduated licensing programmes that forbid driving with a BAC over 20 mg% during the novice and probationary periods, which usually last two to three years.

In 2006, alcohol use was cited as a contributing factor in 33% of fatal crashes (drivers involved in a fatal crash with any amount of alcohol in their blood, including those below the 80 mg% threshold), rising to almost half in cases involving fatally injured drivers in the 25-45 age group.

##### ❖ Speed

Excess speed was a factor in more than 27% of fatalities and about 19% of serious injuries in 2006. Speed is often cited as a factor in combination with other high-risk behaviour, such as drink driving, non-use of seat belts and the running of red lights. A study of single vehicle crashes occurring on rural roads identified speed as a factor in 35% of driver fatalities and 25% of serious injuries to drivers. Speeding is also a serious problem on urban streets with posted speed limits of 60 km/h or less, where it is cited as a contributing factor in one-third of all fatalities and serious injuries.

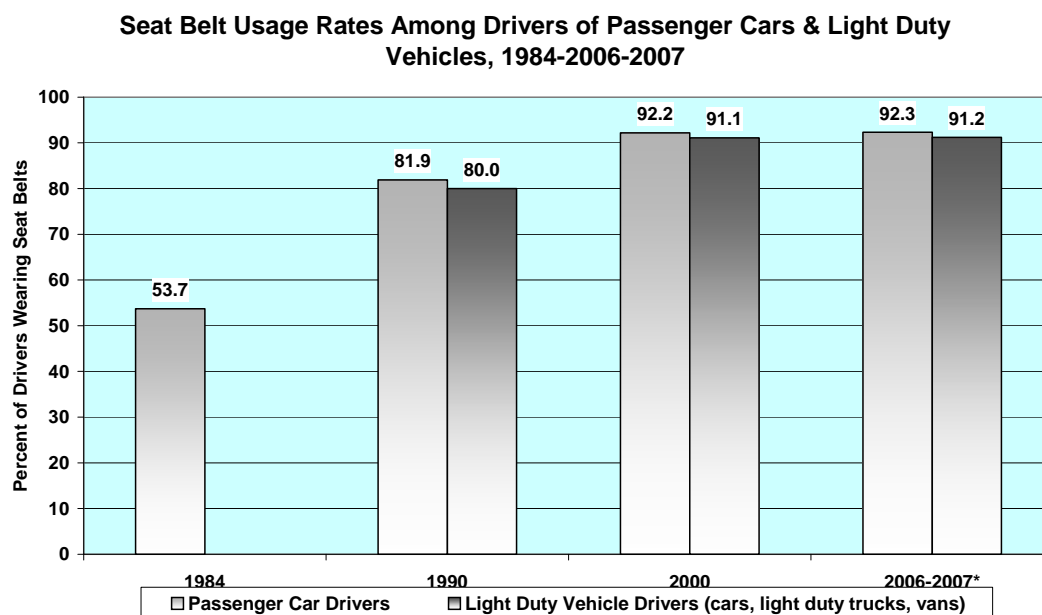
##### ❖ Seat belts and helmets

Seat belt use first became compulsory for front and rear seat occupants in one Canadian province in 1976. All provinces and territories now have mandatory seat belt laws. The National Occupant Restraint Programme was introduced in 1989 with the objective of increasing seat belt use. It was supported by public education and enforcement initiatives.

Figure 3 and Table 4 show the evolution of seat belt use.



Figure 3. Evolution of seat belt use  
1984-2007



Note: Usage rates cited for all years except 2006-2007 were derived from urban areas; the 2006-2007 figures were derived from both urban and rural sites.

Table 4. Evolution of seat belt usage rate

	1980	1990	2000	2006-2007
Urban areas – driver	36%	82%	92%	93%

Despite the high restraint usage rates in Canada overall, some 37% of motor vehicle occupants killed in traffic collisions in 2006 and 16% of those seriously injured were unbelted at the time of the crash. Victims in the 20-44 age group had the highest incidence of non-compliance. By location, the share of fatally injured occupants not using seat belts was highest on rural roads (80-90 km/h), at almost 38%, followed by urban areas (posted speed limits of 70 km/h or less), at almost 37%, and motorways (35%).

All riders of motorized 2-wheelers are required by provinces and territories to wear helmets. Some jurisdictions have helmet use laws for cyclists but these vary in application. In some cases, the law only applies to children and young adults up to age 18. In general, police services do not rigorously enforce helmet use laws among cyclists.

## 5. National road safety strategies and targets

### ❖ National road safety strategies

Canada's current national road safety plan, Road Safety Vision 2010, will soon come to an end. Therefore, a working group composed of representatives of the federal, provincial and territorial governments as well as key stakeholders (e.g. police services) recently developed the key elements of a national programme to succeed Road Safety Vision 2010.

The key elements of the successor plan proposed by the working group – vision, strategic objectives, guiding principles, coordinated framework and options for an overall national goal – were presented to the Council of Deputy Ministers of Transportation and Highway Safety in April 2009. Guidance from the council will be used to more fully develop the most suitable option for a national road safety target.

❖ **Safety targets and subtargets**

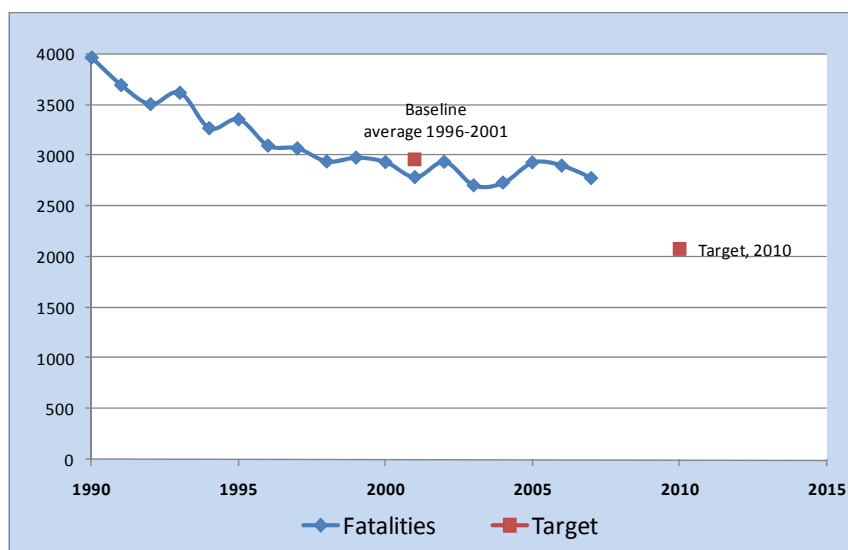
Canada has a national target of reducing the average number of road users fatally or seriously injured by 30% in 2008-2010, compared with 1996-2001. It has also set subtargets of percentage decreases in the following categories (decrease in numbers, except as indicated):

- unbelted fatally or seriously injured occupants, 40%;
- percentage of road users fatally or seriously injured in crashes involving drink drivers, 40%;
- road users fatally or seriously injured on rural roads, 40%;
- young drivers and riders (those aged 16 to 19) killed or seriously injured in crashes, 20%;
- number of road users killed or seriously injured in speed-related crashes, 20%;
- road users killed or seriously injured in intersection-related crashes, 20%;
- fatally or seriously injured vulnerable road users (pedestrians, motorcyclists, bicyclists), 30%;
- road users killed or seriously injured in crashes involving commercial vehicles, 20%.

**Progress towards targets**

Progress towards the national road safety target of a 30% decrease in the number of deaths and serious injuries in 2008-2010, compared with 1996-2001, was limited during the first six years of the initiative (2002-2007). The number of road users killed in 2007 (the latest year for which complete data are available) was 6.1% lower than the death toll for 1996-2001.

Figure 4. **Trend in progress towards road safety target**



## 6. Recent safety measures (2007-2009)

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### ❖ Road user behaviour

- Alcohol and drug abuse

**Smashed.** Transport Canada updated this popular publication on drinking and driving. The publication helps people learn how alcohol and drugs can affect their behaviour, perceptions and driving skills. It also looks at the consequences of, and penalties for, driving while impaired.

<http://www.tc.gc.ca/RoadSafety/SafeDrivers/drinkingdriving/smashed/index.htm>

**Seat Belt Sense.** In 2008, Transport Canada published a new brochure on seat belts, for distribution nationally. The brochure explains why occupants need seat belts and how they work with other safety features to protect people.

<http://www.tc.gc.ca/roadsafety/tp/tp14646/menu.htm>

**Winter driving brochure.** A new edition of Transport Canada's winter driving brochure was prepared to give drivers with tips on how to deal with heavy snow and ice, skidding, and preparations for winter road travel.

<http://www.tc.gc.ca/roadsafety/safevehicles/safetyfeatures/winterdriving/index.htm>

### ❖ Vehicle standards and equipment

- The federal government reached an agreement with industry in Canada to continue increasing the number of vehicles available for sale that are equipped with electronic stability control.
- In 2009, the operations of all federally regulated transit services, which had been exempt from National Safety Code regulations for the previous twenty years, were subjected to the federal hours of service regulation.

### ❖ Infrastructure

- Guidelines for collision prone location screening. Transport Canada is partnering with provinces and territories as well as key stakeholders on a project to develop national guidelines for collision prone location screening.
- Canadian Road Assessment Program. Canada is undertaking a project to test the technological and institutional feasibility of instituting a Canadian Road Assessment Program (CanRAP) under the iRAP umbrella.

### ❖ Other measures

- National Day of Remembrance for Road Crash Victims. This event, first held in 2008, is to be held every November. It was established to remind people about the extent of the road crash problem and to commemorate the victims of serious crashes.

## 7. Research

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### ❖ Major research undertaken in 2007-2009

Study of the effectiveness of Electronic Stability Control in Canada, Transport Canada.

## 8. References

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### ❖ Useful websites and references

Transport Canada: <http://www.tc.gc.ca/>  
Road Safety Vision 2010 <http://www.ccmta.ca/english/committees/rsrp/rsv/rsv.cfm>

# CZECH REPUBLIC<sup>1</sup>

## 1. General comments on trends for 2008

In 2008, road fatalities decreased by 11.8% and the number of persons seriously injured decreased by 2.5%. Preliminary results for the year 2009 are very good, and a -19% decrease could be reached.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Between 1970 and 2008, the number of fatalities decreased by 46% and the number of injury crashes by 15%. In the same period, the number of vehicles more than doubled. In recent years (2000-2008), the number of fatalities decreased by 28%.

Table 1. Number of road fatalities and injury crashes  
1970-2008

	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	% change over		
												2007-08	2000-08	1970-2008
Fatalities	1 983	1 291	1 486	1 334	1 431	1 447	1 382	1 286	1 063	1 222	1 076	-12%	-28%	-46%
Injury crashes	26 478	21 910	25 445	26 027	26 586	27 320	26 516	25 329	22 115	23 060	22 481	-3%	-12%	-15%

Four periods can be observed:

**From 1970 to 1986**, the number of fatalities decreased and reached its lowest in 1986. At that time, the number of fatalities per million population in the former Czechoslovakia was comparable with the most advanced European countries. An official assessment by UNECE rated Czechoslovakia as one of the best countries regarding the development in reducing road fatalities. This good performance was explained by the following factors:

- Introduction of first speed limits for rural roads on 1 July 1979 (passenger cars 90 km/h, heavy vehicles 70 km/h, motorcycles 80 km/h).
- Implementation of the regulation of the Federal Ministry of Interior No. 101/1981 Coll., on suspending driving licences of drivers not able to pay a fine for their road traffic offence. The regulation, which came into effect on 1 January 1982, contributed significantly to road safety improvement at the time, although it is no longer in effect.
- Intensive development of motorway network started at the end of the 1960s (in 1980, a motorway opened between Prague and Brno).
- Faster development and modernization of the vehicle fleet.
- Strong enforcement.

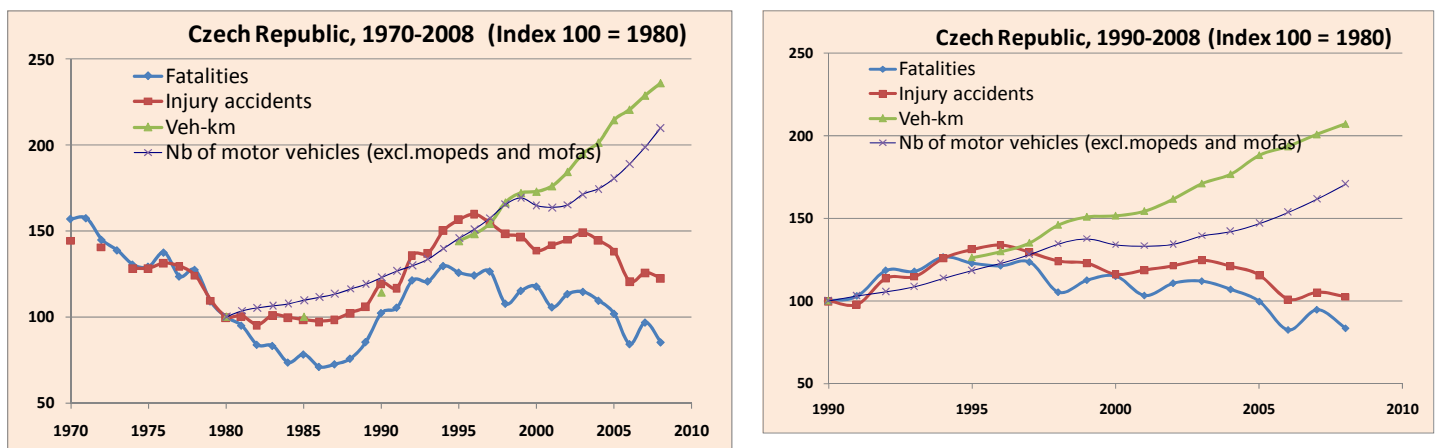
1. Source: IRTAD, Transport Research Centre (CDV).

**1986-1996:** the number of road fatalities started to increase slightly after 1986 and more rapidly after 1989, with a peak in 1994. This can be explained by the fast increase in motorization and a false understanding of “new freedom”.

**1997-2003:** The number of fatalities oscillated in a certain range. The first significant positive change was the speed limit reduction in urban areas to 50 km/h on 15 October 1997. On 1 January 2001, mandatory daytime running lights in the winter season and priority of pedestrians at pedestrian zebra crossings were introduced in the framework of a new traffic code.

**2004-2008:** The positive trend accelerated after 2003. In connection with the implementation of the National Road Safety Strategy, the work of the police was intensified and greater initiatives were carried out to improve the road infrastructure at the local level. The most positive results were achieved in 2006, the best since 1990, after the implementation of the penalty point system in July 2006. 2007 was not a very good year; but results in 2008 are again encouraging.

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008



#### ❖ Time series for key risk indicators

Between 1980 and 2008 the mortality rate, expressed in terms of deaths per 100 000 population, decreased by 15% and risks (expressed in deaths per distance travelled) decreased by 64 %.

Table 2. Risk indicators 1980, 1990, 2000, 2007

	1980	2000	2008	Change over	
				2000-08	1980-2008
Deaths/100 000 population	12.22	14.46	10.4	-28%	-15%
Deaths/billion veh-km	53.9	36.7	19.4	-47%	-64%
Deaths/10 000 vehicles	4,8	3,4	2,0	-43%	-59%
Motorisation (number of vehicles/1 000 inhabitants)	254	420	530	+26%	+109%

### 3. Recent development of accident trends

#### ❖ Road users

All user groups except motorcyclists have benefited from the important safety improvements since the end of the 1990s.

Table 3. **Fatalities by road user group  
1990, 2000, 2007 and 2008**

									% change over		
	1990		2000		2007		2008		2007-2008	2000-2008	1990-2008
<b>Bicyclists</b>	135	11%	151	10%	116	9%	93	9%	-20%	-38%	-31%
<b>Motorised 2-wheelers</b>	113	9%	116	8%	139	11%	123	11%	-12%	6%	9%
<b>Car occupants</b>	597	47%	784	53%	660	54%	573	53%	-13%	-27%	-4%
<b>Pedestrians</b>	359	28%	362	24%	235	19%	238	22%	1%	-34%	-34%
<b>Others</b>	90	7%	73	5%	72	6%	49	5%	-32%	-33%	-46%
<b>Total</b>	1 261	100%	1 486	100%	1 222	100%	1 076	100%	-12%	-28%	-15%

The number of motorcyclists killed is increasing despite a stabilisation in the use of motorised two-wheelers.

Figure 2. **Evolution in the number of motorcycles in traffic  
and the number of motorcyclists killed**

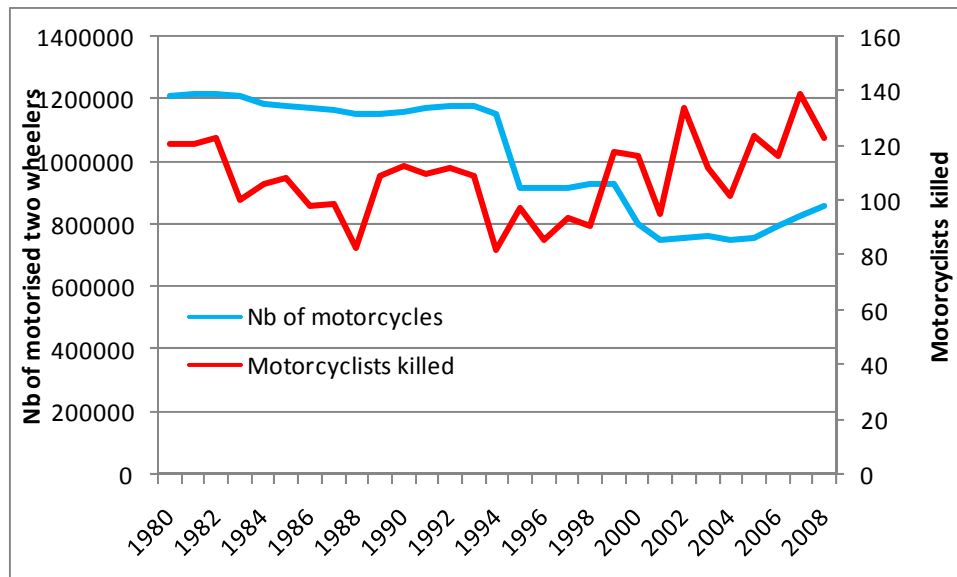


Table 4 illustrates the relative fatality risk for the different road user groups. For a motorcyclist, the risk of dying in a traffic crash is 27 times higher than that for a car occupant.

Table 4. Relative fatality risk by road user group)

	Fatalities	Deaths (inside or on the vehicle) per million vehicles	Average kilometrage per vehicle	Deaths (inside or on the vehicle) per billion vehicle/km
<b>Pedestrians</b>	238			
<b>Bicycles</b>	93			
<b>Mopeds</b>	2	4,2		
<b>Motorcycles</b>	121	315	825	382
<b>Car and van occupants</b>	573	134	9570	14
<b>Heavy goods vehicles</b>	45	84	25000	3,4

#### ❖ Age groups

Since 1980, the reduction in fatalities has benefited the youngest and oldest age groups, but young people aged 18-20 have suffered a serious increase in the number of casualties, and deaths among drivers aged 21 to 64 also increased compared to 1980. The most impressive reduction concerned the 6-9 age group (-90%). For 2000-2008, all age groups saw improved safety.

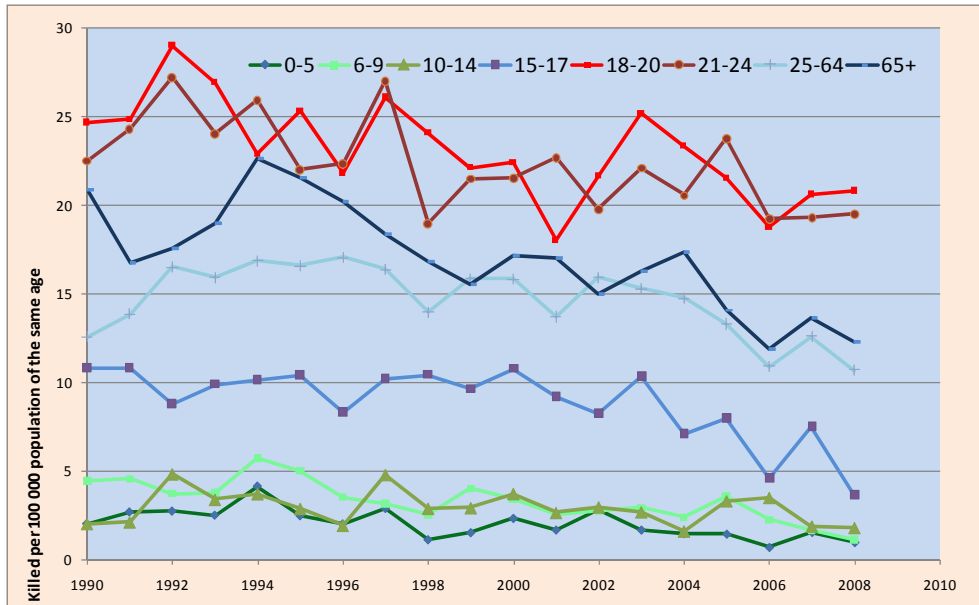
Young people (18-24) are still a high-risk group in road safety, with a fatality risk twice as high than for the general population (Figure 3).

Table 5. Reported fatalities by age group

Age	1980	1990	2000	2007	2008	% change over	
						2000-2008	1980-2008
<b>0-5</b>	25	16	13	9	6	-54%	-76%
<b>6-9</b>	39	25	17	6	4	-76%	-90%
<b>10-14</b>	17	18	24	10	9	-63%	-47%
<b>15-17</b>	28	57	44	29	14	-68%	-50%
<b>18-20</b>	40	107	103	82	83	-19%	108%
<b>21-24</b>	76	123	155	108	110	-29%	45%
<b>25-64</b>	498	668	881	753	646	-27%	30%
<b>&gt;65</b>	278	270	243	202	186	-23%	-33%



Figure 3. Evolution of fatality risks by age group (deaths per 100 000 population in a given group) 1990-2008



❖ Accident locations

In 2008, around 56% of fatal crashes occurred on rural roads, 41% in urban areas and 3% on motorways (Figure 4). Since 1980, the greatest reduction in fatalities occurred on urban roads (-31%), while there has been no improvement on rural roads. The number of fatalities on motorways significantly increased until 2000, due to the enlargement of the motorway network. Improvements on urban roads are related to the introduction of the 50 km/h speed limit, the extension of 30 km/h zones, and the wide introduction of traffic calming measures.

In 2008, most improvement occurred on motorways, while no progress was made on urban roads.

Figure 4. Reported fatalities by type of road 1980, 1990, 2000 and 2008

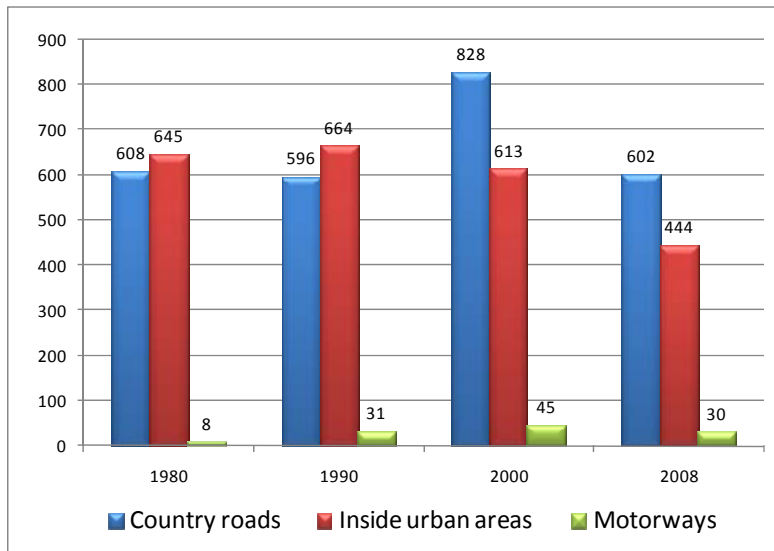


Table 6. Reported fatalities by type of road

	1980	2000	2007	2008	% change over		
					2007-2008	2000-2007	1980-2008
Country roads	608	828	732	602	-18%	-27%	-1%
Inside urban areas	645	613	442	444	0%	-28%	-31%
Motorways	8	45	48	30	-38%	-33%	275%

#### 4. Recent development of driving behaviour

##### ❖ Speed

The share of injury accidents due to excessive speed was 25% in 1980, 24% in 2000 and 28% in 2008. The share of fatal accidents due to excessive speed was 33% in 1980, 40% in 2000 and 43% in 2008.

##### ❖ Drink driving

There is a zero BAC limit in the Czech Republic. When the police come to the scene of an accident, all the persons involved are checked for BAC. If the BAC level of any of the persons involved is positive, the accident is classified as alcohol-related. In 2007, only 3.4% of fatal crashes were due to drink drivers.

##### ❖ Seat belts and helmets

Seat belt use is compulsory in front seats since 1966 and in rear seats since 1975. However, until recently the level of enforcement was very low. The situation has significantly improved since 2004. In 2006, the general usage rate was 88% (Table 7).

Table 7. Evolution in seat belt use for car occupants

	2000	2003	2006
General	46%	56%	88%
Rear seat	7%	13%	68%
Front seat	63%	61%	90%
Motorways - driver	81%	88%	98%
Rural roads - driver	62%	65%	90%
Urban areas - driver	46%	47%	88%

Helmet wearing is compulsory for all motorcycles and moped riders and the wearing rate is nearly 100%.

Safety helmets were made mandatory for cyclists to age 15 in 2001 and to age 18 in 2006.

#### 5. National road safety strategies and targets

##### ❖ National road safety strategies

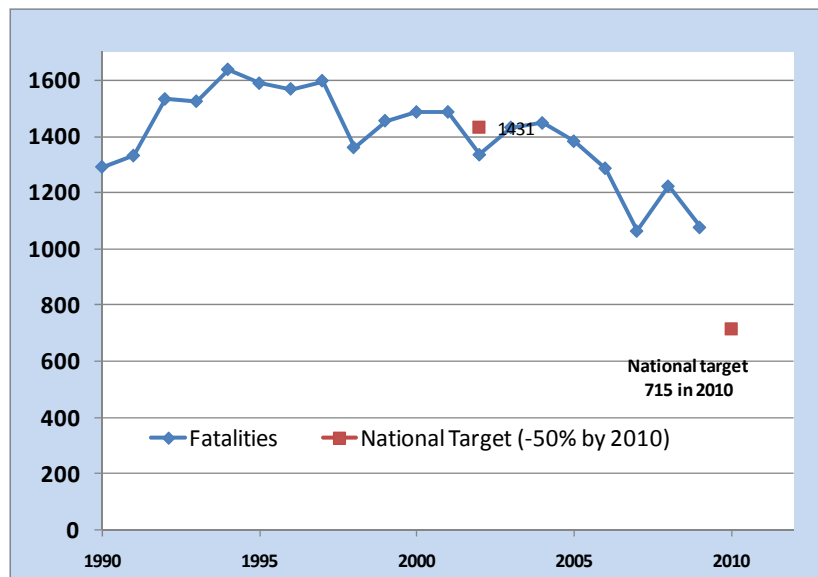
The very bad results in 2007 led to a growing awareness among policy-makers. The Ministry of Transport initiated the evaluation and update of the National Road Safety Strategy. An expert working group was established to review the Highway Code and propose safety orientated changes.

Recently a strong accent has been put on public awareness and prevention activities.

## ❖ Safety targets

In 2002, the Czech Republic agreed on the target to reduce by 50% the number of fatalities by 2010. There is no sub-target. Despite the good progress made in the past years, it is very unlikely that the target will be met.

Figure 5. Trend in progress towards road fatality target



## 6. Recent safety measures (2007-2009)

### ❖ Road user behaviour, enforcement

- The road traffic police significantly increased enforcement activities for drink driving, excess speed and lack of seat belt use. The police vehicle fleet was equipped with high-performance cars and motorcycles.
- Police units have been equipped with high powered motorcycles
- Introduction of variable message signs on urban roads to inform drivers of their speed.
- Introduction of GPS-based localisation of accident spots

### ❖ Licensing, regulation

- Several new traffic warning and information signs have come to roadsides since 21 April 2009, including Opening bridge ahead, Road chapel, Area in which cameras are used to enforce speed regulations, and Oncoming cyclists ahead. Signage has been added for one-way streets, and blue posts warn of the risk of ice and slippery roads.

### ❖ Education and communication

- The Ministry of Transport and the traffic police jointly launched the campaign "Safe Holiday 2009" that resulted in a significant decrease in accidents and their consequences (-27%) compared to 2008.
- The Designated Driver Campaign "Let's agree" targeting young drivers was successfully continued.

- A new safety campaign, “If you don’t think, you will pay”, was initiated to target the most dangerous behaviours (aggressive driving, drinking and driving, speeding, and failure to wear seat belts).
- Permanent attention is devoted to child safety education. The programme “Safe road to school” is widely accepted.
- The Multimedia project “The Action”, targeting secondary school students, was extended.
- A contest for elementary school pupils “Safe on the roads” was organised in October.
- BESIP (Road Safety) Teams are acting in each region trying to develop local safety public activities. However, only two regions have developed their regional road safety programmes and plans.

## 7. Major recent or ongoing research (2007-2009)

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- The Ministry of Transport has contracted for several road safety research projects that are ongoing, targeting safer road infrastructure, road users behavior and driving licensing.

## 8. References – Useful websites and references

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<b>CDV, Transport research centre</b>	<a href="http://www.cdv.cz">www.cdv.cz</a>
<b>Ministry of Transport</b>	<a href="http://www.mdcr.cz">www.mdcr.cz</a>
<b>Police of the Czech Republic</b>	<a href="http://www.policie.cz">www.policie.cz</a>

# DENMARK<sup>1</sup>

## 1. General comments on trends for 2008

In 2008, the number of fatalities was unchanged while the number of injury accidents was reduced by 10%.

The number of people seriously injured also decreased by 10% compared to 2007. The number of those killed and injured was at its lowest level since 1932, while the number of injury accidents reached a 10-year low. Between 2003 and 2008 single vehicle accidents, head-on collisions, and accidents involving parked vehicles, pedestrians or alcohol all decreased.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured, and injury crashes

Between 1970 and 2008, the number of fatalities decreased by 66% and the number of injury crashes by 75%. In the same period, the number of vehicles and the distance travelled (in vehicle-kilometres) more than doubled.

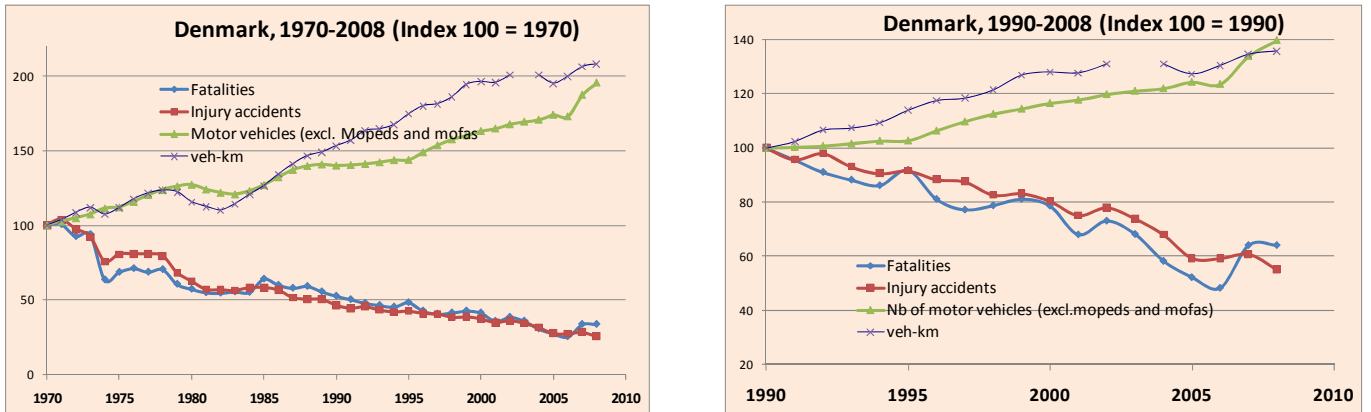
Table 1. Number of road fatalities and injury crashes, 1970-2008

												% change over		
	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	2007-2008	2000-2008	1970-2008
Fatalities	1 208	634	498	431	463	432	369	331	306	406	406	0%	-18%	-66%
Injury crashes	19 782	9 155	7 346	6 861	7 126	6 749	6 209	5 412	5 403	5 549	5 020	-10%	-32%	-75%

Fatalities peaked in Denmark in 1971. Since then the number has decreased, with some fluctuations over the years. The increase from 2006 to 2007 in the number of fatalities appears high only because the figures were extremely low from 2004 to 2006, and especially in 2006. From a long-term perspective, the figure for 2008 is only slightly higher than expected. The substantial drop from 1970 to 1990 was mainly due to the impact of the oil crises in 1974 and 1979. The oil shocks led to the introduction of general speed limits, which significantly influenced road safety. Later legislation on seat belt use pushed the numbers down further.

1. Source: IRTAD, Danish Road Directorate.

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles  
1970-2008



#### ❖ Time series for key risk indicators

Between 1970 and 2008 the mortality rate, expressed in deaths per 100 000 population, decreased by 70% and the fatality risk (expressed in deaths per distance travelled) decreased by 84%.

Table 2. Risk indicators  
1970, 2000 and 2008

	1970	2000	2008	% change over	
				2000-2008	1970-2008
Deaths/100 000 population	24.62	9.34	7.37	-21%	-70%
Deaths/billion veh-km	50.54	10.65	8.22	-23%	-84%
Deaths/10 000 vehicles		2.1	1.4		
Motorisation (number of vehicles/1 000 inhabitants)		463	524		

### 3. Recent development of accident trends

#### ❖ Road users

All user groups have benefited from the important safety improvement since the 1970s. However, the amount of improvement for motorcyclists has been quite small.

The user groups benefiting most from safety progress are pedestrians (-82%) and moped riders (-81%). The fatality reduction in the latter group is largely linked to decreasing popularity of this transport mode, as Figure 2 shows.

Table 3. Fatalities by road user group  
1970, 2000, 2007 and 2008

									% change over:		
	1970		2000		2007		2008		2007-2008	2000-2008	1970-2008
<b>Bicyclists</b>	152	13%	58	12%	54	13%	54	13%	0%	-7%	-64%
<b>Mopeds</b>	154	13%	47	9%	48	12%	30	7%	-38%	-36%	-81%
<b>Motorcycles &amp; scooters</b>	42	3%	24	5%	36	9%	40	10%	11%	67%	-5%
<b>Passenger cars</b>	444	37%	239	48%	177	44%	201	50%	14%	-16%	-55%
<b>Pedestrians</b>	327	27%	99	20%	68	17%	58	14%	-15%	-41%	-82%
<b>Others</b>	131	11%	55	11%	59	15%	63	16%	7%	15%	-52%
<b>Total</b>	1 208	100%	498	100%	406	100%	406	100%	0%	-18%	-66%

Figure 2. Relative evolution of the number of motorised two-wheelers in traffic and the number of moped riders and motorcyclists killed in traffic

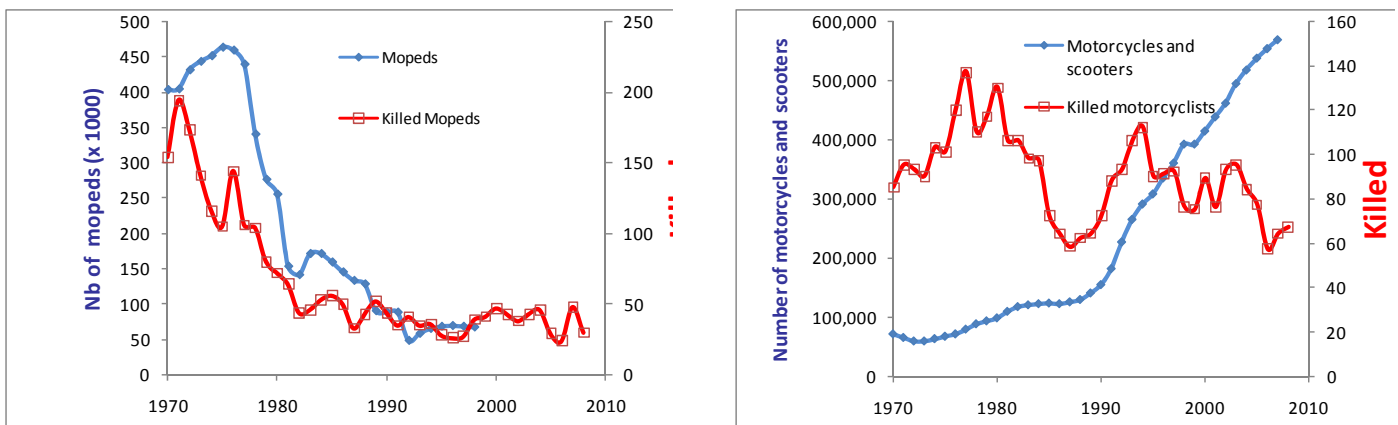


Table 4 illustrates the relative fatality risk for the different road user groups. For a motorcyclist, the risk of dying in a traffic crash is 7.5 times higher than that for a car occupant.

Table 4. Relative fatality risk by road user group

	Fatalities	Deaths (inside or on the vehicle) per million vehicles	Average kilometrage per vehicle	Deaths (inside or on the vehicle) per billion veh-km
<b>Pedestrians (2003)</b>	43	NA	NA	34
<b>Bicycles (2004)</b>	53	NA	NA	(bicycles & mopeds together) 41
<b>Mopeds (2004)</b>	38	NA	NA	
<b>Motorcycles (2004)</b>	24	NA	NA	38
<b>Car and van occupants (2004)</b>	199	NA	NA	5
<b>Heavy goods vehicles (2004)</b>	3	NA	NA	2

#### ❖ Age groups

Since 1970, all age groups have shared in the reduction in fatalities, but the most impressive decrease concerned the youngest group (0-14), for which fatalities fell by 90%, from 172 in 1970 to 19 in 2008. A possible explanation for this decline may be that children are now less active traffic participants than in the 1970s. They

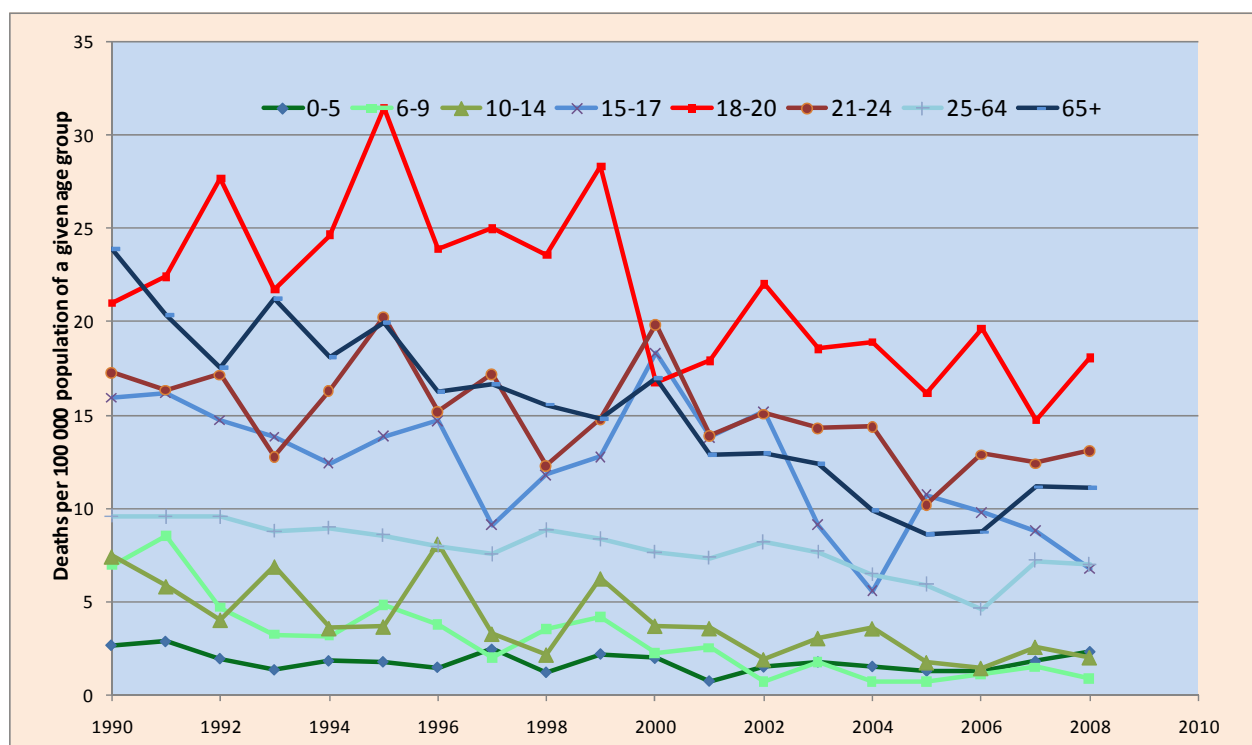
are often driven to school by their parents and spend most of the day in school or activities instead of playing in the streets.

Young people, especially those aged 18 to 20, are still a high-risk group in terms of road safety, with a fatality risk three times higher than for the general population (Figure 3).

Table 5. Reported fatalities by age group

							% change over:		
	1970	1980	1990	2000	2007	2008	2007-2008	2000-2008	1970-2008
0-5	53	14	9	8	7	9	29%	13%	-83%
6-9	66	11	15	6	4	3	-25%	-50%	-95%
10-14	53	25	24	11	9	7	-22%	-36%	-87%
15-17	64	66	35	30	18	14	-22%	-53%	-78%
18-20	102	88	46	30	28	36	29%	20%	-65%
21-24	82	66	57	55	30	33	10%	-40%	-60%
25-64	487	249	257	224	214	207	-3%	-8%	-57%
>65	296	171	191	134	95	97	2%	-28%	-67%
<b>Total</b>	<b>1208</b>	<b>634</b>	<b>498</b>	<b>369</b>	<b>406</b>	<b>406</b>	<b>0%</b>	<b>10%</b>	<b>-66%</b>

Figure 3. Evolution of fatality risks by age group (deaths per 100 000 population in a given group) 1990-2008



#### ❖ Accident locations

In 2008, 60% of fatal crashes occurred on rural roads, 32% in urban areas and 8% on motorways (Figure 4). Since 1980, the greatest reduction in fatalities has occurred on urban roads (-58%), which can be partly explained



by a change in traffic patterns. Another explanation is the use of automatic speed control, which was introduced first in urban areas.

Between 1980 and 2008, several new motorways were constructed, which explains the increase in the number of fatalities on motorways; this does not mean motorways have become less safe. The reduction in fatalities was larger in urban areas (-69%) than on country roads (-47%).

Figure 4. **Reported fatalities by type of road**  
1980, 1990, 2000 and 2008

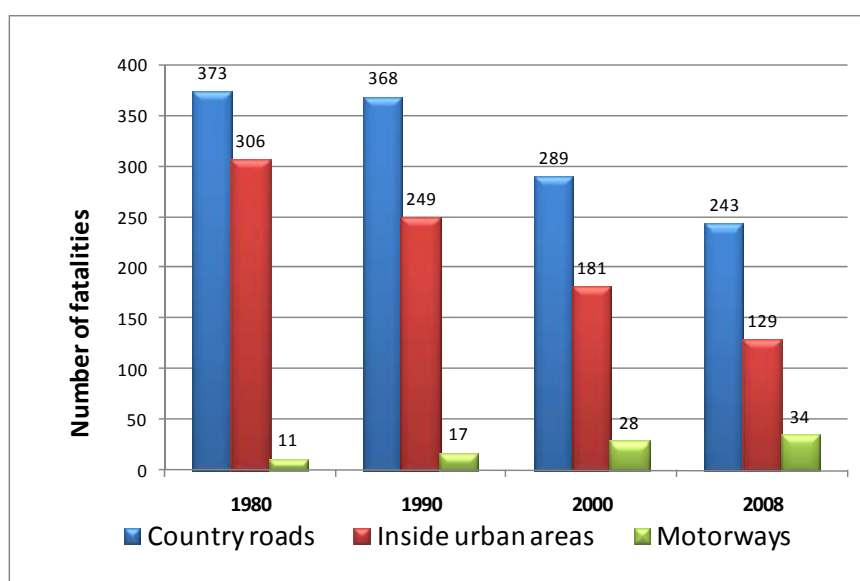


Table 6. **Reported fatalities by type of road**

	1980	2000	2007	2008	% change over:		
					2007-2008	2000-2008	1980-2008
Country roads	373	289	251	243	-3%	-16%	-35%
Inside urban areas	306	181	129	129	0%	-29%	-58%
Motorways	11	28	26	34	31%	21%	209%

#### 4. Recent development of driving behaviour

##### ❖ Drink driving

The maximum authorised BAC is 0.5 g/l for drivers of a motorised vehicle in cases where a driving licence is required (including professional drivers). There is no maximum authorised BAC for cyclists, moped drivers or pedestrians.

The penalty is higher for novice drivers (those who have had their licence for less than three years).

##### ❖ Speed

The Danish Road Directorate monitors the mean speeds for different road types. The speed for each road type is based on five to eight sites. At each site, speeds are measured hourly except for hours characterised by heavy traffic or unusually low speeds, in which case no measurements are made. The mean speeds for cars are

published monthly. In addition to mean speeds, other results are calculated, including the number and percentage of cars driving above the speed limit.

**Table 7 Percentage of drivers exceeding speed limits  
2003-2007**

	2003	2004	2005	2006	2007
<b>% of drivers over the posted speed limit:</b>					
- in urban areas	64 %	63 %	58 %	59 %	60 %
- on rural roads	65 %	63 %	60 %	61 %	65 %
- on 110 kph motorways	66 %	62 %	61 %	58 %	60 %
- on 130 kph motorways	26 %	24 %	23 %	26 %	31 %

#### ❖ Seat belts and helmets

Seat belt use has been compulsory in front seats since the early 1970s and in rear seats since the late 1980s. Rear seat belts are not compulsory in cars made before 1990, and very old cars need not have front seat belts either. Both groups account for a very low share of the Danish car fleet.

**Table 8. Evolution in seat belt use by car occupants**

	2003	2005	2006	2007
Rear seat, adults		63 %	71 %	70 %
Front seat, driver		87 %	91 %	90 %
Motorways – driver	88%	92%	93 %	94 %
Rural roads – driver	89%	91%	94 %	92 %
Urban areas –driver	81%	83%	88 %	87 %

Helmets are required to be worn by all motorcycle and moped riders. The compliance rate by motorcyclists was around 97% as of 2006.

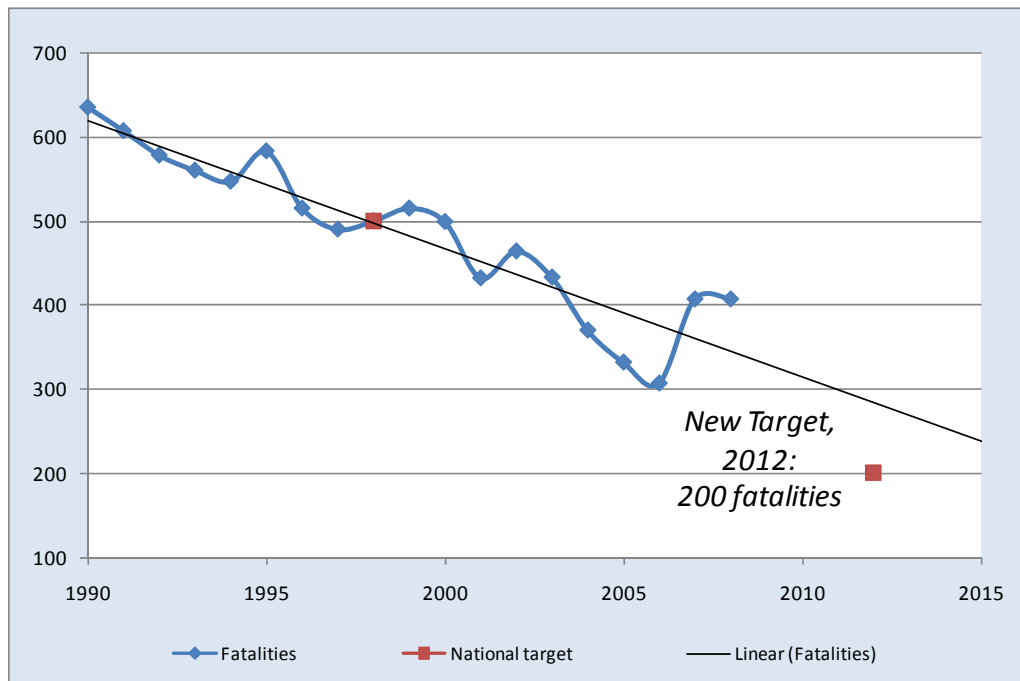
## 5. National road safety strategies and targets

Denmark's 2000 traffic safety action plan set as its main target a 40% reduction in fatalities and serious injury accidents by 2012. Measures supporting the target included a particular focus on speeding, bicycle safety, young drivers and drink driving.

One hundred special actions were identified, with a clear sharing of responsibilities for each. Implementing all of the actions was expected to make it possible to reach the target. Examples include stationary speed cameras (now used on a pilot basis in six places), improvements in driving education and the use of bicycle helmets.

As fatalities in 2006 were very close to the target for 2012 (300), the Traffic Safety Committee revised the target in 2007 to 200 fatalities by 2012.

Figure 5. Trend in progress towards road fatality target



## 6. Recent safety measures (2007-2009)

### ❖ Road user behaviour, enforcement

- Mobile speed cameras have been supplemented with six stationary speed cameras as a pilot project.

## 7. Major research undertaken in 2007-2009

- DTU Transport recently published a risk analysis by transport modes and age groups.
- DTU Transport participates in the research on the prevalence of drug and alcohol use in the driving population in Europe (DRUID).

## 8. References – Useful websites and references

<p><b>National statistics</b></p>	<p>Annual accident information is available in English on the Danish Road Directorate website:  <a href="http://webapp.vd.dk/uheldnykomm/UhAarStat.asp?page=document&amp;objnr=105608">http://webapp.vd.dk/uheldnykomm/UhAarStat.asp?page=document&amp;objnr=105608</a></p>
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# FINLAND<sup>1</sup>

## 1. General comments on trends for 2008

In 2008 there were 36 fewer fatalities than in 2007. The number of accidents involving personal injury and the number of injured persons were higher than in the previous year.

Preliminary data for 2009 indicate that 4 948 road traffic accidents involving personal injury happened between January and September 2009, 222 persons were killed and 6 221 injured. The latest figure for fatalities within the last 12 months is 322 persons, of which 59 were pedestrians or bicyclists.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

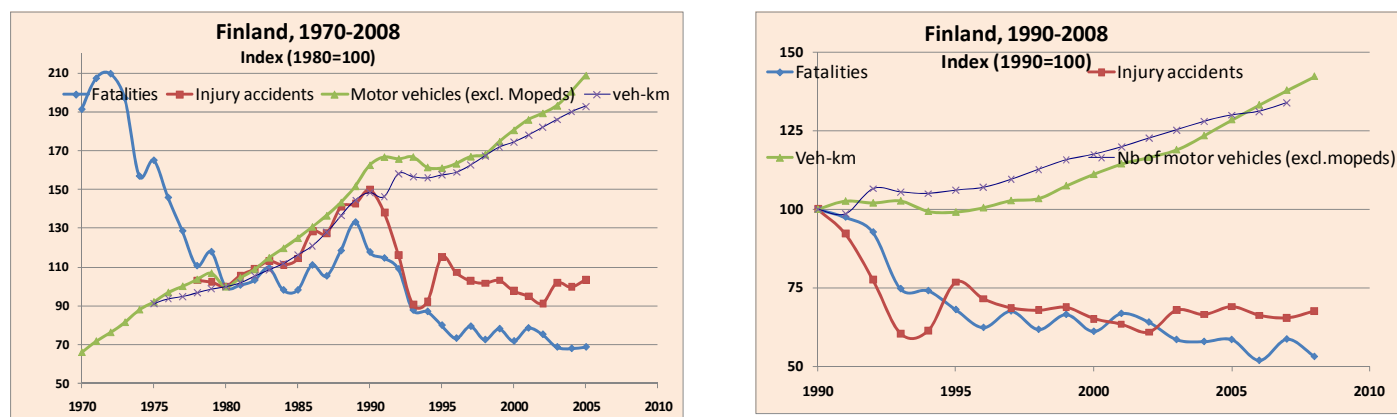
Between 1970 and 2008, the number of fatalities decreased by 67% while the number of vehicles more than tripled. In recent years (2000-2008), fatalities decreased by 13%.

Table 1. **Number of road fatalities and injury crashes, 1970-2008**

												% change over:		
	1970	1990 *	2000	2001	2002	2003*	2004	2005	2006	2007	2008	2007-2008	2000-2008	1970-2008
Fatalities	1 055	649	396	433	415	379	375	379	336	380	344	-9%	-13%	-67%
Injury crashes	11 439	10 175	6 633	6 451	6 196	6 907	6 767	7 022	6 740	6 657	6 881	+3%	+4%	na

\* Compilation method for personal injury accidents changed.

Figure 1. Evolution in numbers of road fatalities, personal injury crashes and vehicles 1970-2008



#### ❖ Time series for key risk indicators

Between 1970 and 2008 the mortality rate, expressed in terms of deaths per 100 000 population, decreased by 72%.

Table 2. Risk indicators, 1970, 2000, 2008

	1970	2000	2008	% change over:	
				2000-2008	1970-2008
Deaths/100 000 population	22.87	7.6	6.5	-14 %	-72 %
Deaths/billion veh-km	na	8.5	6.5	- 24 %	na
Deaths/10 000 vehicles	12.7	1.6	1.1	- 31 %	- 91 %
Motorisation (number of vehicles/1 000 inhabitants)	180	476	594	+ 25 %	+ 230 %

### 3. Recent development of accident trends

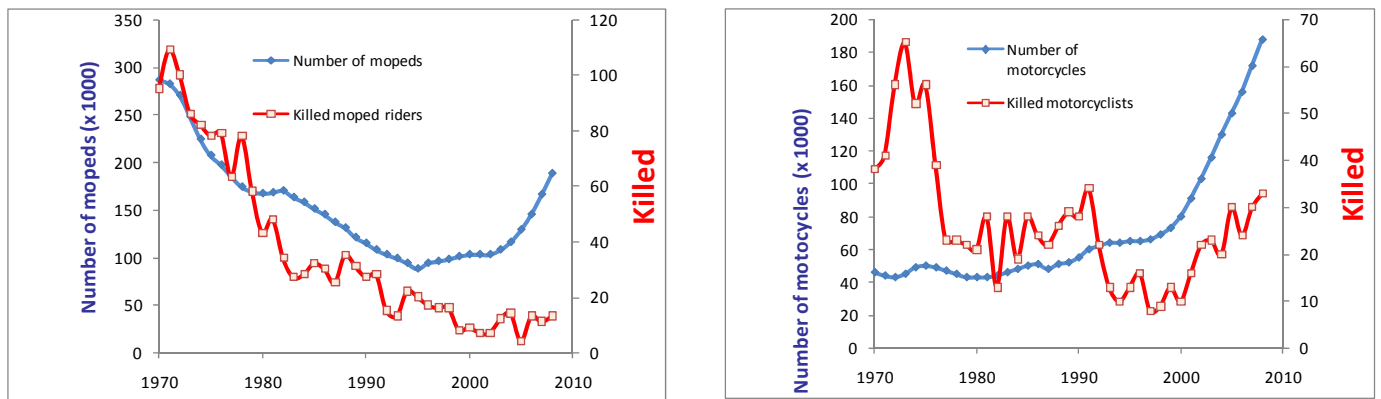
#### ❖ Road users

All user groups have benefited from the important safety improvements since the 1970s. However, the decrease has been very small for motorcyclists. Bicyclists and pedestrians are the user groups that benefited the most from the safety progress. There has also been a sharp decrease in fatalities among moped riders, which must be analysed in relation to the decreasing popularity of this transport mode (Figure 2).

Table 3. Fatalities by road user group  
1970, 2000, 2007 and 2008

									% change over		
	1970		2000		2007		2008		2007-2008	2000-2008	1970-2008
<b>Bicycles</b>	151	14%	53	13%	22	6%	18	5%	-18%	-66%	-88%
<b>Mopeds</b>	95	9%	9	2%	11	3%	13	4%	18%	44%	-86%
<b>Motorcycles and scooters</b>	38	4%	10	3%	30	8%	33	10%	10%	230%	-13%
<b>Passenger cars</b>	354	34%	224	57%	241	63%	202	59%	-16%	-10%	-43%
<b>Pedestrians</b>	322	31%	62	16%	48	13%	53	15%	10%	-15%	-84%
<b>Others</b>	95	9%	38	10%	28	7%	25	7%	-11%	-34%	-74%
<b>Total</b>	1 055	100%	396	100%	380	100%	344	100%	-9%	-13%	-67%

Figure 2. Relative evolution of the number of motorised two-wheelers in traffic and the number of moped riders and motorcyclists killed in traffic



#### ❖ Age groups

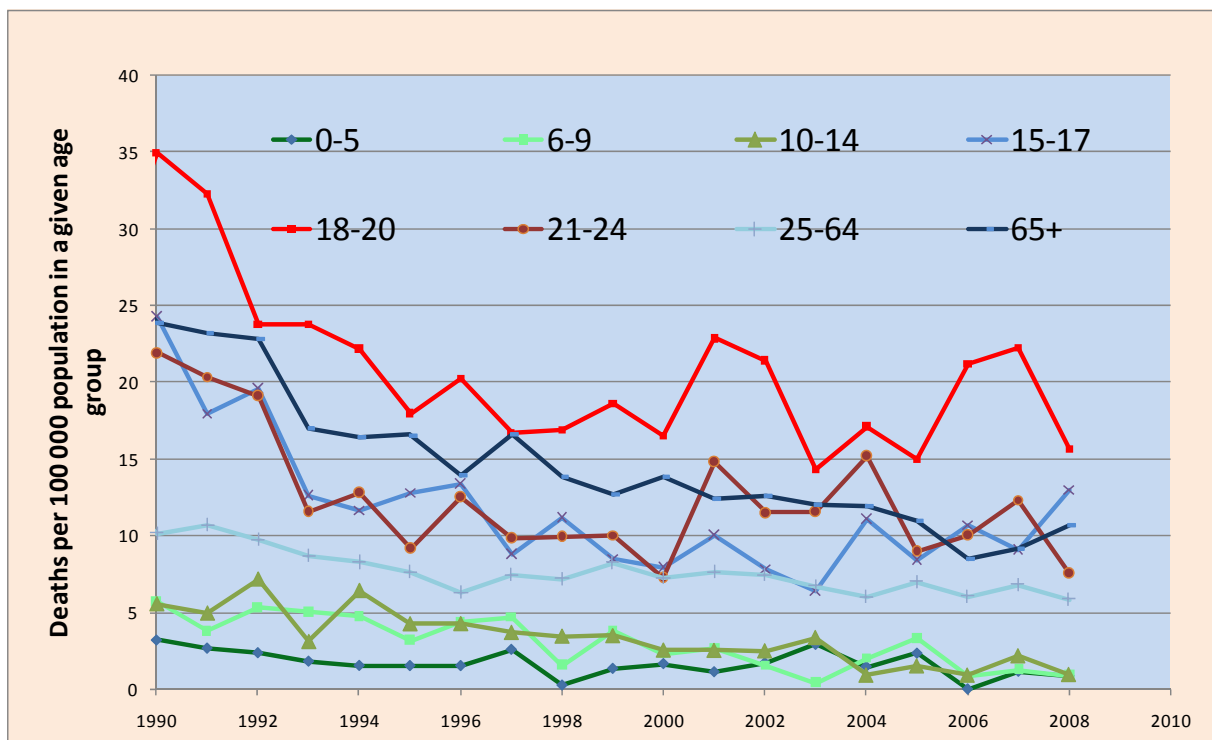
Since 1970, the reduction in fatalities has benefited all age groups, but the most impressive reduction concerned the youngest groups (0-14), for which fatalities decreased by more than 90%, from 132 in 1970 to 8 in 2008.

Young people, and especially 18- to 20-year-olds, are still a high risk group in road safety, with a fatality risk twice as high as that of the general population (Figure 3). Most accident and risk problems involve young male drivers.

Table 4. Reported fatalities by age group  
1970-2008

Age	1970	1980	1990	2000	2007	2008	% change over:		
							2007-2008	2000-2008	1970-2008
0-5	30	8	12	6	4	3	-25%	-50%	-90%
6-9	67	13	15	6	3	2	-33%	-67%	-97%
10-14	35	15	18	8	7	3	-57%	-63%	-91%
15-17	55	30	43	16	18	26	44%	63%	-53%
18-20	83	35	66	32	42	30	-29%	-6%	-64%
21-24	102	33	63	19	33	20	-39%	5%	-80%
25-64	514	265	274	203	194	167	-14%	-18%	-68%
>65	169	152	158	106	79	93	18%	-12%	-45%

Figure 3. Evolution of fatality risks by age group  
(deaths per 100 000 population in a given group)  
1990-2008



#### ❖ Accident locations

In 2008, 66% of fatal crashes occurred on rural roads, 31% in urban areas and 3% on motorways (Figure 4). Since 1990, the reduction in fatalities has been spread equally between urban and country roads.

Most fatalities are due to frontal crashes occurring on main roads outside built-up areas. Finland has only about 650 km of motorways, and they account for a minor share of accidents.

High risk roads are usually those with one-way carriage, no central fencing and 80 or 100 km/h speed limits.

Figure 4. Reported fatalities by type of road  
1990, 2000 and 2008

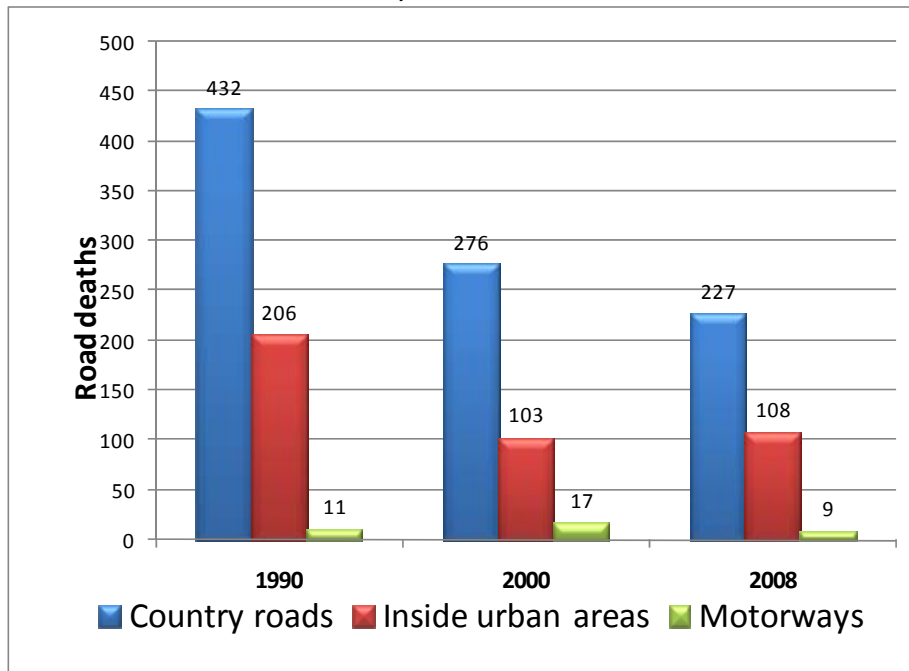


Table 5. Reported fatalities by type of road  
1990, 2000, 2007, 2008

	1990	2000	2007	2008	% change over		
					2007-2008	2000-2008	1990-2008
Country roads	432	276	285	227	-20%	-18%	-47%
Inside urban areas	206	103	81	108	33%	5%	-48%
Motorways	11	17	14	9	-36%	-47%	-18%

#### 4. Recent development of driving behaviour

##### ❖ Drink driving

The maximum authorised BAC is 0.5 g/l for all drivers. Around 30% of fatal crashes involve drivers with a BAC above the limit.

The percentage of drivers under the influence of alcohol in traffic has decreased since peaking at 1.02% in 1999. The percentage of drivers over the legal limit has remained fairly constant for the past five years (2004-2009) at between 0.14% and 0.16%. In 2009, 0.64% of drivers were driving under the influence of alcohol and 0.14% were over the legal limit.

##### ❖ Speed

While a high proportion of drivers go above the speed limit, the percentage of drivers speeding 10 km/h above the limit is relatively small. In 2003, it was 17% on 80 km/h rural roads and 6% on 100 km/h rural roads. In 2008, around 12% of drivers exceeded the speed limit by more than 10 km/h.

Speed cameras, put into use within this decade, covered around 3 000 km of the main roads in 2009.



## ❖ Seat belts and helmets

Seat belt use is compulsory in front and rear seats. Table 7 shows the significant increase in seat belt use by car drivers since 1980.

Table 6. Evolution in seat belt use by car occupants

	1980	2000	2007	2008
Rural roads – driver		89 %	95 %	92 %
Urban areas – driver	22 %	80 %	87 %	85 %

Helmet wearing is compulsory for all motorcycle and moped riders.

While it has been mandatory to wear a helmet while cycling since 2003, this is not enforced. The bicycle helmet usage rate was 25% in 2004, 29% in 2005, 33% in 2007 and 31% in 2008. Most small children wear helmets, but teenagers and elderly people tend not to do so. The usage rate in the Helsinki area is about 50%, but rates in northern Finland are much lower.

## 5. National road safety strategies and targets

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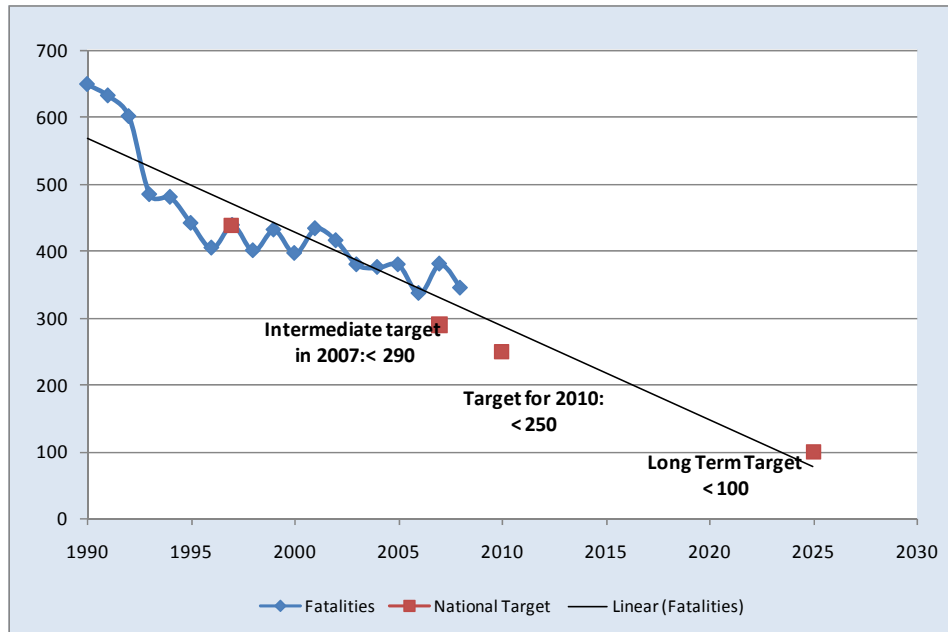
The Government of Finland has undertaken systematic target-oriented traffic safety work through resolutions approved in 1993, 1997, 2001 and 2006. In the resolution of 2001, the government adopted a long-term road safety vision aiming for a road transport system designed in such a way that nobody need die or be seriously injured on Finnish roads.

The road safety plan that formed the basis for the resolution aimed at creating opportunities for continuous development of the transport system so that by 2025 the annual number of road fatalities would not exceed 100.

At the same time, the government revised the previous objective, set in 1997, declaring that by 2010 the annual number of road fatalities should be less than 250. With the following resolution, of 9 March 2006, the government confirmed the goals set previously.

Current trends and planned measures indicate it is unlikely that the 2010 target will be reached, as this would mean saving 100 lives compared to 2008.

Figure 5. Trend in progress towards road fatality target



## 6. Major research undertaken in 2007-2009

- LINTU long-term research and development programme for road safety (<http://www.lintu.info/research.htm>)

## 8. References – Useful websites and references

Road safety plan 2006-2010	<a href="http://www.lvm.fi/web/en/21">http://www.lvm.fi/web/en/21</a>
Ministry of Transport and Communications	<a href="http://www.lvm.fi/web/en/home">http://www.lvm.fi/web/en/home</a>

# FRANCE<sup>1</sup>

## 1. General comments on trends for 2008

The results for 2008 are fairly good, showing a continued strong decrease in the main indicators:

- -7.5 % for the number of fatalities (4 275)
- -8.3 % for the number of injury accidents (74 487)
- -9.1% for the number of injured people (93 798).

The main reasons for these positive results are reduction in traffic volume (partly due to the peak in oil prices in the middle of the year) and reduction in the average speed (-1.1%). There has been no improvement with respect to drink driving crashes.

These relatively good results are, however, slightly below the annual decrease (8.2%) required to reach the target set in 2007 by French President Sarkozy of fewer than 3 000 people killed by 2012.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Between 1970 and 2008, the number of fatalities decreased by 74% and the number of injury crashes by 68%. In the same period, the number of vehicles tripled. In recent years (2000-2008), the decrease in the number of fatalities has been sustained (-48%).

A significant change was introduced in July 2002, when then President Chirac announced that road safety was among the priorities of his mandate. Since then, a determined road safety policy has been developed with effective measures regarding speed management, drink driving and seat belt use, the strengthening of the demerit point system, etc.

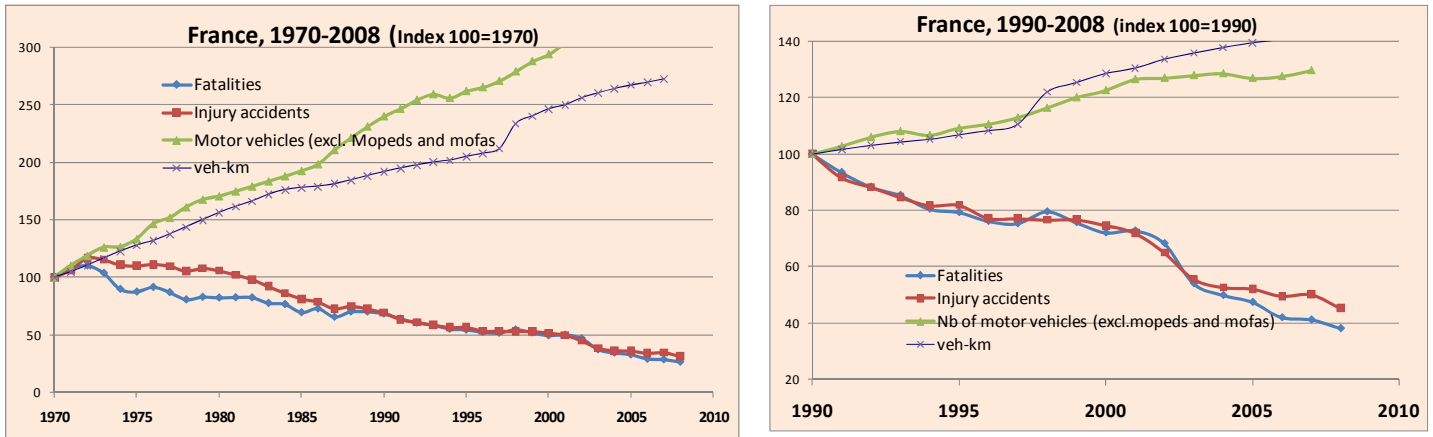
Table 1. Number of road fatalities and injury crashes, 1970-2008\*

	1970	2000	2001	2002	2003	2004	2005	2006	2007	2008	% change over		
											2007-08	2000-08	1970-2008
Fatalities*	16 445	8 170	8 253	7 742	6 126	5 593	5 318	4 709	4 620	4 275	-7.5%	-48%	-74%
Injury crashes	235 109	121 223	116 745	105 470	90 220	85 390	84 525	80 309	81 272	74 487	-8.3%	-33%	-68%

\*For the years 2000 to 2004 a factor of 1.069 was applied to the fatality data for conversion from six days to 30 days recording period.

1. Source IRTAD, ONISR, SETRA.

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008



#### ❖ Time series for key risk indicators

Between 1970 and 2008 the mortality rate, expressed in terms of deaths per 100 000 population, decreased by 79%, and the fatality risk (expressed in deaths per distance travelled) decreased by 91 % (Table 2).

Table 2. Risk indicators 1970, 2000 and 2008

	1970	2000	2008	Change	
				2000-2008	1970-2008
Deaths/100 000 population	32.55	12.9	6.9	-46%	-79%
Deaths/billion veh-km	90.36	15.1	8.1	-46%	-91%
Deaths/ 10 000 registered vehicles		2.4	1.1	-53%	

### 3. Recent development of accident trends

#### ❖ Road users

Moped riders and car occupants are the road user group which has seen the largest decrease compared to 2007 in the number of fatalities (-16% and -11 %), followed by moped riders (-4.0%). The number of fatalities has increased for cyclists (+4%) (Table 3).

Motorcyclists continue to be the user group most at risk. In 2008, they represented 1.1% of the traffic but 18.6% of fatalities. Figure 2 shows the respective change in the number of mopeds and motorcycles in traffic and the number of moped and motorcycle riders killed.

Table 3. Fatalities by road user group  
1970, 2000, 2007 and 2008

	1970		2000*		2007		2008		% change		
									2007-2008	2000-2008	1970-2008
<b>Bicyclists</b>	867	5%	273	3%	142	3%	148	3%	4%	-46%	-83%
<b>Mopeds</b>	2 874	17%	461	6%	325	7%	291	7%	-16%	-41%	-91%
<b>Motorcycles and scooters</b>	334	2%	947	12%	830	18%	795	19%	-4%	-16%	138%
<b>Car occupants</b>	8 199	50%	5 351	65%	2 464	53%	2 205	52%	-11%	-59%	-73%
<b>Pedestrians</b>	3 490	21%	848	10%	561	12%	548	13%	-2%	-35%	-84%
<b>Others</b>	681	4%	365	4%	298	6%	288	7%	-3%	-21%	-58%
<b>Total</b>	16 445	100%	8 170	100%	4 620	100%	4 275	100%	-7%	-48%	-74%

\* For the year 2000 a factor of 1.069 was applied to the fatality data for conversion from six days to 30 days recording period.

Figure 2. Relative evolution of the number of motorised two-wheelers in traffic and the number of moped riders and motorcyclists killed in traffic

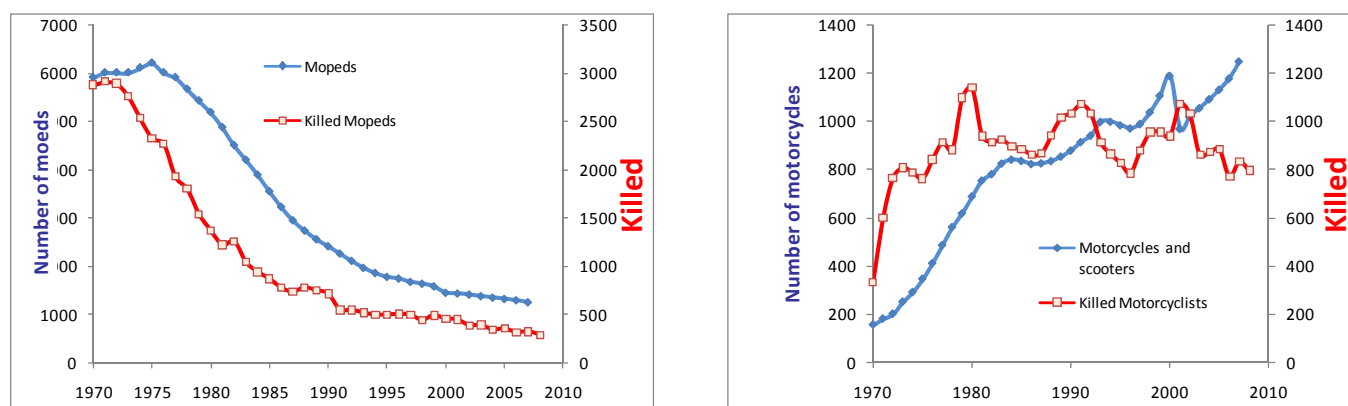


Table 4 illustrates the relative fatality risk for the different road user groups. For a motorcyclist, the risk of dying in a traffic crash is 23 times higher than that for a car occupant.

Table 4. Relative fatality risk by road user group (2007)

Breakdown in relation to number of vehicles	Deaths per million vehicles	Average kilometres travelled	Deaths per billion vehicle/km
Mopeds	258	2 020	127
Motorcycles	665	4 728	141
Light vehicles	81	13 029	6
Heavy vehicles	122	50 084	2

#### ❖ Age groups

Since 1980, the reduction in fatalities has benefited all age groups, but the most impressive reduction concerned the youngest groups – 6-9, 0-5 and 10-14 – for which fatalities respectively decreased by 90%, 86% and 84%.

Young people are overrepresented in road fatalities. They represent around 12% of the population but 25% of the road fatalities. The 18-20 age group continues to be the one most at risk, with a rate of 18 fatalities per 100 000 population of the same age, while the rate for the general population is around 7.

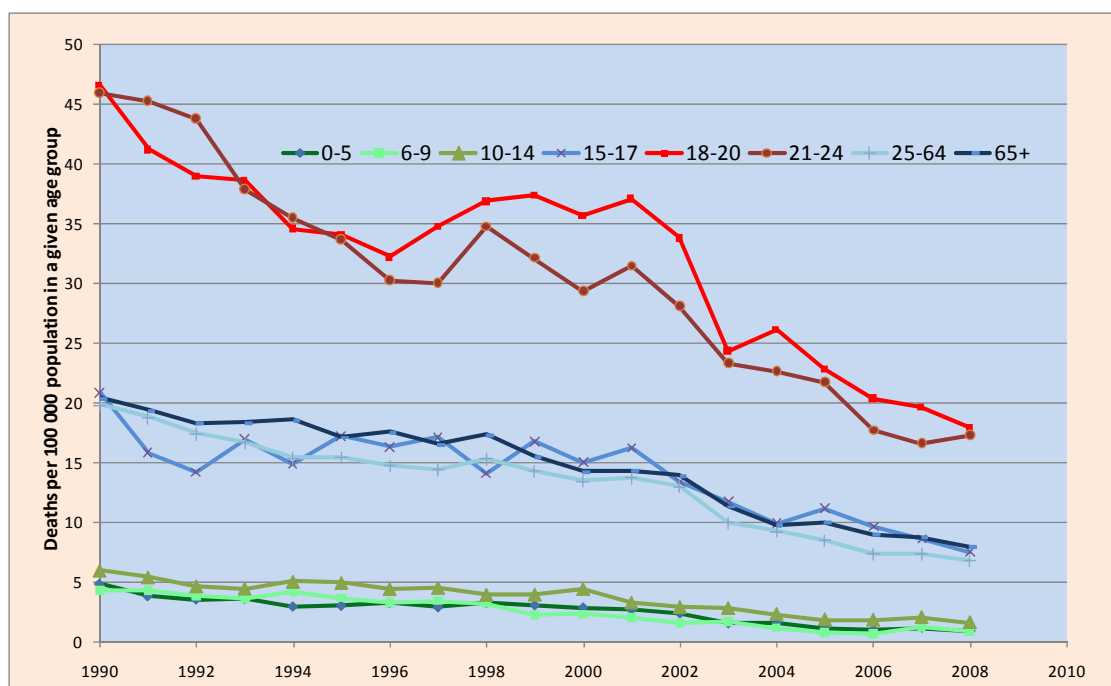
The good results of 2008 did not benefit the 21-24 age group (+4% fatalities). The largest reduction in the number of road fatalities was observed among the under-18 group (-14.4 %).

Table 5. Reported fatalities by age group  
1980, 1990, 2000, 2007, 2008

	1980	1990	2000*	2007	2008	% change over		
						2007-2008	2000-2008	1970-2008
0-5	296	220	125	54	42	-22%	-66%	-86%
6-9	261	132	68	36	25	-31%	-63%	-90%
10-14	362	222	173	74	58	-22%	-66%	-84%
15-17	840	534	354	200	172	-14%	-51%	-80%
18-20	1 693	1 224	867	466	424	-9%	-51%	-75%
21-24	1 703	1 566	879	515	534	4%	-39%	-69%
25-64	6 118	5 684	4 204	2 383	2 209	-7%	-47%	-65%
>65	2 092	1 603	1 358	884	811	-8%	-40%	-61%

\* For the year 2000 a factor of 1.069 was applied to the fatality data for conversion from six days to 30 days recording period.

Figure 3. Evolution of fatality risks by age group  
(deaths per 100 000 population in a given group) 1990-2008

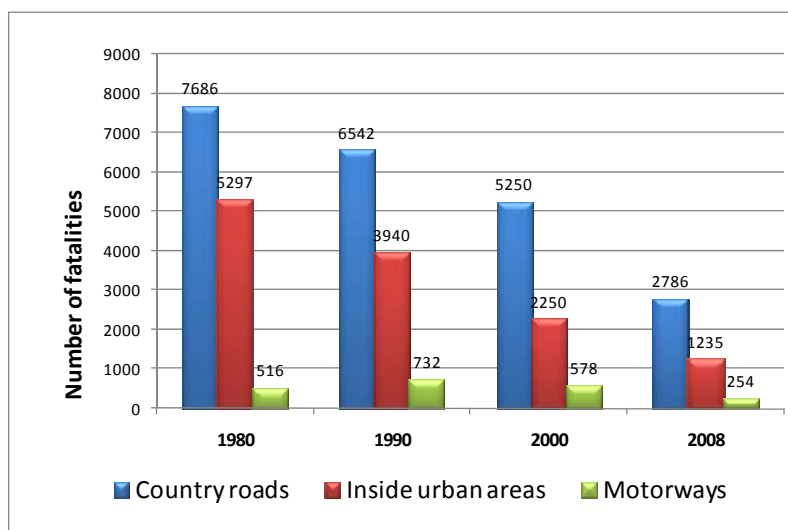


#### ❖ Accident locations

France has a very large road network (1 million km), of which 80% is rural (not including interurban motorways). When fatalities per billion vehicle-km travelled are broken down by type of road, road risk on

country roads is shown to be very high. In 2008, 64% of fatalities occurred on rural roads, 29% on urban roads and 6% on motorways.

Figure 4. Reported fatalities by type of road  
1980, 1990, 2000 and 2008



#### 4. Recent development of driving behaviour

##### ❖ Drink driving

The maximum permissible BAC is 0.5 g/l, 0.2 g/l for bus drivers. In comparison to 2007, there has been no progress in 2008 regarding the number of crashes due to drink driving. The percentage of drivers involved in a fatal crash with a BAC above the limit is around 16%.

##### ❖ Speed

Speed monitoring for the first 8 months of 2008 showed a significant decrease in average speed in comparison to 2007 (Table 6). The average speed decreased by 1.1% and the rate of excessive speed (10 km/h above the limit) decreased from 12.6 % in 2007 to 12.1% in 2008. The good results for 2008, in terms of the reduction in the number of fatalities (-7.2%), are directly linked to the decrease in average speeds.

Table 6. Evolution in average speed

	Sept-Dec 2006	Jan-April 2007	May-August 2007	Sept-Dec 2007	Jan-April 2008	May-August 2008
Average speed of passenger cars (km/h, all networks)	82.2	81.3	81.7	81.6	80.8	80.4
% of drivers above the limit	42.9%	37.4%	35.7%	37.7%	35.7%	32.3%
% of drivers 10km/h above the limit	16.7%	13.4%	11.7%	16.2%	13.3%	10.9%

## ❖ Seat belts and helmets

Seat belt usage rate is very high, and among the best in OECD/ITF countries (see Table 7).

Table 7. Evolution in seatbelt usage rate

	1980	1990	2000	2008
Motorway – driver	94%	91%	96%	99%
Rural roads – driver	79%	87%	94%	99%
Urban areas –driver	55%	55%	78%	98%

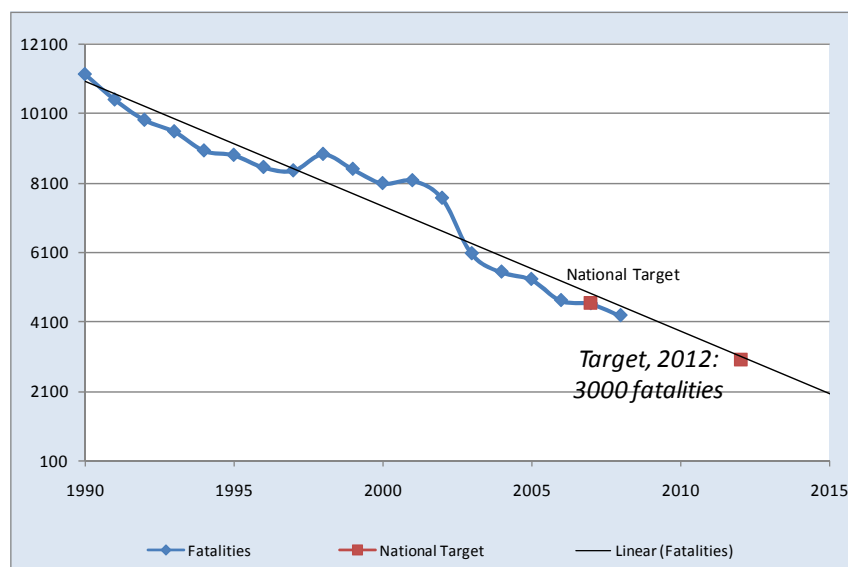
*Helmet use* is mandatory for motorcyclists (including mopeds). It is not compulsory for cyclists. The data available (site soundings) show an almost 100% rate, but the quality of the helmet and its correct buckling are very variable from one user to another, from one situation to another, etc.

## 5. National road safety strategies and targets

### ❖ Targets

In 2007, President Sarkozy set a national target of reducing the number of road fatalities to 3 000 by 2012. This corresponds to a reduction of 35 % over the 2007 level; that is, an average annual reduction of 8.3%. There are no quantitative subtargets. In 2008, the number of fatalities decreased by 7.1%, which is just below the required annual decrease to reach the target.

Figure 5. Trend in progress towards road fatality target





## 6. Recent safety measures (2007-2009)

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### ❖ Road user behaviour

- Speed  
The implementation of automatic speed cameras continued in 2008 and will continue till 2012 (500 devices per year including red light or headway cameras).
- Alcohol and drug abuse  
Preparation of a law to allow judges to oblige a driver testing with a positive BAC to install an alcohol interlock in his car or to confiscate the vehicle in case of recidivism of driving under influence of alcohol or drugs. This law will be presented to the Parliament at the end of 2009.  
Mandatory alcohol interlock in school buses (September 2009).
- Enforcement (general)  
First implementation of red light cameras started at the beginning of 2009.

### ❖ Vehicle standards and equipment

- July 2008, compulsory reflecting jacket and triangle
- Cyclists must wear a reflecting jacket outside urban areas at night

## 7. Major recent or ongoing research (2007-2009)

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Two major research studies were published in 2008:

- Leproust, S., Lagarde E., *et al.* (2008), "Risks and advantages of detecting individuals unfit to drive: A Markov decision analysis," *J Gen. Intern. Med.*, August.
- Hours, M., *et al.* (2008), "Diseases, consumption of medicines and responsibility for a road crash: A case-control study," *AAP* 40, pp. 1789-1796.

## 8. References – Useful websites and references

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Road safety in France, analysis by the National Road Safety Observatory	<a href="http://www2.securiteroutiere.gouv.fr/infos-ref/observatoire/observatory.html">http://www2.securiteroutiere.gouv.fr/infos-ref/observatoire/observatory.html</a>
SETRA, technical departement for transport, road and bridges	<a href="http://www.setra.equipement.gouv.fr/English-presentation.html">http://www.setra.equipement.gouv.fr/English-presentation.html</a>
INRETS - Transport and Safety Research Institute	<a href="http://www.inrets.fr">www.inrets.fr</a>

# GERMANY<sup>1</sup>

## 1. General comments on trends for 2008

Like most other countries, Germany had a 2008 fatality total that was substantially lower than that of the previous year: about 10% fewer road users died than in 2007. The 2008 toll is the lowest number of road users killed in crashes since 1950.

The highest decrease in the number of fatalities was observed on motorways. From 2007 to 2008 the number of persons killed in accidents on motorways diminished by 18%. In contrast the number of road fatalities on urban roads decreased about 6%.

Comprehensive analysis of 2008 data will not occur for some time. As a result, it is difficult to assess the impact of several factors on specific road user groups or on the 2008 death toll. These factors include the recent economic downturn and interventions introduced during the first eight years of Germany's current national road safety programme, in particular the 0.00% rule for novice drivers (those under age 21 and drivers of any age who have not yet finished their two year driving licence probationary period).

It is interesting to note, however, given the large drop in fatalities, that the number of vehicle-kilometres travelled in 2008 was only 0.3% lower than the corresponding 2007 figure.

## 2. Long term trends

### ❖ Evolution in the number of fatalities and injury crashes

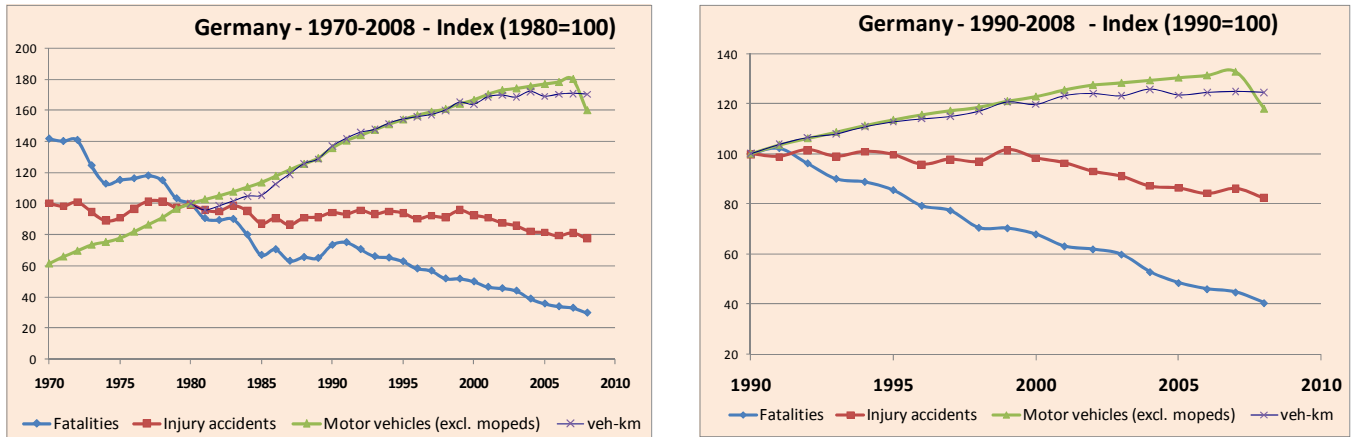
Between 1970 and 2008, the number of fatalities decreased by 79%, the number of injury crashes fell by only 23% and the number of vehicles nearly tripled. The fatality figures improved despite structural changes caused by German reunification in the early 1990s. In recent years (2000-2008), the number of fatalities decreased by 40%.

Table 1. Number of road fatalities and injury crashes  
1970-2008

	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	2008-07	2008-00	2008-1970
<b>Fatalities</b>	21 332	11 046	7 503	6 977	6 842	6 613	5 842	5 361	5 091	4 949	4 477	-10%	-40%	-79%
<b>Injury crashes</b>	414 362	389 350	382 949	375 345	362 054	354 534	339 310	336 619	327 984	335 845	320 614	-5%	-16%	-23%

1. Source : IRTAD, BAST

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008<sup>1</sup>



### ❖ Time series for key risk indicators

In the last 18 years the mortality rate (in terms of deaths per 100 000 population) has decreased by 61% while motorisation has increased by 28%.

Table 2. Risk indicators 1990, 2000, 2008

	1990	2000	2008	2000-2008	1990-2008
Deaths/100 000 population	14.0	9.1	5.5	-40.3%	-61.0%
Deaths/billion veh-km	20.0	11.3	6.5	-42.6%	-67.5%
Deaths/10 000 vehicles <sup>2</sup>	2.6	1.5	0.8		
Motorisation (number of vehicles/1 000 inhabitants)	528.8	625.2	675.2	8.0%	27.7%

## 3. Recent development of accident trends

### ❖ Road users

Germany is one of the world's most highly motorized countries. Motor vehicle occupants account for the large majority of traffic fatalities that occur each year on German roads.

Motor vehicle occupant and pedestrian fatalities have gradually decreased in recent years, with the reduction being strongest for passenger car occupants. The number of motorcyclist fatalities increased slightly in 2007 before decreasing substantially in 2008. A recent increase in the number of deaths among moped riders reflects an increase in the number of mopeds registered.

Table 3 shows the breakdown of road fatalities by user group.

1. From 2008: registered vehicles exclude temporarily decommissioned vehicles.
2. From 2008: registered vehicles exclude temporarily decommissioned vehicles. Therefore, 2008 data cannot be compared with previous years.

Table 3. Fatalities by road user group  
1990, 2000, 2008

	1970		1990		2000		2008		2000-2008	1970-2008
<b>Bicyclists</b>	2094	10%	908	8%	659	9%	456	10%	-31%	-78%
<b>Motorised two-wheelers</b>	2415	11%	1 443	13%	1 102	15%	766	17%	-30%	-68%
<b>Passenger car occupants</b>	9400	44%	6 256	57%	4 396	59%	2 368	53%	-46%	-75%
<b>Pedestrians</b>	6843	32%	2 113	19%	993	13%	653	15%	-34%	-90%
<b>Other</b>	1835		326	13%	353	5%	234	5%	-34%	

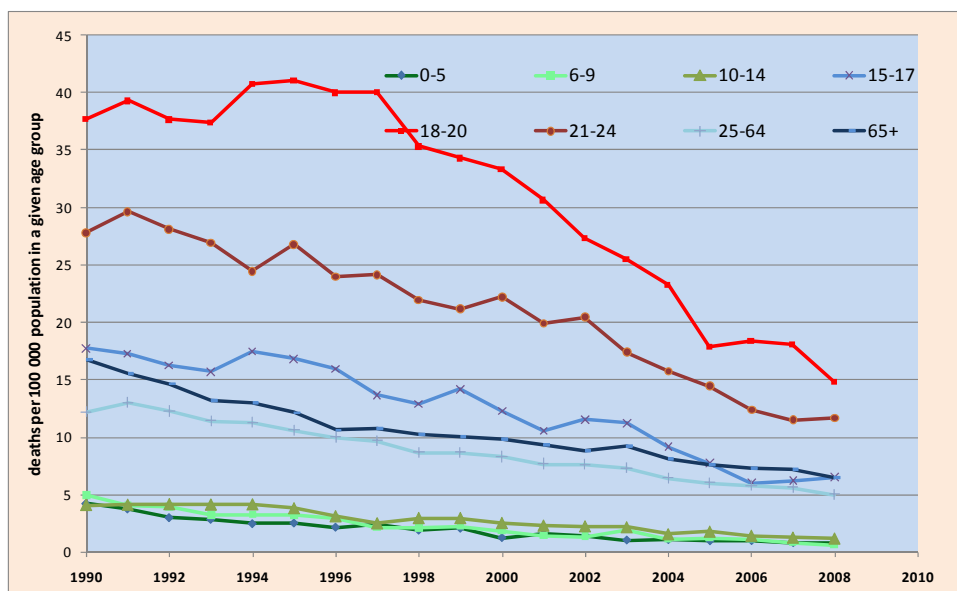
#### ❖ Age groups

The age group most at risk in Germany is 18-20, followed by 21-24. The 18-20 group has a mortality rate almost triple that of the general population.

In terms of road deaths among 18- to 24-year-olds, motor vehicle occupant fatalities are the principal problem. Despite graduated licensing and accompanied driving programmes, driver inexperience, particularly among those aged 18 to judge by their high mortality rate, remains a concern.

In recent years the elderly were the age group with the smallest reduction of road deaths, largely because of demographic changes.

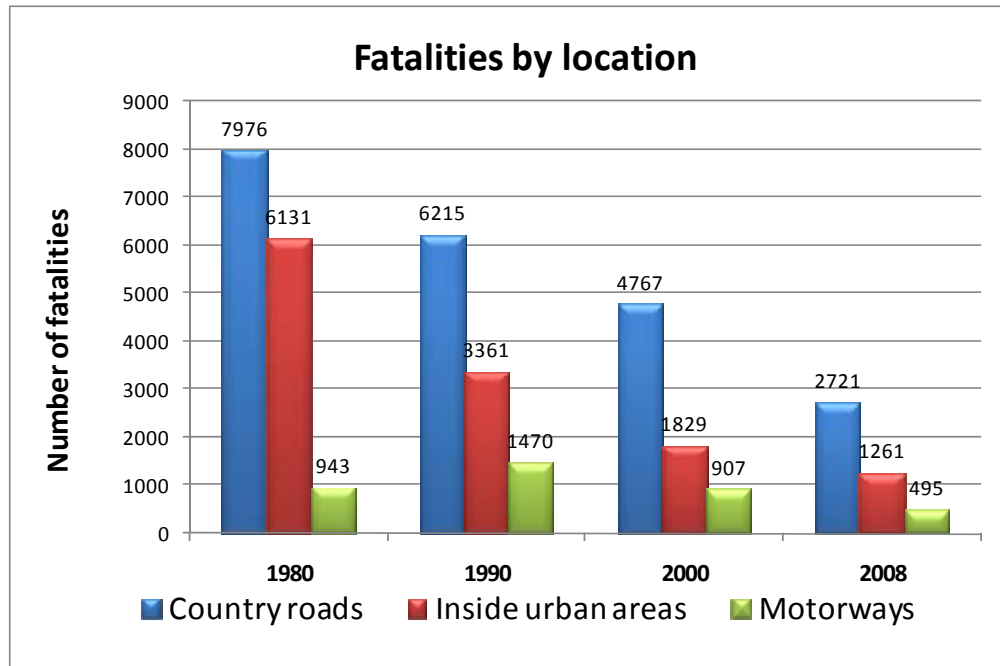
Figure 2. Evolution of fatality risks by age group  
(deaths per 100 000 population in a given group, 1990-2008)



#### ❖ Accident locations

Rural roads are the most dangerous type of location for road users, despite the fact that rural roads account for the highest reduction in road fatalities in recent years. In 2008, the large majority of all traffic fatalities occurred on rural roads.

Figure 3. Reported fatalities by type of road



#### 4. Recent development of accident behaviour

##### ❖ Drink driving

In Germany driving with a BAC over 50 mg% (0.5g/l) is punishable by fine, licence suspension and possibly jail. In addition, drivers with a BAC between 30 mg% and 50 mg% can have their licence suspended if their driving ability is impaired. Since 2007 Germany's graduated licensing programme has forbidden alcohol for drivers under 21 and during the probationary period.

In 2008, alcohol use was cited as a contributing factor in 11% of fatal crashes (drivers involved in a fatal crash with any amount of alcohol in their blood, including those below the 50 mg% threshold), rising to almost 21 in cases involving fatally injured drivers in the 25-34 age group.

##### ❖ Speed

Inappropriate speed was a factor in more than 37% of fatal accidents and about 25% of serious injury accidents in 2008. Speed is often cited as a factor in combination with other high-risk behaviour, such as drink driving.

##### ❖ Seat belts and helmets

Seat belt use has been compulsory for front seats since 1976 and rear seats since 1984. Fines for not wearing seat belts were introduced in the mid-1980s and led to a sharp increase in seat belt use.

Table 4 shows the evolution of seat belt use.

Table 4. **Seat belt usage rate**

	2000	2008
Urban roads – car drivers	90%	96%
Rural roads – car drivers	95%	98%
Motorways – car drivers	98%	98%

All riders of motorised two-wheelers are required to wear helmets. There is no mandatory helmet use law for cyclists.

Table 5. **Helmet wearing rates**

	2001	2008
Urban roads - motorcycle drivers	99%	97%
Urban roads – motorcycle passengers	99%	98%
Urban roads – bicyclists	5%	10%
Urban – bicyclists under 10 years old	40%	55%

## 5. National road safety strategies and targets

### ❖ National road safety strategies

Germany's current federal road safety action plan, launched in 2001, is the "Programme for more safety in road transport".

### ❖ Safety targets and sub targets

Germany has no national target in terms of numbers but instead aims at reducing fatalities and injuries as much as possible. The federal road safety action plan is entitled "Programme for more safety in road transport". Mobility is seen as an expression of freedom and quality of life, and as a prerequisite for economic wealth and growth. Human and social behaviour are considered an important part of a road safety culture (road users should behave more responsibly and less aggressively, and have respect for more vulnerable road users).

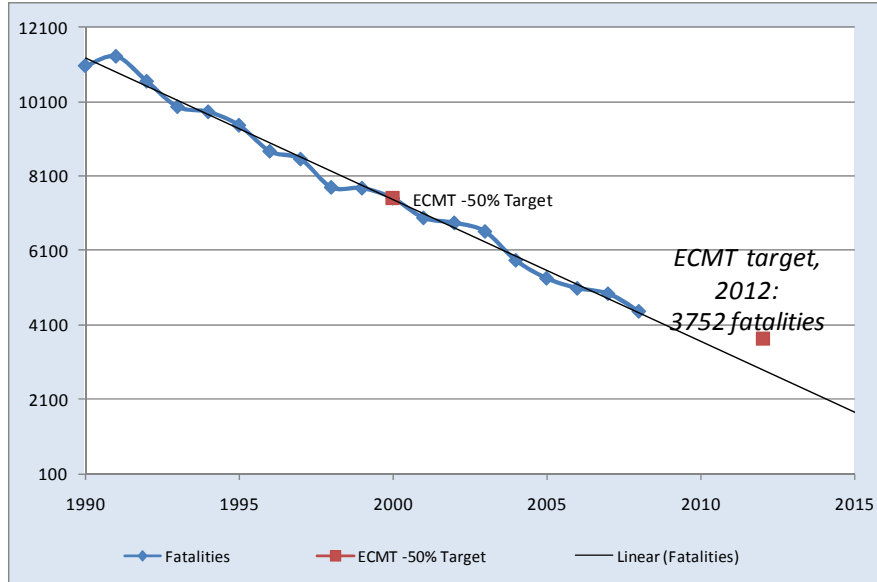
The Federal Ministry of Transport, Building and Urban Affairs has identified the following priorities:

- to improve the transport climate in Germany (e.g. aggressiveness)
- to protect vulnerable road users (children and the elderly, pedestrians, cyclists and motorcyclists).
- to reduce accident risk among young drivers
- to reduce the potential danger of heavy goods vehicles
- to improve road safety of rural (interurban) main roads

Progress towards targets

Germany made a good contribution to the overall ECMT target to reduce by 50% the number of fatalities between 2000 and 2012.

Figure 4. Trend in progress towards road safety target



## 6. Recent safety measures (2007-2009)

The Programme for more safety in road transport, launched in 2001 and still vital, has been a good basis for a positive decade of road safety development on German roads.

The success of the programme is a good example of efficient road safety work without setting a specific numeric target. Regarding recent road safety development, Germany benefits from an excellent road network with over 12,000 km of highways, which are among the safest roads worldwide without a general speed limit; an optimised legal framework with a highly sophisticated penalty point system; and impressive progress in passive safety technology, as well as, increasingly, active safety as the vehicle industry strives to meet customer demand.

In recent years further promising measures that have been introduced include:

- spending more than EUR 9 billion to build more than 900 km of new highways since 2001
- reducing the legal BAC limit from 0.08% to 0.05% and to zero for novice drivers
- increasing sanctions for main offences
- introducing accompanied driving in all Lander (which is currently under evaluation)
- recommending the application of day-time-running lights
- carrying out nation-wide safety campaigns (“Gelassen läuft” and “Runter vom Gas”)
- ESP has been introduced broadly in the vehicle fleet while other active safety systems like ACC are at the edge of a countable market penetration

## 7. References – Useful websites

Federal Ministry of Transport, Building and Urban Affairs	<a href="http://www.bmvbs.de/">http://www.bmvbs.de/</a>
Federal Highway Research Institute	<a href="http://www.bast.de/">http://www.bast.de/</a>
German Federal Statistical Office	<a href="http://www.destatis.de/">http://www.destatis.de/</a>
German Road Safety Council e.V.	<a href="http://www.dvr.de/">http://www.dvr.de/</a>

# GREECE<sup>1</sup>

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## 1. General comments on trends for 2008

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In 2008, Greece saw a 3.7 % reduction in fatalities compared to 2007. In addition, the number of road crashes decreased by 2.7%, despite an overall increase in the number of motor vehicles (+4.7%). The decrease in the number of road accident fatalities observed in 2008 may be partly attributed to the petrol and economic crises and their impact on traffic volumes.

## 2. Long term trends

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### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Since 1970, the number of vehicles has increased very rapidly, multiplying by nearly 20 between 1970 and 2008. The increase in motorisation has continued, with the number of motorised vehicles almost tripling since 1990.

In this context the level of road safety deteriorated significantly from 1970 to 1995 (+119%), when it reached a peak with 2 411 road deaths.

Between 1995 and 2008, Greece observed a sharp decrease in fatalities (-36%). This decrease is mainly attributed to the enforcement intensification, implemented within the first road safety strategic plan (2001-2005), but also to a significant traffic flow increase (and subsequent average speed decrease) in the urban and interurban road network of Greece, due to a sizeable increase in vehicle ownership.

However, the fatality decrease has clearly decelerated after 2004, indicating that further measures of a more integrated nature are required.

During the last decade, Greece has shown the lowest level of road safety (highest fatalities rate) among the 15 older European Union (EU) countries, and one of the lowest levels among the 27 EU countries, reflecting insufficient effort from both the Authorities and the citizens. The fatality rate (deaths per 10 000 vehicles) in Greece over the last ten years has progressively decreased, from 5.7 in 1996 (2.6 in the EU 27) to 2.3 in 2006 (1.5 in the EU 27), highlighting the vast potential for further improvement if a more systematic effort is made. In addition, account should be taken of the successful practices of other European countries which have shown significant improvement.

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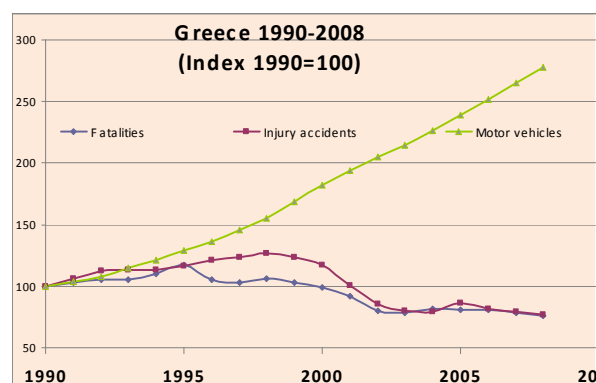
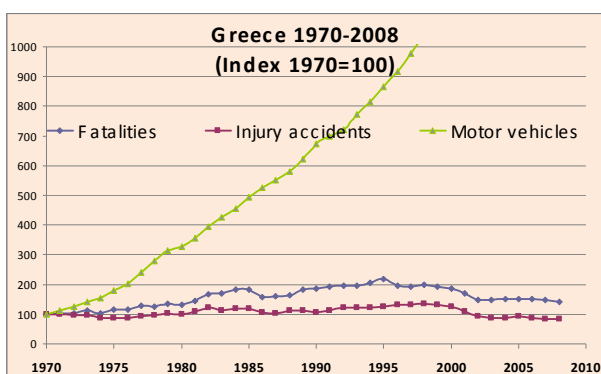
1. Source: IRTAD and National Technical University of Athens (NTUA).



Table 1. Number of road fatalities and injury crashes  
1970-2008

	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	% change over		
												2007-08	2000-08	1970-2008
Fatalities	1 099	2 050	2 037	1 880	1 634	1 605	1 670	1 658	1 657	1 612	1 553	-3.7	-23.8	41.3
Injury crashes	18 289	19 609	23 001	19 671	16 809	15 751	15 547	16 914	16 019	15 499	15 083	-2.6	-34.4	-17.5

Figure 1. Evolution in numbers of road fatalities, injury crashes, distance travelled and vehicles  
1970-2008



### ❖ Time series for key risk indicators

Table 2. Risk indicators  
1990, 2000, 2008

	1970	1990	2000	2008	% change over	
					2008-2000	2008-1970
Deaths/100 000 population	12.5	20.18	18.68	13.84	-26.0	10.7
Deaths/billion veh-km						
Deaths/10 000 vehicles	26.5	7.4	4.0	2.0	-50.1	-92.4

## 3. Recent development of accident trends

### ❖ Road users

Since the peak in fatalities in the 1995, all road users, with the exception of motorcyclists, have benefited from the overall improvement of road safety.

Between 1990 and 2008, moped riders fatalities decreased by 79%, pedestrian fatalities by 53% and cyclist fatalities by 15%. The number of motorcyclists killed increased by 44%.

Table 3. Fatalities by road user group  
1970, 2000, 2007 and 2008

									% change over		
	1990		2000		2007		2008		2007-08	2000-08	1990-2008
Bicyclists	26	1%	22	1%	16	1%	22	1%	38%	0%	-15%
Mopeds	192	9%	90	4%	43	3%	41	3%	- 5%	- 54%	- 79%
Motorcycles and scooters	274	13%	412	20%	426	26%	394	25%	- 8%	-4%	44%
Car occupants	712	35%	891	44%	769	48%	708	46%	- 8%	-21%	-1%
Pedestrians	524	26%	375	18%	255	16%	248	16%	- 3%	-34%	-53%
Other	322	16%	247	12%	103	6%	140	9%	36%	-43%	-57%
Total	2 050	100%	2 037	100%	1 612	100%	1 553	100%	- 4%	-24%	-24%

Figure 2 illustrates the relative evolution in the number of motorised two wheelers killed and the number of motorised two wheelers in traffic. Since 1990, the number of motorcycles has been multiplied by more than 6, which of course explains in part the 28% in the number of motorcyclists killed. Since 1995, the number of moped riders killed dropped significantly (-79%), while the number of mopeds in traffic continued to increase.

Figure 2. Relative evolution of the number of motorised two-wheelers in traffic and the number of moped riders and motorcyclists killed in traffic

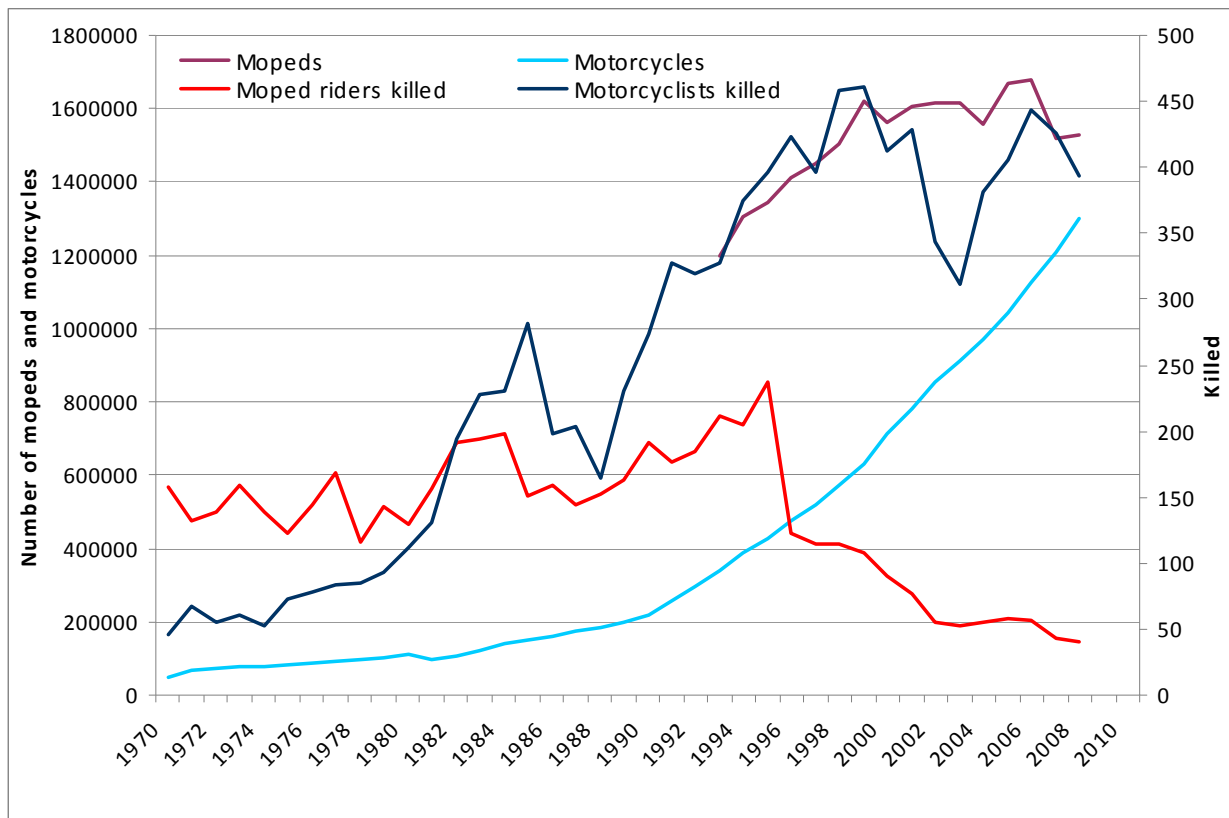


Table 4 illustrates the relative fatality risk for the different road user groups. For a motorcyclist, the risk of dying in a traffic crash is 10 times higher than that for a car occupant.

Table 4. **Relative fatality risk by road user group**  
**2004**

	Deaths per billion vehicle/km
<b>Mopeds</b>	34
<b>Motorcycles</b>	67
<b>Car occupants</b>	6.9

❖ **Age groups**

Since the peak in 1995, all age groups have benefited from a decrease in fatalities, with best achievements for the 6-9 and 10-14 age group (respectively -88% and -67% decrease between 1990 and 2008).

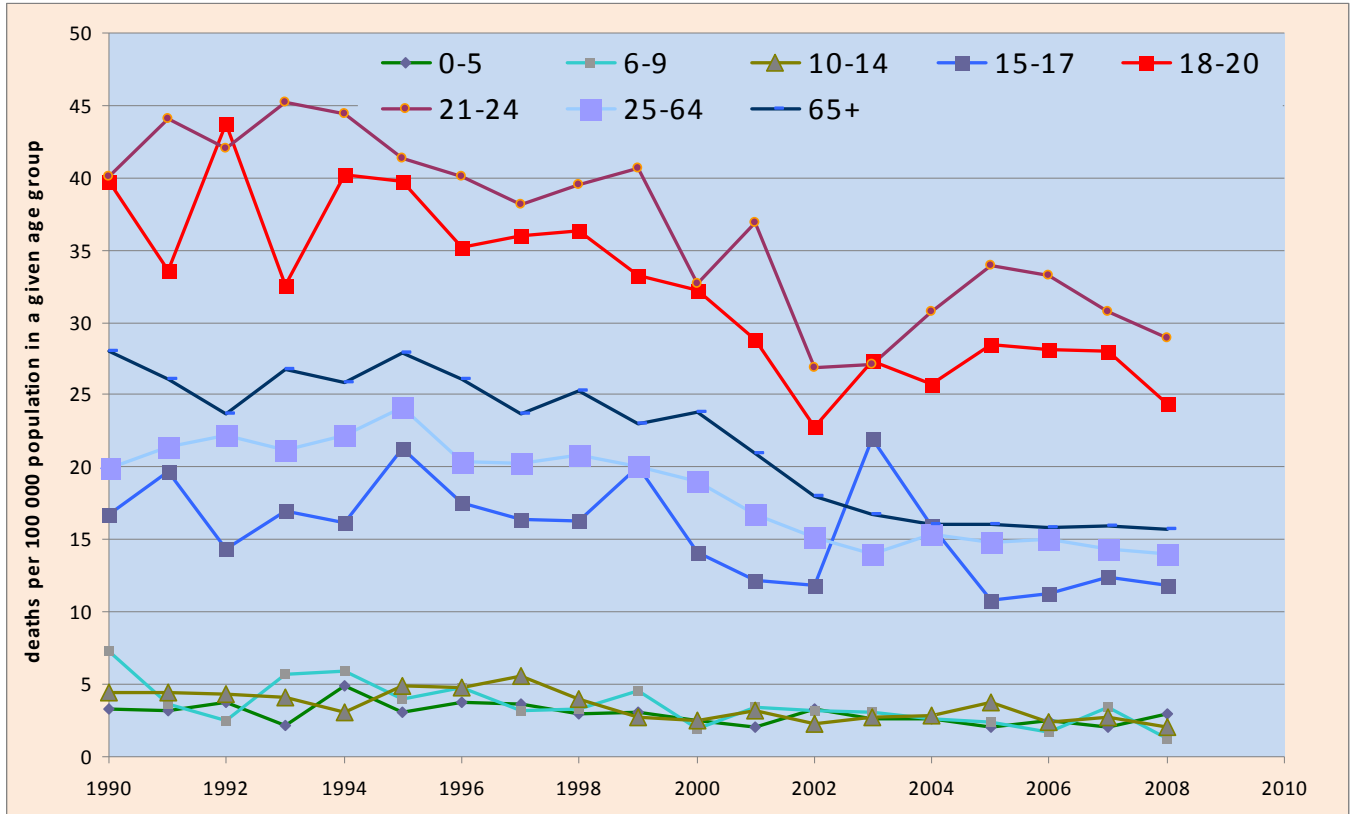
Between 2000 and 2008, only the 0-5 age group shows an increase in the number of fatalities (+19%). In 2008, there was a 46% increase in the number of children killed within this group.

Table 5. **Fatalities by age group**

						% change over		
	1980	1990	2000	2007	2008	2007-2008	2000-2008	1990-2008
<b>0-5</b>	47	22	16	13	19	46%	19%	-14%
<b>6-9</b>	24	40	9	14	5	-64%	-44%	-88%
<b>10-14</b>	31	33	15	15	11	-27%	-27%	-67%
<b>15-17</b>	51	76	60	43	41	-5%	-32%	-46%
<b>18-20</b>	125	183	156	103	87	-16%	-44%	-52%
<b>21-24</b>	145	249	219	177	159	-10%	-27%	-36%
<b>25-64</b>	734	1 051	1 107	892	879	-1%	-21%	-16%
<b>&gt;65</b>	278	392	428	330	329	0%	-23%	-16%
<b>Total</b>	1 446	2 050	2 037	1 612	1 553	-4%	-24%	-24%

The age groups the most at risks are the young people (18-24), who have a fatality risk twice as high as the general population (see figure 3).

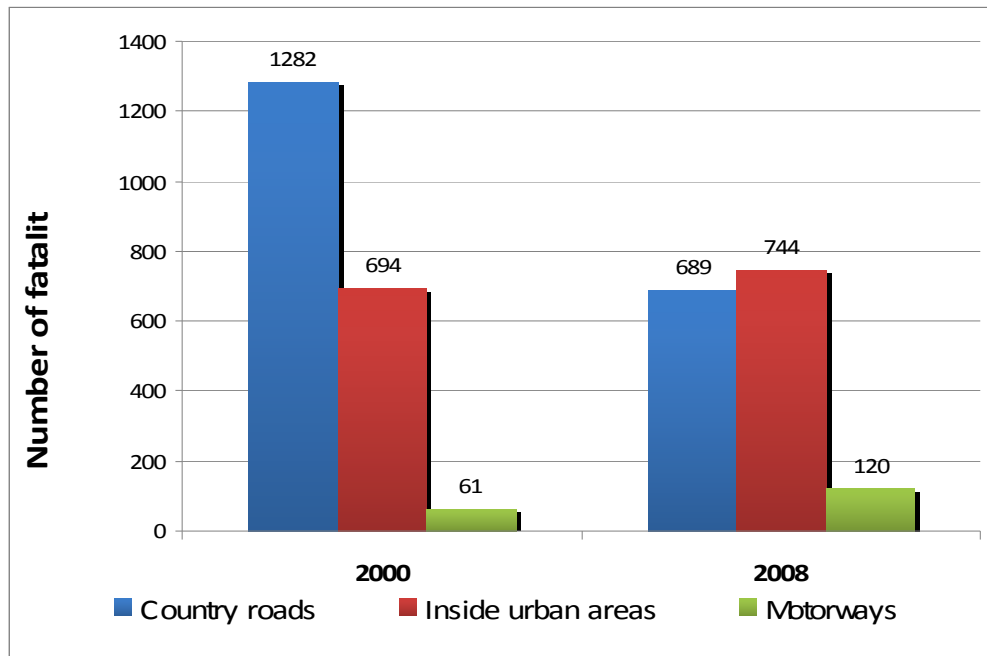
Figure 3. Evolution of fatality risks by age group (deaths per 100 000 population in a given group) 1990-2008



❖ Accident locations

In 2008, 44% of fatal crashes occurred on rural roads, 48% in urban areas and 8% on motorways (Figure 4). More than 75% of injury crashes occurred in built up areas and accident severity is almost 5 times higher for the road network outside urban areas. This is mainly explained by the higher speeds observed in the interurban road network.

Figure 4. Fatalities by type of road  
2000 and 2008



Since 2000, most improvements occurred on the rural network, with almost 1 000 kms of the national interurban network upgraded to motorways.

The significant increase in fatalities on the motorways network since 2000 can be explained mainly by the expansion of the motorways' network.

Table 6. Fatalities by type of road

	2000	2007	2008	% change over	
				2008-2007	2008-2000
Rural roads	1 282	748	689	-8%	-46%
Inside urban areas	694	724	744	3%	7%
Motorways	61	140	120	-14%	97%

#### 4. Recent development of driving behaviour

##### ❖ Drink driving

According to the Greek Road Code, the maximum permissible BAC is 0.5 g/l, when it is measured by blood sample, and 0.25 mg/l when measured by breath testing.

Since 2007, a lower limit (0.2 g/ l) applies to professional drivers (heavy goods vehicles, school buses and coaches), motorcycles and moped riders.

The percentage of fatal crashes involving a driver with a BAC above the limit is not accurately recorded. However analysis done for the period 2000 – 2008, using the induced exposure technique, revealed that the accident risk for drivers under the influence of alcohol is 2.4 times higher than the risk for other drivers.

## ❖ Speed

Speeding is perhaps the most critical factor for road accidents in Greece. Speeding enforcement varied during the last decade, with a direct impact on the progress of road safety trends in Greece, as borne out by related research.

## ❖ Seat belts and helmets

Seat belt use has been compulsory in front seats since 1987, and in rear seats since 2003. The rate of seat belt use is 77% for the driver, 74% for the front passenger, and only 23% for rear seat passengers. The percentage of use of seat belts by drivers is 72% in urban areas, 78% on rural roads, and 95% on motorways. The available seat belt usage rates are presented in Table 7.

Table 7. **Seat belt use for car occupants**  
**2009**

	<b>2009</b>
General	72%
<i>Rear seat</i>	23%
<i>Front seat</i>	75%
Motorways - driver	95%
Rural roads - driver	78%
Urban areas - driver	72%

Helmet wearing is compulsory for all motorcycles and moped riders. The wearing rate is 75% for drivers and 46% for passengers. The percentage of helmet use by drivers is 73% in urban areas, 85% on rural roads, and 98% on motorways.

## 5. National road safety strategies and targets

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### ❖ National road safety strategies

The first national road safety plan covered the period 2001-2005. Its implementation has contributed to a significant decrease in the number of road accidents and related casualties in Greece.

The second national road safety strategic plan (2006-2010) consolidated the knowledge gained from implementation of the first strategic plan and proposes to achieve the European target of a 50% reduction in road fatalities by 2010 (in relation to 2000 figures). With that purpose, a set of 50 priority measures were proposed, with some already implemented, focussing mainly on:

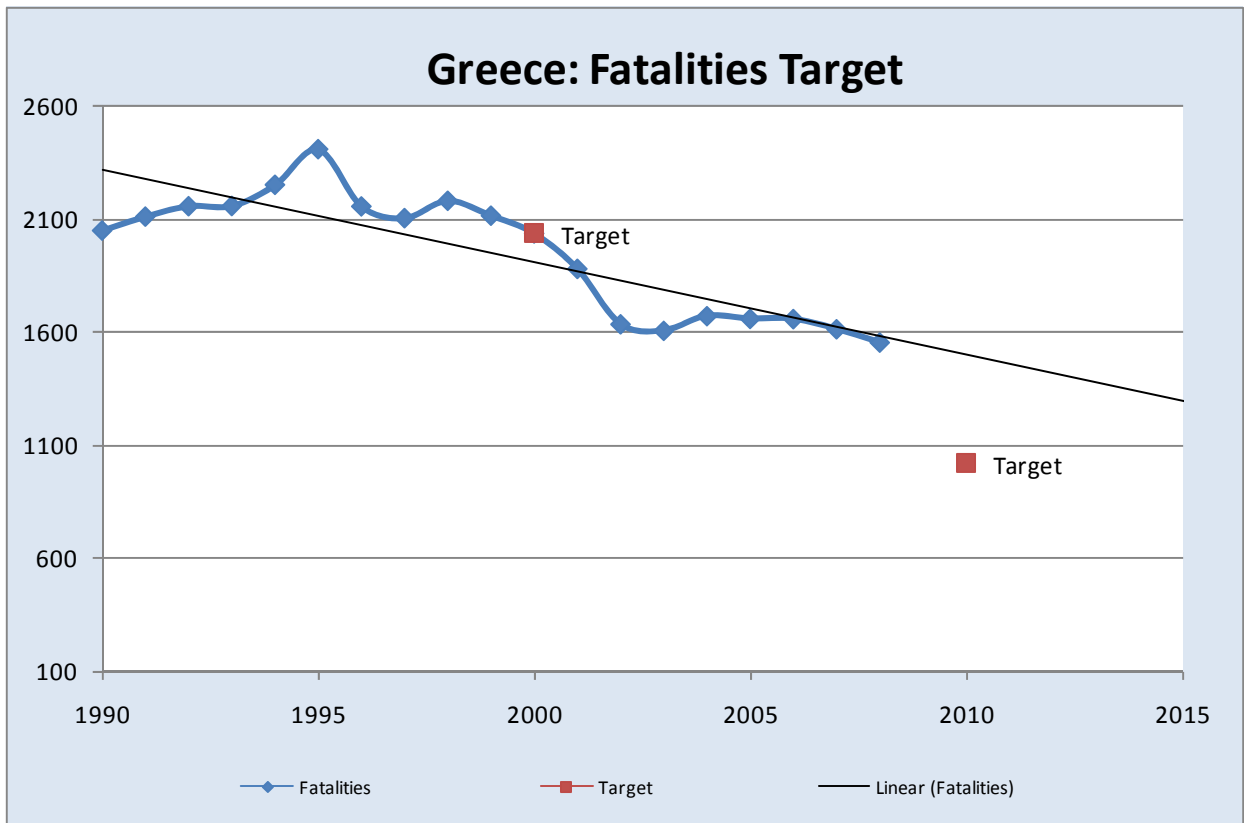
- The intensification of road safety enforcement (mainly speeding, drinking and driving, and use of seatbelts and helmets).
- A large programme of maintenance and road safety interventions on the interurban road infrastructure.
- An important programme of motorway development, totalling 2 500 kms of motorways (total length in 2005 was 868 kms).
- A more modern and stricter Road Code (already in force since June 2007).
- Frequent and targeted road safety education and information campaigns.

The low level of road safety in Greece, together with the significant reduction of road casualties during the last decade, indicates that there is great potential for further improvement. The consistent and continuous implementation of priority measures by all parties involved is not only a tool for the achievement of the European and national targets, but also a challenge for citizens and the Authorities to work together for a significant improvement on the current level of road safety in Greece.

❖ **Safety targets and sub-targets**

The second national road safety plan set a target to reduce the number of road fatalities by 50% between 2000 and 2010 (in line with the EU Target). Alignment to the European targets and sub-targets will be considered in the next national road safety strategic plan (2010 - 2020).

Figure 5. **Trend in progress towards road fatality target**



6. Recent safety measures (2007-2009)

A number of road safety measures of national, regional and local nature are implemented, covering traffic regulations, infrastructure improvements, behaviour enforcement, etc. However no inventory is kept and evaluation of these measures are rarely carried out.

## 7. Major recent or ongoing research (2007-2009)

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The Greek road safety research organisations participate in several national, European and international research projects covering most areas of road safety research. The research results are then used by the various Authorities to support road safety decision making at strategic, tactical and operational level.

## 8. References – Useful websites and references

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<b>National Statistical Service of Greece</b>	<a href="http://www.statistics.gr">www.statistics.gr</a>
<b>Ministry of Infrastructure, Transport and Networks</b>	<a href="http://www.yme.gr">www.yme.gr</a>
<b>National Technical University of Athens</b>	<a href="http://www.ntua.gr">www.ntua.gr</a>
<b>Road Safety Institute Panos Mylonas</b>	<a href="http://www.ioas.gr">www.ioas.gr</a>



# HUNGARY<sup>1</sup>

## 1. General comments on trends for 2008

After several years of stagnation in the number of road traffic casualties, 2008 was marked by a significant decrease in fatalities (-17%) and injury crashes (-10%). These good results are the fruit of the implementation of stringent safety measures, including the increased number of speed cameras, the “zero tolerance” approach to drink driving and further development of the demerit point system.

Preliminary data for 2009 show a continuous slight decrease in the number of fatalities.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Between 1970 and 2008, the number of fatalities decreased by 39% and the number of injury crashes by 17%. In the same period, the number of vehicles and the distance travelled (vehicle-kilometres) was multiplied by four. In recent years (2000-2008), the number of casualties was stable until 2008, which saw a significant improvement.

Table 1. Number of road fatalities and injury crashes, 1970-2008

												% change over		
	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	2007-08	2000-08	1970-2008
Fatalities	1627	2432	1200	1239	1429	1326	1296	1278	1303	1232	996	-19%	-17%	-39%
Injury crashes	23225	27801	17493	18505	19686	19976	20957	20777	20977	20635	19174	-7%	-10%	-17%

The history of Hungarian road safety can be divided into five periods:

**1976-1986:** Relatively stable period. The 30-day definition of road accident victims was introduced in 1976.

**1987-1990:** Rapid deterioration, similar in all countries where the political social and economic system changed following the collapse of the Soviet Block. This political change was accompanied by negative side effects for road safety due to weak police control, false interpretation of freedom, explosions in the vehicle fleet, etc.); 1990 was the worst year for Hungarian road safety with nearly 2 500 people killed.

**1991-2000:** Important improvement and major initiatives:

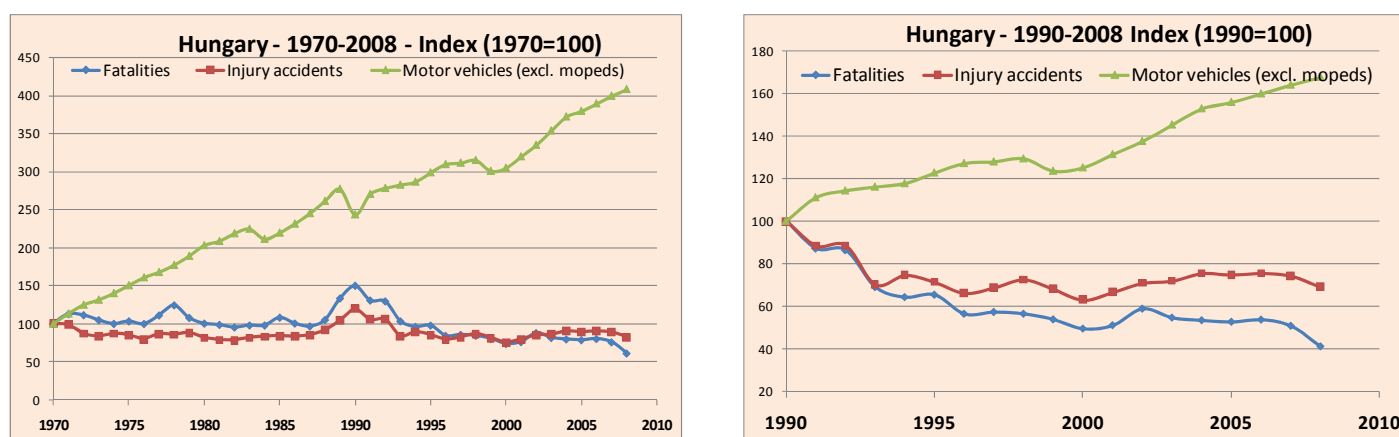
- 1993: adoption of the first Hungarian National Road Safety programme with a quantitative target. Consistent road safety measures were implemented: speed limit reduction inside built-up areas, use of daytime running lamps outside built-up areas, intensified police control and road safety campaigns, more severe sanctions, etc.

1 . Source: IRTAD, KTI (Institut for Transport Sciences).

- 2000 was the best year until 2008, with 1 200 people killed. (More than 50% reduction in the number of people killed since 1990.) Some demographic and economic factors influence the positive trend. (Decrease in the number of young novice drivers and increase in vehicle operation costs.)
- 2001-2006: Deterioration, mainly outside built-up areas. In 2001 the speed limits outside built-up areas were raised. The level of police enforcement is insufficient, as are the organisation and funding of road safety activities.

**2007-2008.** After several years of increasing road fatalities, 2007 performance was back to the level of 2000. In 2008, a remarkable decrease occurred, and the lowest level of road fatalities was reached, with fewer than 1 000 fatalities.

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008



### ❖ Time series for key risk indicators

Between 1990 and 2008 the mortality rate, expressed in terms of deaths per 100 000 population, decreased by 57%.

Table 2. Risk indicators 1980, 1990, 2000, 2007

	1970	1990	2000	2008	Change over	
					2000-2008	1990-2008
Deaths/100 000 population	15.78	23.44	11.76	9.93	-16%	-57%
Deaths/10 000 vehicles			4.23	2.70	-36%	

## 3. Recent development of accident trends

### ❖ Road users

All user groups have benefited from the important safety improvement since 1990 (when fatalities peaked), with the largest benefits for moped riders (-73%), pedestrians (-69%) and bicyclists (-65%). Improvement was slower for motorcyclists. The benefit to mopeds has to be analysed in conjunction with the relative evolution of mopeds and motorcycles in traffic.

In 2008, the user group that benefited most from safety improvement was cyclists (-31%).

Table 3. Fatalities by road user group  
1990, 2000, 2007 and 2008

									% change over		
	1990		2000		2007		2008		2007-2008	2000-2008	1990-2008
<b>Bicyclists</b>	313	13%	182	15%	158	13%	109	11%	-31%	-40%	-65%
<b>Mopeds</b>	95	4%	33	3%	31	3%	26	3%	-16%	-21%	-73%
<b>Motorcycles and scooters</b>	143	6%	52	4%	112	9%	91	9%	-19%	75%	-36%
<b>Passenger cars</b>	974	40%	500	42%	555	45%	448	45%	-19%	-10%	-54%
<b>Pedestrians</b>	803	33%	346	29%	288	23%	251	25%	-13%	-27%	-69%
<b>Others</b>	104	4%	87	7%	88	7%	71	7%	-19%	-18%	-32%
<b>Total</b>	2 432	100%	1 200	100%	1 232	100%	996	100%	-19%	-17%	-59%

#### ❖ Age groups

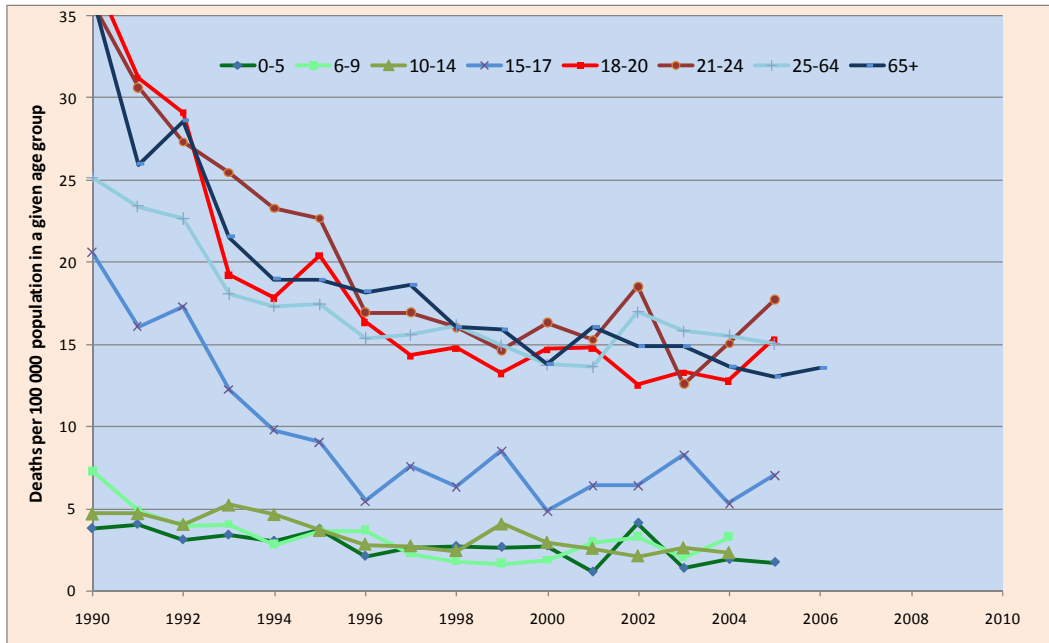
Since 1990, the reduction in fatalities has benefited all age groups, but the most impressive reduction concerned the youngest children (0-5), for whom fatalities decreased by 75%, as well as the 18-20 group, in which fatalities decreased by 77%.

In 2008, safety improvements benefited all age groups except the 15- to 17-year-olds.

Table 4. Reported fatalities by age group

					% change over		
	1990	2000	2007	2008	2007-2008	2000-2008	1990-2008
<b>0-5</b>	28	17	11	7	-36%	-59%	-75%
<b>6-9</b>	39	9	26	18	-31%	100%	-54%
<b>10-14</b>	40	18	16	11	-31%	-39%	-73%
<b>15-17</b>	99	18	30	32	7%	78%	-68%
<b>18-20</b>	162	64	46	37	-20%	-42%	-77%
<b>21-24</b>	191	114	93	66	-29%	-42%	-65%
<b>25-64</b>	1 365	736	805	644	-20%	-13%	-53%
<b>&gt;65</b>	498	203	209	179	-14%	-12%	-64%
<b>Total</b>	2 432	1 200	1 232	996	-19%	-17%	-59%

Figure 2. Evolution of fatality risks by age group  
(deaths per 100 000 population in a given group)  
1990-2008



❖ Accident locations

In 2008, 53% of fatal crashes occurred on rural roads, 42% in urban areas and 5% on motorways (Figure 3). Since 1980, the greatest reduction in fatalities has occurred in urban areas. The number of fatalities on rural roads significantly increased in 2001 following the increase in speed limits from 80 km/h to 90 km/h.

Figure 3. Reported fatalities by type of road  
1989, 2000, 2002 and 2008

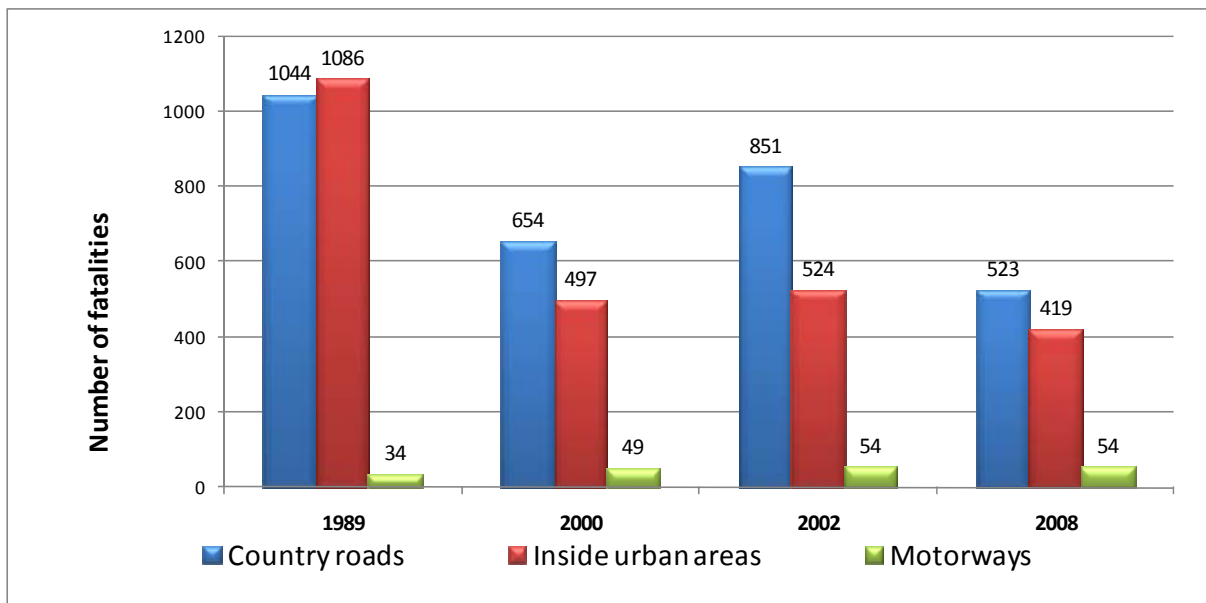


Table 5. **Reported fatalities by type of road**

					% change over		
	1989	2000	2007	2008	2007-2008	2000-2008	1989-2008
<b>Country roads</b>	1044	654	666	523	-21%	-20%	-50%
<b>Inside urban areas</b>	1086	497	505	419	-17%	-16%	-61%
<b>Motorways</b>	34	49	61	54	-11%	10%	59%

#### 4. Recent development of driving behaviour

##### ❖ Drink driving

In Hungary, drivers must not drive under the influence of alcohol. The theoretical maximum BAC is 0.0 g/l. In practice, drivers are convicted if their BAC is above 0.2 g/l: their licence is withdrawn on the spot. In 2008, it was estimated that 12% of fatal crashes involved drivers with a BAC above 0.2 g/l.

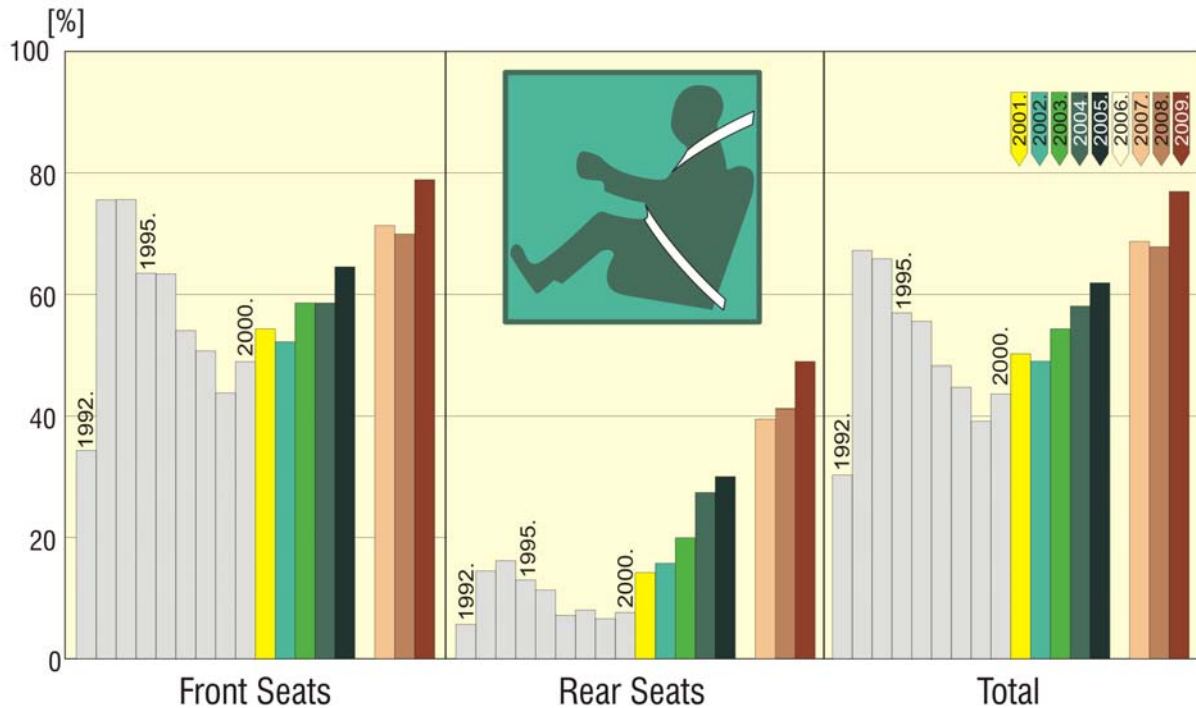
##### ❖ Speed

Speeding is a causation factor in around 40% of fatal crashes. Automatic speed cameras are being introduced.

##### ❖ Seat belts and helmets

Seat belt use has been compulsory in front seats since 1976 and in rear seats since 1993 outside built-up areas and 2001 inside built-up areas. Figure 4 shows the evolution in seat belt usage rates between 1992 and 2009. In 2009, the rate was 79% for front seat occupants and 50% for rear seat occupants, which is low in comparison to other countries.

Figure 4. Evolution in seat belt use for car occupants outside built-up areas



Helmet wearing has been compulsory since 1965 for motorcyclists, since 1997 for mopeds riders outside built-up areas and since 1998 for moped riders inside built-up areas.

The compliance rate by motorcyclists is nearly 100%.

## 5. National road safety strategies and targets

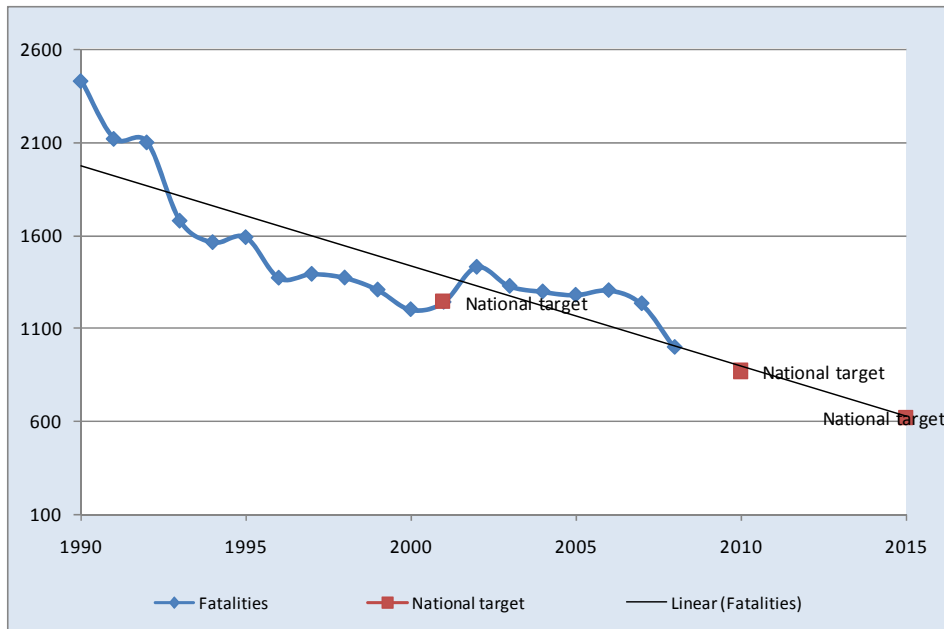
**The Road Safety Action Programme for 2008-2010** is a three-year project for road safety improvement. On the basis of the Action Programme a yearly action plan has to be elaborated for the content and schedule of road safety work in the relevant year. The programme was prepared in accordance with relevant EU directives and strategic documents, as well as with national concepts and sector strategies approved or under implementation.

In 2002, Hungary adopted the following targets (base year 2001):

- -30% fatalities by 2010 and -50% fatalities by 2015
- -30% injury accidents by 2010 and -50% injury accidents by 2015.

Figure 5 illustrates the trend in progress towards the fatality target.

Figure 5. Trend in progress towards road fatality target



## 6. Recent safety measures (2007-2009)

### ❖ Speed

- The number of automatic speed cameras is increasing progressively. The most important legal prerequisite for their use was the introduction of owner responsibility (i.e. the owner of a vehicle is responsible for the offences caused by the vehicle). This rule was introduced on 1 January 2008 and entered into force on 1 May 2008.

### ❖ Drink driving

- On 20 January 2008, the so-called “zero tolerance” rule against drinking and driving entered into force. It means that the driving licence can be withdrawn on the spot if the driver is under the influence of alcohol (even a small amount of alcohol).

### ❖ Enforcement

- **More severe sanctions.** From 1 August 2009 some sanctions became more severe. The penalties for not wearing the safety belt, not using the child restraint system (CRS) or using a hand-held mobile phone while driving have been significantly increased. For example, the penalty for using a hand-held mobile phone while driving is HUF 10 000 inside built-up areas (ca. EUR 40), HUF 15 000 outside built-up areas (ca. EUR 60) and HUF 20 000 on motorways (ca. EUR 80). The penalties for not using CRS are HUF 15 000, HUF 30 000 or HUF 45 000 and those for not using the safety belt or safety helmet are HUF 10 000, HUF 20 000 or HUF 30 000, depending on road category. The increases could be useful from the point of view of road safety, but could also be problematic, as higher penalties will be imposed without demerit points.
- **Development of the demerit point system.** Since January 2008, the system has been stricter, with the risk of losing more points for an offence.

## 7. Major recent or ongoing research (2007-2009)

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- Hollo (2007). **Determination of a mid-term transport strategy concept for the period 2007–2010, working out affectivity studies, and ensuring a background of experts.**  
*The mid-term transport strategy concept contains action plans for influencing peoples' behaviour in transport, for infrastructure development, for the enhancement of technical safety of vehicles, for the modernisation of legal and organisational regulations and for a successful search and rescue. The annex of the study gives a detailed overview of traffic safety in Hungary over the past 30 years.*
- Gabor (2007). **Analysis of the effects of mobile phone use during driving on national road networks and the accident risks applying to traffic conflict technique.**
- Hoz (2007). **Analysis of accidental risks, reasons and chances of survival of road users.**
- Berta (2007). **Analysing the accuracy of the installed laser heads of speedometers on motorways with reference measuring on the given motorway section.**

## 8. References – Useful websites and references

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KTI – Institute for Transport Sciences	<a href="http://WWW.KTI.HU">WWW.KTI.HU</a>
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# ICELAND<sup>1</sup>

## 1. General comments on trends for 2008

In 2008, there were 12 persons killed in road traffic, 3 less than in 2007.

## 2. Long term trends

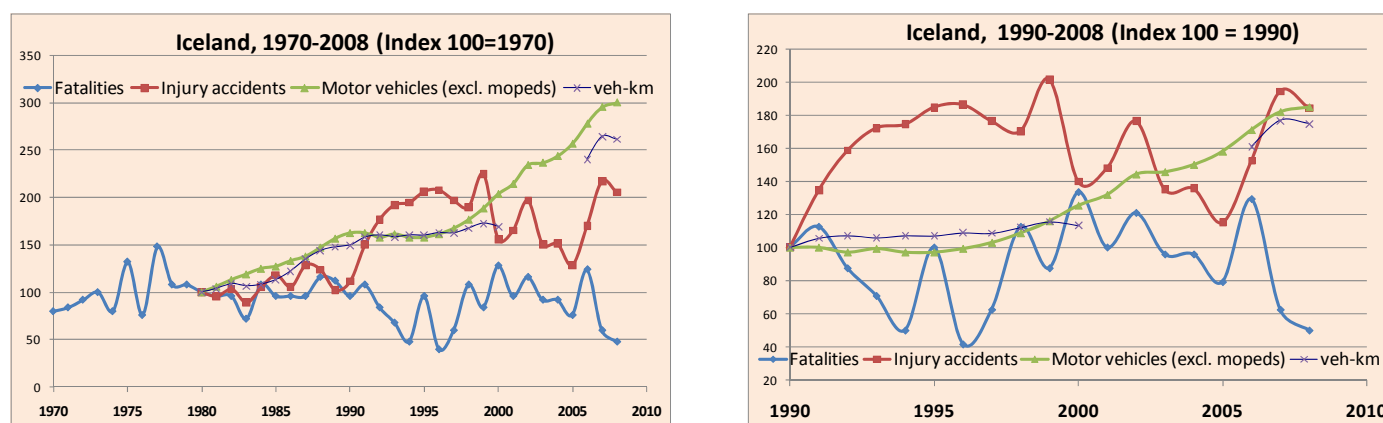
### ❖ Evolution in numbers of fatalities and injury crashes

Table 1. Number of road fatalities and injury crashes, 1970-2008

	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	% change over		
												2007-2008	2000-2008	1970-2008
Fatalities	20	24	32	24	29	23	23	19	31	15	12	<i>Figures too small</i>		
Injury crashes			815	862	1027	787	790	671	887	1132	1073	-5%	+39%	

Iceland reached the maximum number of killed in 1977 with 37 fatalities.

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008



### ❖ Time series for key risk indicators

In 2008, the mortality rate (expressed in terms of deaths per 100 000 population) was 3.8.

1. Source : IRTAD ; Icelandic Road Administration

Table 2. Risk indicators 1970, 2000, 2008

	1970	2000	2008
Deaths/100 000 population	9.8	11.47	3.8

### 3. Recent development of accident trends

#### ❖ Road users

In Iceland, most of the victims are occupants of passenger cars.

Table 3. Fatalities by road user group 2000, 2007 and 2008

	2000	2007	2008
Bicyclists	0	0	0
Mopeds	0	0	0
Motorcycles and scooters	1	3	1
Passenger cars	25	11	10
Pedestrians	1	1	0
Others	5	0	1
<b>total</b>	<b>32</b>	<b>15</b>	<b>12</b>

#### ❖ Age groups

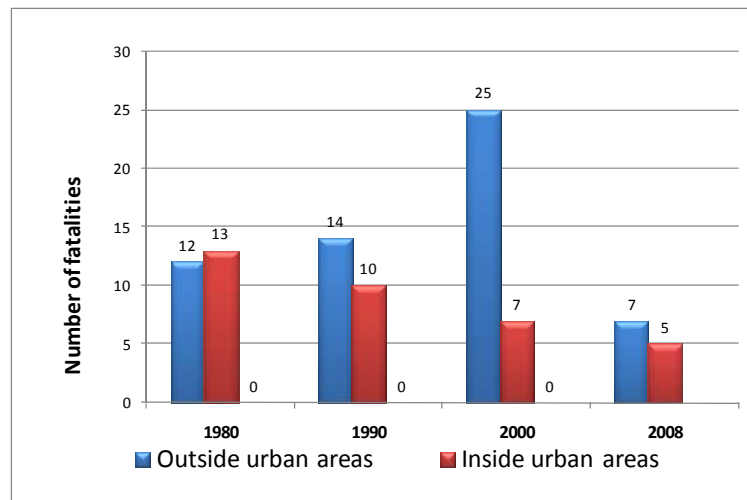
Table 4 shows a breakdown of fatalities by age group.

Table 4. Reported fatalities by age group

	2000	2007	2008
0-5	0	1	0
6-9	0	0	0
10-14	0	0	0
15-17	5	0	0
18-20	4	1	2
21-24	1	1	1
25-64	16	9	5
>65	6	3	4
<b>Total</b>	<b>32</b>	<b>15</b>	<b>12</b>

#### ❖ Accident locations

Figure 2. **Reported fatalities by type of road**  
**1980, 1990, 2000 and 2008**



#### 4. Recent development of driving behaviour

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##### ❖ Drink driving

The maximum authorized blood alcohol content is 0.5 g/l.

##### ❖ Speed

Speed is a big problem on Icelandic roads. There has been an increase in the average speed and the V85-speed in the period 1990-2004.

##### ❖ Seat belts and helmets

It is compulsory, in Iceland, to wear seatbelts in both front and rear seats if they are available. On average, 40% of victims in fatal accidents during the period 1998-2004 were not wearing seatbelts.

Helmet wearing is mandatory for all motorized 2-wheelers, and is compulsory for cyclists up to 14 years of age.

#### 5. National road safety strategies and targets

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In 2005, the Icelandic Parliament agreed upon a new traffic safety plan. The goals and objectives are as follows:

- In 2016, the number of killed in traffic in Iceland per 100 thousand inhabitants shall not be higher than in countries with outstanding traffic safety (e.g. Great Britain, Sweden and Netherlands now have the lowest numbers, i.e. five year average 1999-2003).
- The number of killed and seriously injured in traffic in Iceland shall decrease by 5% on average per year until 2016.

### General road safety targets

Type	Targets (in % or absolute figures)	Base year	Target year	Base year figure	Current results (figure in 2008)
Fatalities per 100 000 population	Not higher than the best performing countries	1999-2003	2016	9.0	3.8
Killed and seriously injured	-5% per year	Average of 1999-2003 for killed, 2003 for seriously injured.	2016	170.8*	

\* *i.e.* 145 (no. of seriously injured in 2003) + 25,8 (the number of killed in 1999-2003 on average)  
When the traffic safety plan was prepared the numbers for the year 2003 were the most recent ones.

# IRELAND<sup>1</sup>

## 1. General comments on trends for 2008

There was a 17% decrease in road fatalities in 2008 compared to 2007: 2008 was the safest year on Ireland's roads since 1959, when safety record-keeping began.

Substantial accident reductions have been recorded in all road user categories, with the highest reduction in pedestrian casualties.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Between 1970 and 2008 the number of fatalities decreased by 48%. In the same period, the number of vehicles on the roads quadrupled.

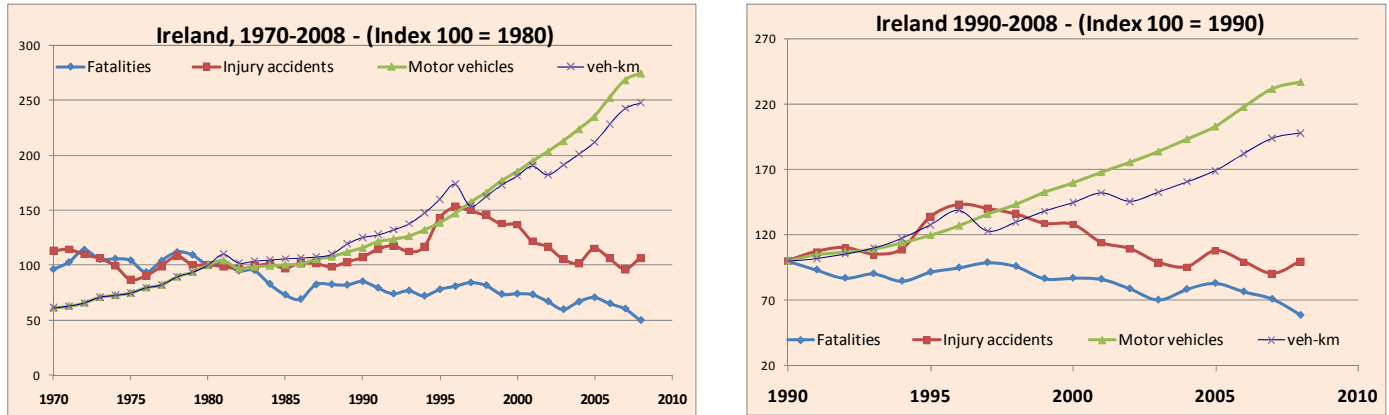
After a peak in 1972 with 640 fatalities, traffic casualties decreased steadily. The rate of improvement increased in the last three years: fatalities decreased by 30% between 2005 and 2008.

Table 1. Number of road fatalities and injury crashes, 1970-2008

												% change over		
	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	2007-2008	2000-2008	1970-2008
Fatalities	540	478	415	411	376	335	374	396	365	338	279	-17%	-33%	-48%
Injury crashes	6 405	6 067	7 757	6 909	6 625	5 985	5 781	6 533	6 018	5 467	6 050	11%	-12%	-6%

1. Source: IRTAD, Irish Road Safety Authority.

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008



#### ❖ Time series for key risk indicators

Between 1970 and 2008 the mortality rate, expressed in terms of deaths per 100 000 population, decreased by 66%. Since 2000, the risk has been more than halved for two risk indicators and almost halved for a third.

Table 2. Risk indicators, 1970, 1980, 2000, 2008

	1970	1980	2000	2008	Change		
					2000-2008	1980-2008	1970-2008
Deaths/100 000 population	18.31	16.58	11	6.3	-43%	-62%	-66%
Deaths/billion veh-km	44.32	28.35	12.6	5.7	-55%	-80%	-87%
Deaths/10 000 vehicles	9.6	5.2	2.5	1.1	-55%	-82%	-88%

### 3. Recent development of accident trends

#### ❖ Road users

All user groups have benefited from the important safety improvements introduced since the 1970s. The apparent increase in car occupant fatalities is related to an increase in car sales, from 711 098 in 1984 to 1 924 281 in 2008. Bicyclists and pedestrians are the groups showing the greatest reduction in fatalities (respectively -77% and -78%).

Table 3. Fatalities by road user group  
1970, 2000, 2007 and 2008

									% change		
	1970		2000		2007		2008		2007-2008	2000-2008	1970-2008
<b>Bicyclists</b>	56	10%	10	2%	15	4%	13	5%	-13%	30%	-77%
<b>Motorised 2-wheelers</b>	53	10%	39	9%	33	10%	29	10%	-12%	-26%	-45%
<b>Car occupants</b>	178	33%	260	63%	171	51%	160	57%	-6%	-38%	-10%
<b>Pedestrians</b>	219	41%	85	20%	81	24%	49	18%	-40%	-42%	-78%
<b>Others</b>	34	6%	21	5%	38	11%	28	10%	-26%	33%	-18%
<b>Total</b>	540	100%	415	100%	338	100%	279	100%	-17%	-33%	-48%

Table 4 illustrates the relative fatality risk for the different road user groups in 2008. For a motorcyclist, the risk of dying in a traffic crash per vehicle kilometres travelled is about 23 times higher than that for a car occupant.

Table 4. Relative fatality risk by road user group

	Fatalities (2008)	Deaths (inside or on the vehicle) per million vehicles	Average kilometrage per vehicle	Deaths (inside or on the vehicle) per billion veh-km
<b>Pedestrians</b>	49	-	-	-
<b>Bicycles</b>	13	-	-	-
<b>Motorcycles</b>	29	736	8 095	91
<b>Car occupants</b>	160	83	18 864	4
<b>Goods vehicles</b>	20	57	27 381	2
<b>Public service Vehicles</b>	0	0	16 942	0

#### ❖ Age groups

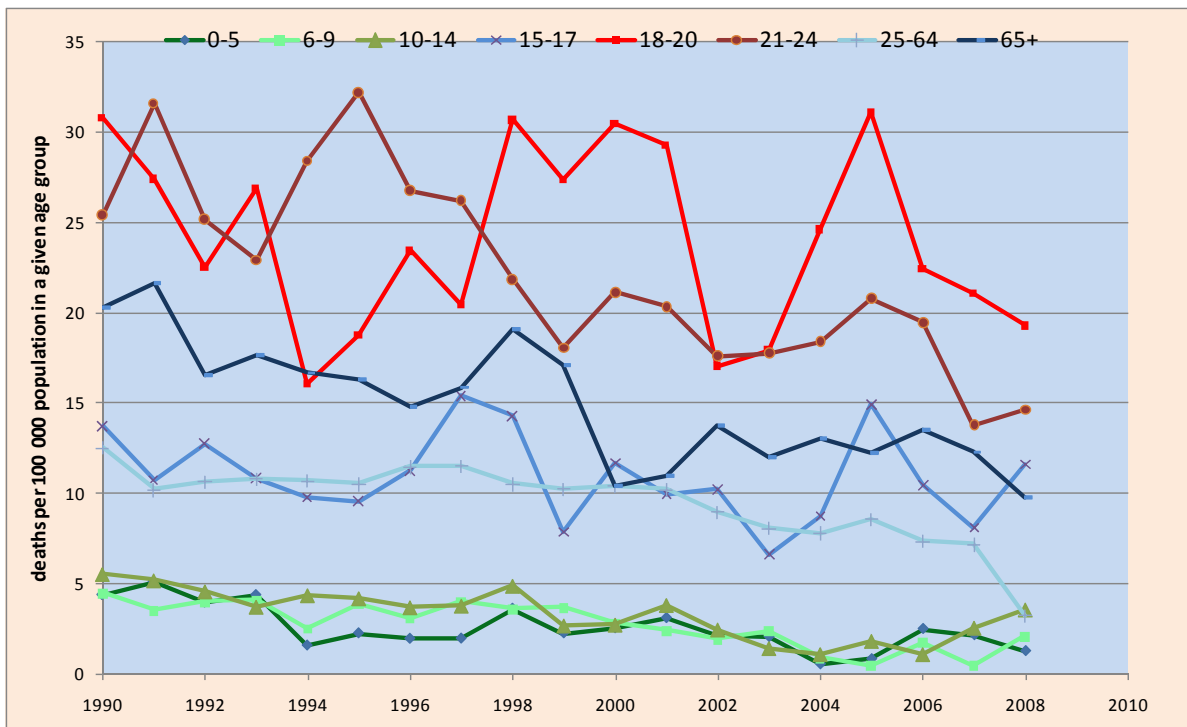
Since 1980, the reduction in fatalities has affected all age groups. The most impressive reduction concerned the youngest age groups: fatalities decreased by 88% for the 0-5 group and 74% for the 6-9 group. Improvements have been less marked for the 21-24 and 25-64 groups.

Young people, especially 18- to 20-year-olds, are still a high risk group in road safety, with a fatality risk three times higher than that of the general population (Figure 2).

Table 5. Reported fatalities by age group

						% change over		
	1980	1990	2000	2007	2008	2008-2007	2008-2000	2008-1980
0-5	40	15	8	8	5	-38%	-38%	-88%
6-9	19	12	6	1	5	400%	-17%	-74%
10-14	21	19	8	7	10	43%	25%	-52%
15-17	33	28	23	14	20	43%	-13%	-39%
18-20	71	56	63	37	33	-11%	-48%	-54%
21-24	51	53	54	39	41	5%	-24%	-20%
25-64	214	195	195	168	155	-8%	-21%	-28%
>65	104	81	44	58	47	-19%	7%	-55%

Figure 2. Evolution of fatality risks by age group (deaths per 100 000 population in a given group) 1990-2008



#### ❖ Accident locations

A large majority of fatal crashes occur on rural roads. In 2008, 71% of fatal crashes occurred on rural roads, 28% in urban areas and 1% on motorways (Figure 3). Since 1980, the greatest reduction in fatalities has occurred on urban roads (-63%).

The small number of fatalities on motorways is due both to the relatively low collision rates on this type of carriageway in general and the underdeveloped motorway network in Ireland.



Figure 3. Reported fatalities by type of road  
1980, 1990, 2000, 2007 and 2008

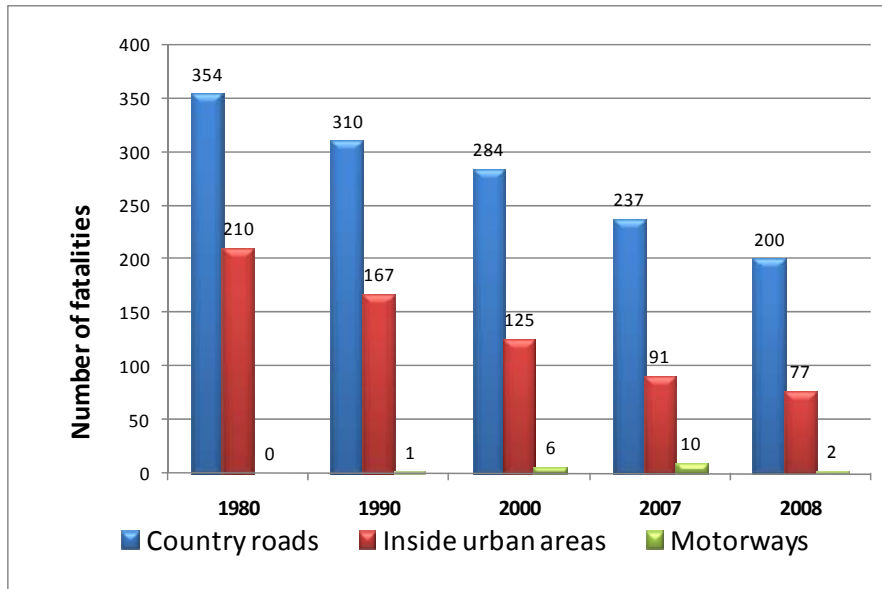


Table 6. Reported fatalities by type of road

	% change over				
	1980	2000	2008	2008-2000	2008-1980
Country roads	354	284	200	-30%	-44%
Inside urban areas	210	125	77	-38%	-63%
Motorways	0	6	2	-67%	n.a.

#### 4. Recent development of driving behaviour

##### ❖ Drink driving

Legislation is currently before the Irish Parliament to reduce the maximum authorised BAC to 0.5 g/l, consistent with the legislation in most EU countries. The proposed legislation will allow for a lower maximum authorised BAC of 0.2 g/l for young drivers and professional drivers. In 2008, it was estimated that drink driving (drivers with a BAC > 0.8 g/l) was responsible for 25% of fatal crashes.

Ireland has introduced mandatory alcohol testing, which allows the police (once authorised by a senior officer) to carry out roadside screening tests on drivers without any previous suspicion of intoxication. This has led to an increased rate of drivers being tested.

##### ❖ Speed

Speeding is a factor in a large number of fatal crashes. Figure 4 illustrates the change in the proportion of car drivers who exceed the posted speed limits. During the last 10 years, the proportion of drivers exceeding the limits has decreased on all types of roads.

Figure 4. Percentage of cars exceeding posted speed limits, 1999-2008

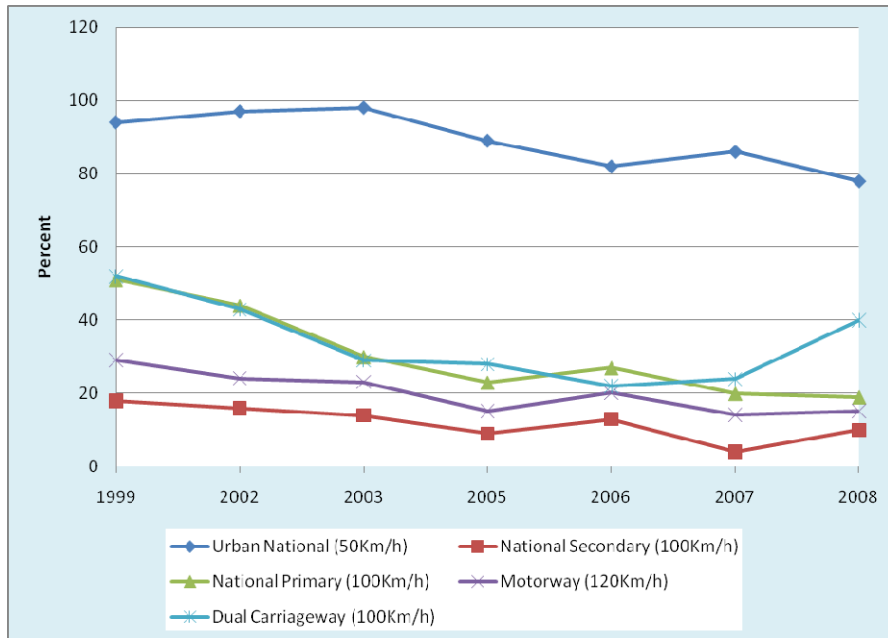


Figure 5. All road collisions in which excessive speed was a contributory factor: percentage of total collisions by type of collision, 1997-2007

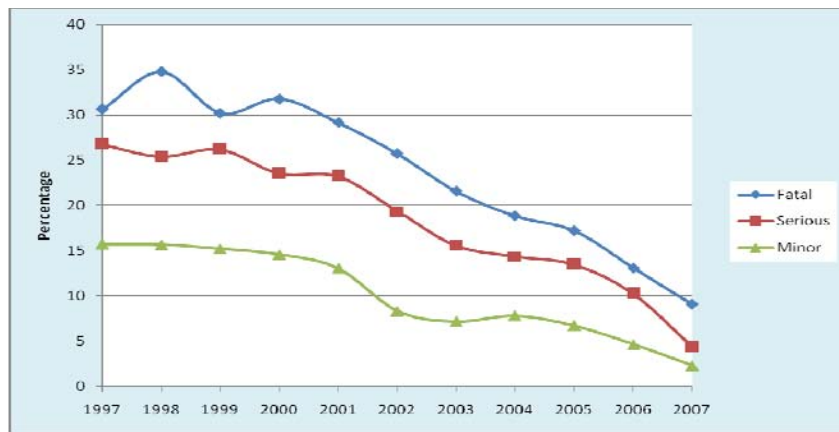
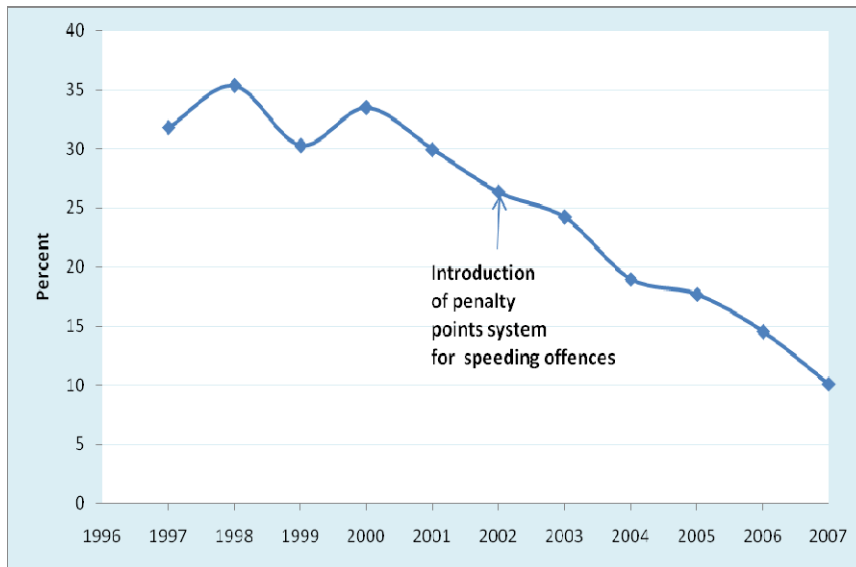


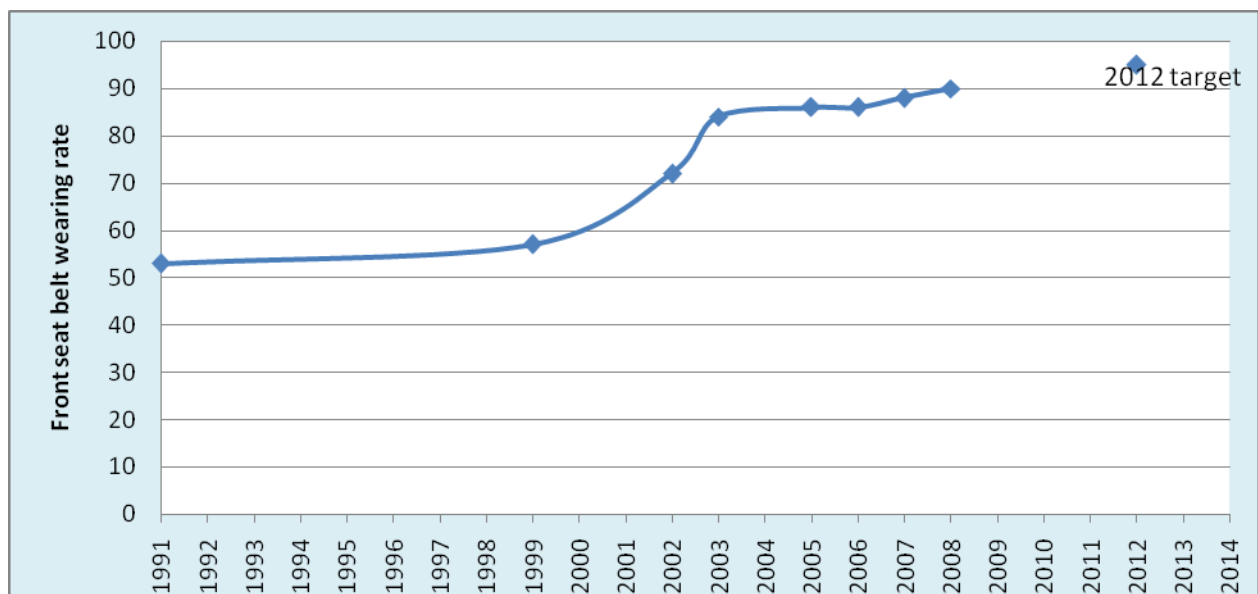
Figure 6. All road deaths in which excessive speed was a contributory factor: percentage of total fatalities, 1997-2007



❖ **Seat belts and helmets**

Seat belt use has been compulsory in front seats and in rear seats since 1979. Front seat safety belt usage rates have increased substantially since the early 1990s, when just over 50% of people used them. This figure increased to 90% in 2008. Figure 7 illustrates the increase in seat belt usage rates over the past 10 years.

Figure 7. Driver and front passenger seat belt usage rates (percentages), 1991-2008



Helmet use is compulsory for all motorcycle and moped riders. The usage rate among motorcyclists in 2008 was around 98.5%. The usage rate among pedal cyclists in 2008 was around 24.6%.

The rate of usage of a high visibility vest or jacket by motorcyclists in 2008 was around 43%, and by pedal cyclists in the same year around 38%.

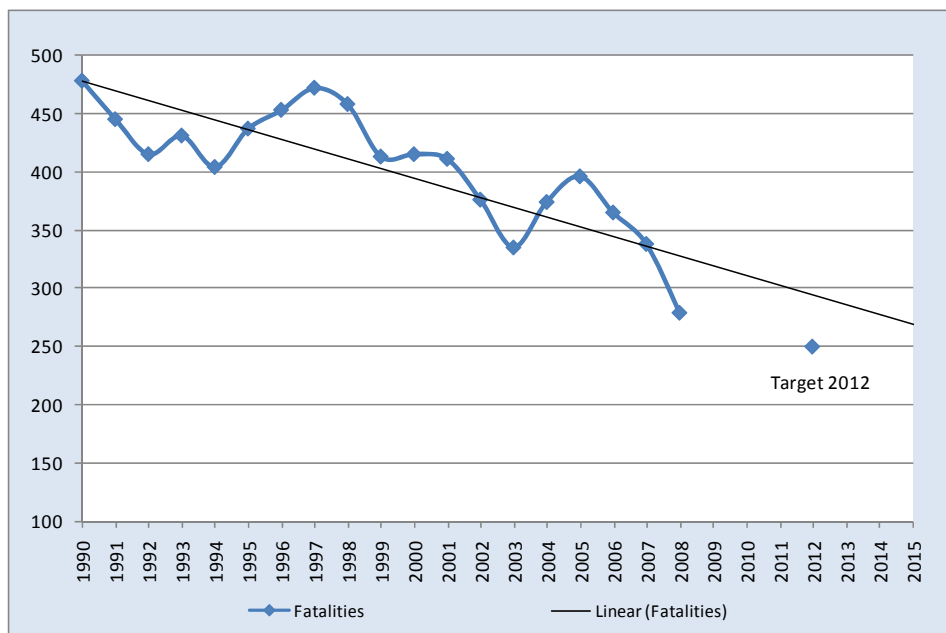
## 5. National road safety strategies and targets

Road safety strategies were introduced in Ireland in 1998, the third such strategy being published in 2007 (the Road Safety Strategy 2007-2012). The strategy sets out comprehensive targets (see below) and identifies 126 actions to be completed within its lifetime.

The main targets are to:

- Reduce the rate of road fatalities to 60 per million population by 2012, and 50 or fewer in the subsequent years, with a demonstrable reduction in each year of the strategy
- Reduce injuries by 25%
- Set specific targets for reducing speed
- Set a specific target to increase restraint use.

Figure 8. Trend in progress towards road fatality target



## 6. Recent safety measures (2007-2009)

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### ❖ Road user behaviour, enforcement

- Drink driving – new maximum authorised BAC

The legislation on driving under the influence of alcohol and drugs is currently before the Parliament. The proposed legislation will set a maximum authorised BAC of 0.5 g/l for general drivers (instead of 0.8 g/l) and 0.2 g/l for young and professional drivers.

- Implementation of automatic number plate recognition by traffic police
- Increase in the number of speed cameras
- Effective enforcement effort for heavy goods vehicles, drivers and operators.

### ❖ Education and communication

- Campaigns to increase general awareness of speeding, drink driving, daytime running lamps, seat belt use and driver fatigue
- Distribution of over 500 000 high visibility jackets and armbands to the public
- Education measures on:
  - the use of high visibility material for pedestrians, cyclists and motorcyclists
  - awareness of intoxicated pedestrians
  - awareness of blind spots on heavy vehicles
- Pre-primary school road safety education
- Primary school road safety education: “Be Safe” aimed at children aged 5-12; “Seatbelt Sheriff” aimed at those aged 7-9; “Streetwise” aimed at those aged 12-15
- Community education programme aimed at the elderly.

## 7. Major recent or ongoing research (2007-2009)

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- Observational Survey of the use of high visibility clothing by cyclists (to be published)
- Observational Survey of pedestrian crossing behaviour (to be published)
- Observational Survey of mobile phone use (to be published)
- National Survey of driver attitudes and behaviour (to be published)
- Speed and restraint use observational studies (published)
- Study of pre-crash behaviour
- Study of exposure risk on regional and local roads.

## 8. References – Useful websites and references

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Irish road safety authority	<a href="http://www.rsa.ie">www.rsa.ie</a>
Penalty points	<a href="http://www.penaltypoints.ie">www.penaltypoints.ie</a>
Rules of the Road online	<a href="http://www.rulesoftheroad.ie">www.rulesoftheroad.ie</a>

# ISRAEL<sup>1</sup>

## 1. General comments on trends for 2008

In 2008 there was an increase of 8% in the number of traffic fatalities and 3% in the number of injury crashes over 2007. This increase was due in part to a single multi-casualty bus crash in December 2008, in which 24 passengers were killed.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Between 1970 and 2008, the number of fatalities decreased by 20% and the number of injury crashes increased by 24%. Over the same period, the number of vehicles and the distance travelled (vehicle-kilometres) grew by a factor of eight.

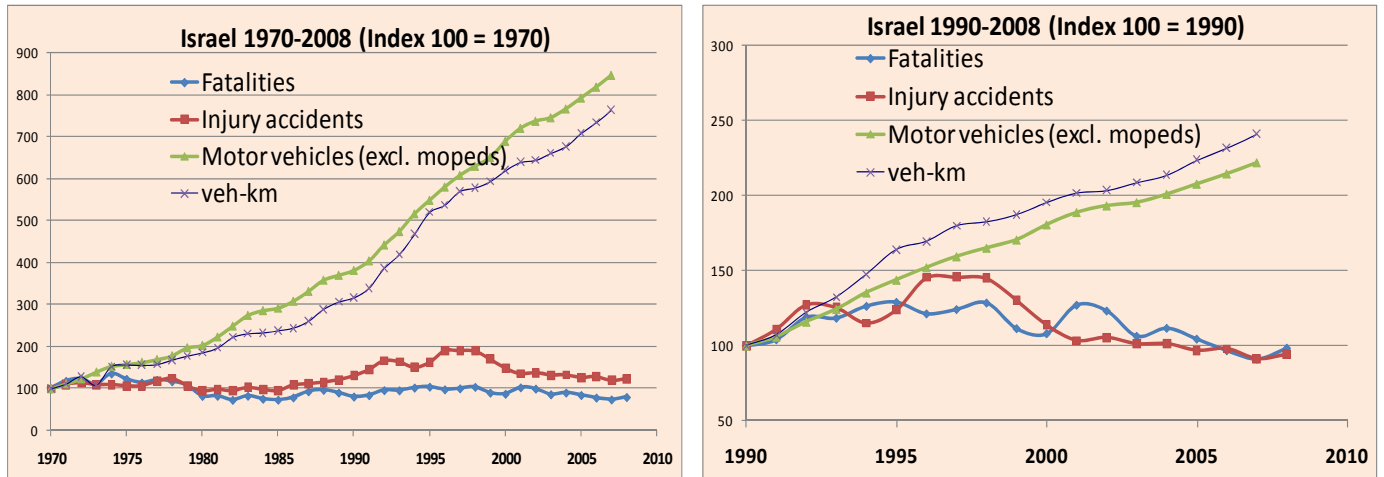
Table 1. Number of road fatalities and injury crashes, 1970-2008

												% change over		
	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	2008-2007	2008-2000	2008-1970
Fatalities	518	418	452	531	515	445	467	437	405	382	412	+8%	-9%	-20%
Injury crashes	13 355	17 496	19 925	18 140	18 490	17 746	17 763	16 986	17 190	16 016	16 531	+3%	-17%	+24%

The highest number of fatalities, 702, occurred in 1974. Despite the sharp increase in the number of motor vehicles and vehicle-kilometres, the absolute number of injuries and fatalities has remained relatively constant over the past 35 years. Since 2003 the number of fatalities has fallen below 500, with the lowest number occurring in 2007.

1. Source: IRTAD, Road Traffic Authority .

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008



#### ❖ Time series for key risk indicators

With the growth of the population, constant efforts at improving safety have yielded significant annual reductions in fatality and injury rates, so that by the end of 2008 Israel had 5.5 fatalities per 100 000 inhabitants and 8.8 fatalities per billion vehicle-kilometres. Between 1970 and 2008, the mortality rate (expressed in terms of deaths per 100 000 population) decreased by 68% and the fatality risk (expressed in terms of deaths per distance travelled) decreased by 90%.

Table 2. Risk indicators, 1970, 2000, 2008

	1970	2000	2008	% change over	
				2008-2000	2008-1970
Deaths/100 000 population	17.1	7.1	5.5	-23%	-68%
Deaths/billion veh-km	87.9	12.6	8.8	-30%	-90%
Deaths/10 000 vehicles		2.5	1.7	-32%	

### 3. Recent development of accident trends

#### ❖ Road users

Data by user group is available in the IRTAD database only from 2003.

The majority of the traffic accident victims in Israel are vehicle occupants, with a small minority of riders of motorised and non-motorised two-wheelers. Over the past 25 years there has been a consistent decrease in the number of pedestrian fatalities. In contrast to the general decline in fatalities, the number of motorised two-wheeler riders killed increased over the same period. In 2008, 53% of the fatalities were vehicle occupants, 33% were pedestrians, 11% were riders of motorised two-wheelers and 3% were bicyclists. In comparison to other countries, the pedestrian casualty rate is very high.

Table 3. Fatalities by road user group  
2003, 2007 and 2008

							% change over	
	2003		2007		2008		2007-2008	2003-2008
<b>Bicyclists</b>	23	5%	6	2%	13	3%	117%	-43%
<b>Motorised two-wheelers</b>	40	9%	36	9%	46	11%	27%	15%
<b>Car and coach passengers</b>	223	50%	224	59%	218	53%	-3%	-2%
<b>Pedestrians</b>	159	36%	114	30%	134	33%	18%	-16%
<b>Others</b>	0	0%	2	1%	1	0%	-50%	
<b>Total</b>	445	100%	382	100%	412	100%	8%	-7%

#### ❖ Age groups

Data by age group is only available from 2003.

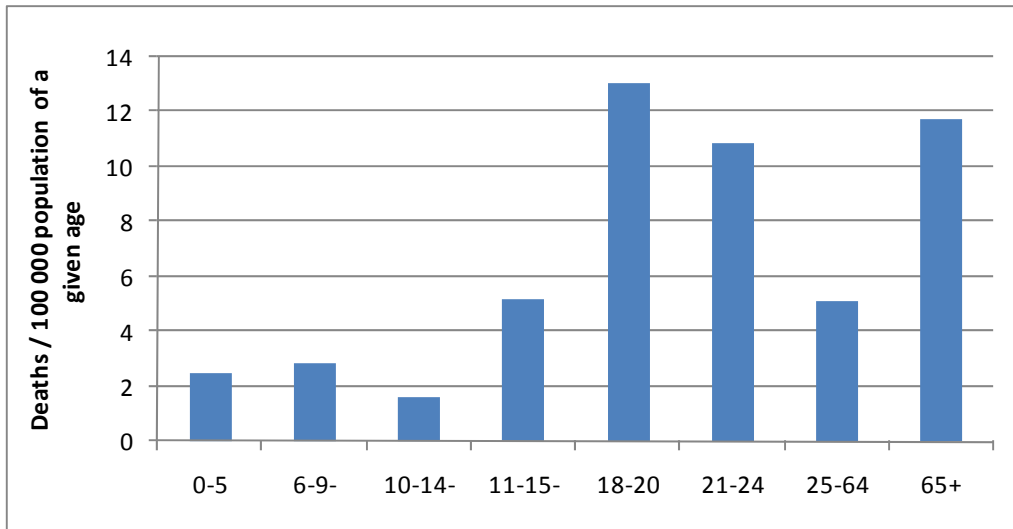
Recently, safety improvements have benefited mainly the three youngest groups (aged 0-14). Young people, especially the 18-20 age group, are still a high risk group in road safety, with a fatality risk two times higher than the general population (Figure 2). The oldest age group is also high risk.

Table 4. Reported fatalities by age group

				% change over	
	2003	2007	2008	2007-2008	2003-2008
<b>0-5</b>	23	17	20	18%	-13%
<b>6-9</b>	14	6	7	17%	-50%
<b>10-14</b>	11	5	7	40%	-36%
<b>15-17</b>	11	17	15	-12%	36%
<b>18-20</b>	42	25	26	4%	-38%
<b>21-24</b>	46	52	41	-21%	-11%
<b>25-64</b>	220	194	193	-1%	-12%
<b>&gt;65</b>	78	66	76	15%	-3%
<b>Total</b>	445	382	412	8%	-7%



Figure 2. **Fatality risk by age group**  
(deaths per 100 000 population in a given group)

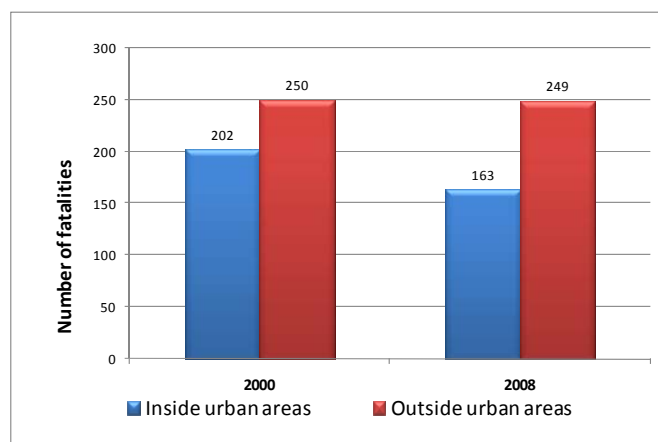


#### Accident locations

Most of the gains in traffic safety over the past 25 years are due to a drop in urban fatalities. This is partly due to the construction of ring roads around many towns, the replacement of signalised intersections with traffic circles and the construction of urban high-speed, limited-access, divided roads.

Between 2000 and 2008 the number of fatalities outside urban areas remained stable, while a 20% decrease in urban areas was observed.

Figure 3. **Reported fatalities by type of road**  
**2000 and 2008**



## 4. Recent development of driving behaviour

### ❖ Drink driving

The maximum authorised blood alcohol content is 0.5 g/l.

The extent of drink driving had been greatly underestimated in the past, due to an unsupported belief that it was not a significant problem. In recent years, the police have increased roadside alcohol testing and testing for

alcohol in drivers involved in crashes. The problem is now recognised as a major one, as it is in most European countries.

Conservative estimates now place alcohol as a factor in 7-15% of fatal crashes. There are no national data on the proportion of drivers with BAC above the limit, but a research effort to obtain that data is now under way. Enforcement and public information concerning drink driving is on the increase, especially at high risk times (nights, weekends, holidays), in high risk places (in the vicinity of pubs) and for high risk populations (young drivers, with zero tolerance for those in their first three months of driving with a licence).

#### ❖ Speed

According to police reports, excessive speed was a contributing factor in 17.4% of fatal crashes in 2007.

#### ❖ Seat belts and helmets

Seat belt use has been compulsory in front seats since 1975 and in rear seats since 1995.

Use of seat belts, child safety seats and booster seats is required of all relevant occupants at all times. Daytime usage of seat belts in front seats is very high in Israel. This is probably due to very intense and frequent (primary law) enforcement and information campaigns. Usage in rear seats is still relatively low but is increasing every year, reaching 63% in 2009. Enforcement of rear seat use is difficult, but is increasing.

Table 5. Evolution in seat belt use by car occupants

	2003	2005	2006	2007	2008	2009
<b>Driver</b>	89%	90%	91%	94%	93%	95%
<b>Front seat passengers</b>	85%	84%	82%	88%	87%	92%
<b>Rear seat passengers</b>	23%	25%	26%	45%	56%	63%

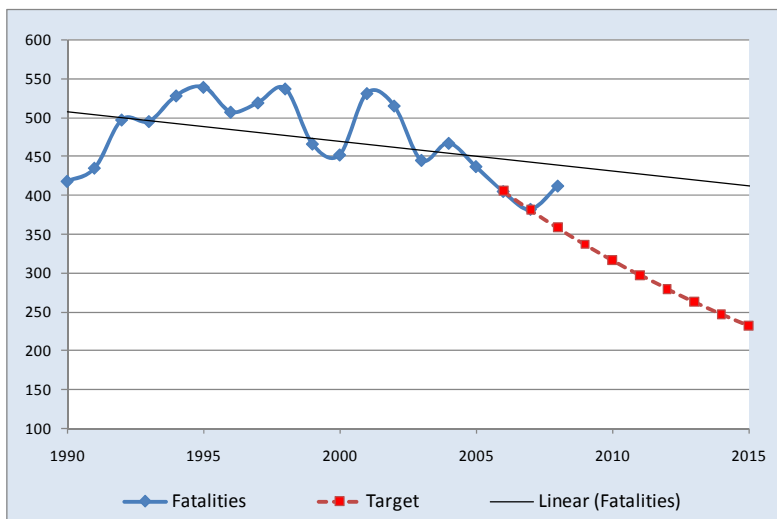
Helmet use is compulsory for all motorcycles and moped riders. The rate of use by motorcyclists is close to 100%.

In 2008 Israel passed a controversial universal bicycle helmet law, but it is little enforced. Use of bicycle helmets varies by place and age. No data is available for adults; the rate of use by children under 18 is 28% in urban areas.

## 5. National road safety strategies and targets

Israel has set a goal for the reduction of fatalities by at least 6% annually between 2006 and 2015. Figure 4 illustrates the progress toward the target. Exceptional effort will be required to reach it.

Figure 4. Trend in progress towards road fatality target



## 6. Recent safety measures (2007-2009)

### ❖ Licensing, regulation

- Law passed prohibiting digital and video commercial signs adjacent to urban motorways
- In 2008 Israel passed a controversial universal bicycle helmet law, but it is hardly enforced.

### ❖ Education and communication

- A special programme was designed for the Arab and Bedouin populations, targeting parents to better educate and protect their children around their homes.

### ❖ Vehicles

- A law requiring all new passenger cars imported after 1 January 2010, and all buses imported after 1 January 2012, to have Electronic Stability Control. SP.

## 7. Major research undertaken in 2007-2009

- First comprehensive annual speed survey conducted, covering both inter-city and urban roads
- Third seat-belt use annual survey
- First alcohol in driving survey planned (covering weekend evenings/nights only)
- First bicycle annual helmet use survey
- First annual pedestrian street crossing survey

## 8. References – Useful websites and references

Israel National Road Safety Authority	<a href="http://www.rsa.gov.il/Pages/default.aspx#">http://www.rsa.gov.il/Pages/default.aspx#</a>
Transportation Research Institute - Technion	<a href="http://techunix.technion.ac.il/~ttri/Transportation%20Library_ENG.html">http://techunix.technion.ac.il/~ttri/Transportation%20Library_ENG.html</a>
Central Bureau of Statistics - Israel	<a href="http://www1.cbs.gov.il/reader">http://www1.cbs.gov.il/reader</a>

# JAPAN<sup>1</sup>

## 1. General comments on trends for 2008

In 2008, the number of road fatalities decreased by 9%, reaching its lowest level since record-keeping began. The number of injury crashes decreased by 8%.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Between 1970 and 2008, the number of fatalities decreased by 72% but the number of injury crashes increased by 7%. In the same period, the number of vehicles and the distance travelled (vehicle-kilometres) were multiplied by more than three. In recent years (2000-2008), the decrease in the number of fatalities was sustained (-42%).

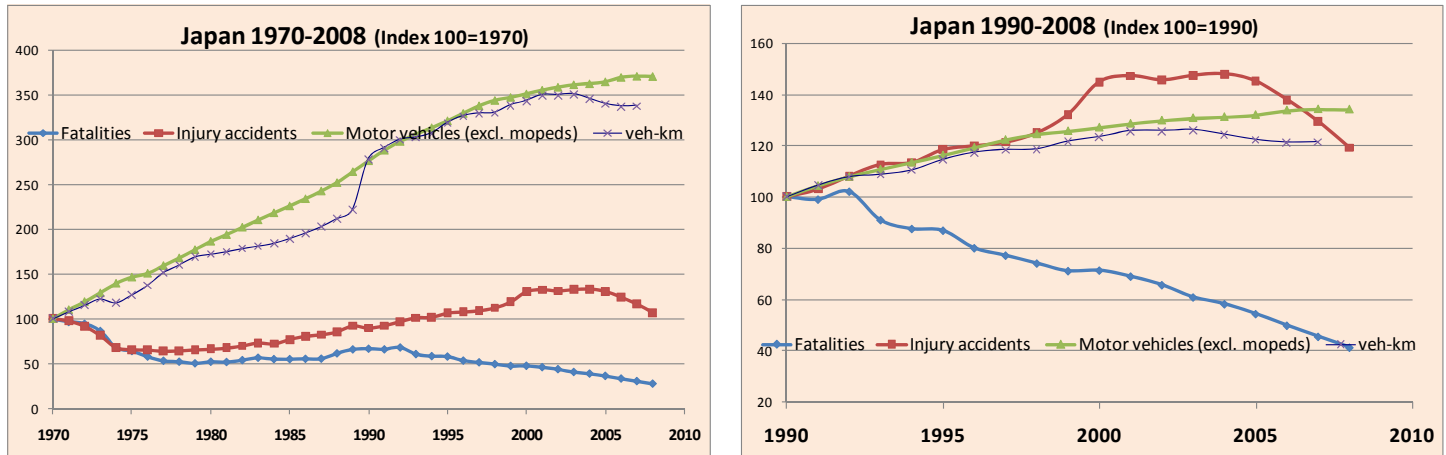
Table 1. Number of road fatalities and injury crashes, 1970-2008

	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	% change over		
												2007-08-	2000-08	1970-2008
<b>Fatalities</b>	21795	14595	10403	10060	9575	8877	8492	7931	7272	6639	6023	-9%	-42%	-72%
<b>Injury crashes</b>	718080	643097	931934	947169	936721	947993	952191	933828	886864	832454	766147	-8%	-11%	+7%

Japan reached the maximum number of traffic deaths in the late 1960s. Since then, fatalities have been decreasing, with some fluctuations over the years.

1. Source : IRTAD, Institute for Traffic Accident Research and Data Analysis; National Police Agency.

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008



#### ❖ Time series for key risk indicators

Between 1970 and 2008 the road traffic mortality rate, expressed in terms of deaths per 100 000 population, decreased by 78% and the fatality risk (expressed in deaths per distance travelled) decreased by 91%.

Table 2. Risk indicators 1970, 2000, 2008

	1970	2000	2008	Change over	
				2000-2008	1970-2008
Deaths/100 000 population	21.01	8.2	4.7	-43%	-78%
Deaths/billion veh-km	96.43	13.4	8.7 <sup>1</sup>	-35%	-91%
Deaths/10 000 vehicles	7.68	1.17	0.66	-44%	-91%

### 3. Recent development of accident trends

#### ❖ Road users

All user groups have benefited from the important safety improvements that have been made since the 1980s. The user groups that benefited the most from safety progress were car occupants (-58%) and moped riders (-53%).

In comparison to other OECD countries, pedestrians represent a very high proportion (one-third) of fatalities.

1. Figure for 2007.

Table 3. Fatalities by road user group  
1980, 2000, 2007 and 2008

									% change over		
	1980		2000		2007		2008		2007-2008	2000-2008	1980-2008
<b>Bicyclists</b>	1 366	12%	1 273	12%	989	15%	971	16%	-2%	-24%	-29%
<b>Mopeds</b>	1 108	10%	944	9%	592	9%	526	9%	-11%	-44%	-53%
<b>Motorcycles &amp; scooters</b>	1 093	10%	903	9%	625	9%	637	11%	2%	-29%	-42%
<b>Passenger car occupants</b>	3 006	26%	2 901	28%	1 446	22%	1 269	21%	-12%	-56%	-58%
<b>Pedestrians</b>	3 597	32%	2 955	28%	2 209	33%	1 976	33%	-11%	-33%	-45%
<b>Others</b>	1 218	11%	1 427	14%	778	12%	644	11%	-17%	-55%	-47%
<b>Total</b>	<b>11 388</b>	<b>100%</b>	<b>10 403</b>	<b>100%</b>	<b>6 639</b>	<b>100%</b>	<b>6 023</b>	<b>100%</b>	<b>-9%</b>	<b>-42%</b>	<b>-47%</b>

#### ❖ Age groups

Since 1980, the reduction in fatalities has benefited all age groups except the elderly (+65). This is due to the ageing of Japanese society. Victims over age 65 accounted for 49% of all fatalities. Unlike in other countries, the oldest age group is also the one the most at risk in traffic (Figure 3). Young people (18-20) have a slightly higher risk than the general population but the difference is much less marked than in other countries.

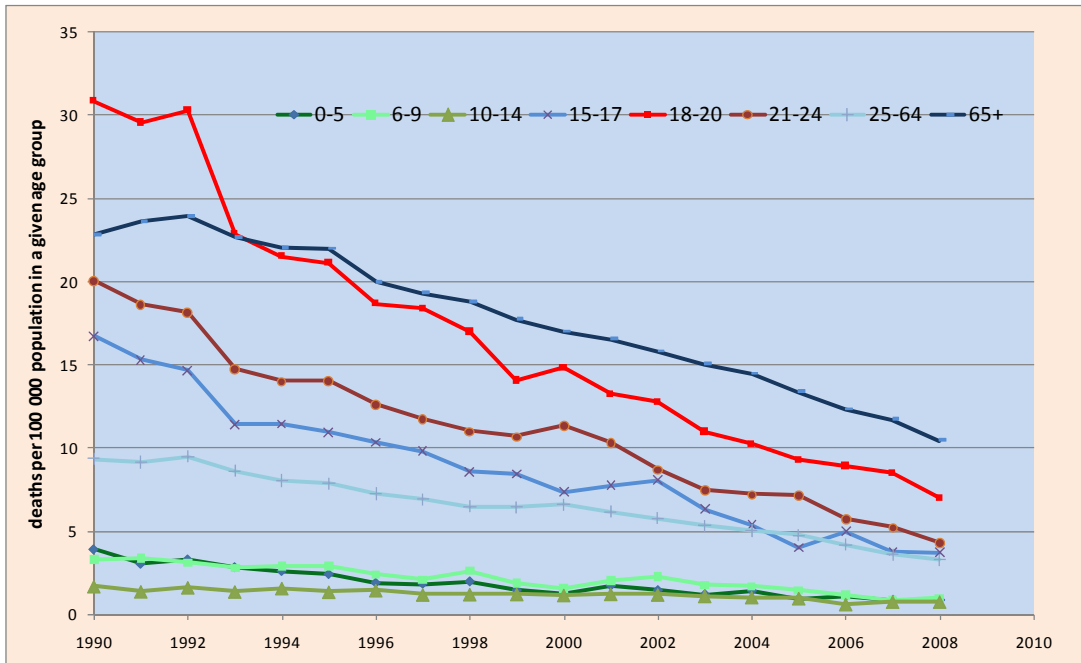
The most impressive reduction concerned the youngest group (0-9), for which the fatality figure was divided by 10 in 28 years.

The national goal of making Japan's roads the "safest in the world" by reducing annual traffic fatalities below 5 000 by 2012 can be realized only if greater effort is made to improve senior traffic safety. The government is now implementing a diverse array of strategies to improve the safety of those at the upper end of the ageing society.

Table 4. Reported fatalities by age group

							% change over		
	1970	1980	1990	2000	2007	2008	2008-2007	2008-2000	2008-1980
<b>0-5</b>	1 537	647	312	88	56	55	-2%	-38%	-91%
<b>6-9</b>	666	381	198	76	39	45	15%	-41%	-88%
<b>10-14</b>	381	151	143	75	45	45	0%	-40%	-70%
<b>15-17</b>	1 218	909	1 006	327	138	134	-3%	-59%	-85%
<b>18-20</b>		1 034	1 820	690	342	274	-20%	-60%	-74%
<b>21-24</b>		814	1 381	772	305	247	-19%	-68%	-70%
<b>25-64</b>	10 568	5 233	6 261	4 635	2 499	2 273	-9%	-51%	-57%
<b>&gt;65</b>	3 554	2 220	3 475	3 740	3 215	2 950	-8%	-21%	33%
<b>Total</b>	<b>21 795</b>	<b>11 388</b>	<b>14 595</b>	<b>10 403</b>	<b>6 639</b>	<b>6 023</b>	<b>-9%</b>	<b>-42%</b>	<b>-47%</b>

Figure 3. Evolution of fatality risks by age group  
(deaths per 100 000 population in a given group)  
1990-2008



❖ Accident locations

In 2008, 43% of fatal crashes occurred on rural roads, 54% in urban areas and 2% on motorways (Figure 4). Since 1980, the greatest reduction in fatalities occurred on motorways (-70%).

Figure 4. Reported fatalities by type of road, 1990, 2000, 2007 and 2008

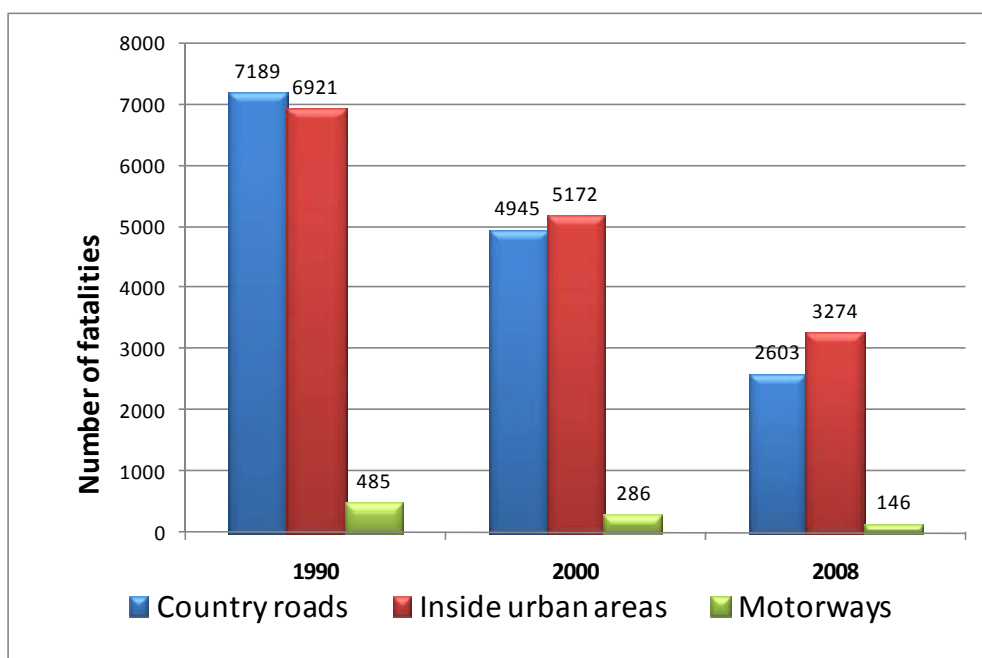


Table 5. **Reported fatalities by type of road**

	1990	2000	2007	2008	% change over		
					2008-2007	2008-2000	2008-1990
<b>Country roads</b>	7189	4945	2892	2603	-10%	-47%	-64%
<b>Inside urban areas</b>	6921	5172	3571	3274	-8%	-37%	-53%
<b>Motorways</b>	485	286	176	146	-17%	-49%	-70%

#### 4. Recent development of driving behaviour

##### ❖ Drink driving

A new drink driving regulation with a new maximum authorised BAC was introduced in June 2002. The maximum was lowered from 0.5 g/l to 0.3 g/l. The effects have been positive, since the number of fatal crashes where alcohol is a causation factor is decreasing.

In 2008, accidents caused by drink driving decreased by 17.7%.

##### ❖ Seat belts and helmets

Until 2008, seat belt use was compulsory only for front seats.

Table 6. **Evolution in seat belt use for car occupants**

	1980	1990	2000	2008
Rear seats		7%	27%	46%
Front seats		77%	91%	97%
Motorways – driver		84%	93%	98%
Urban areas – driver		80%	92%	98%

Helmet wearing is compulsory for all motorcycles and moped riders. The usage rate is around 99%

#### 5. National road safety strategies and targets

The government sets a national traffic safety program every 5 years since 1971.

The 8<sup>th</sup> Programme covers the period 2006 to 2010. It initially included the target to have less than 5500 deaths (within 24 hours<sup>1</sup>) and one million casualties, by 2010. This target was achieved 2 years advance. Therefore the prime minister set new targets:

- To reduce the number of fatalities to less than 5000<sup>2</sup> by 2012 and less than 2500 by 2018.
- To reduce by 20% pedestrian and cyclists fatalities by 2010 in comparison to 2005
- To reduce by more than 10% fatal accidents caused by drivers(+70) by 2010 in comparison to 2005

1. Equivalent 6 325 deaths within 30 days. :  $K(30d)=K(24h)*1.15.$ .

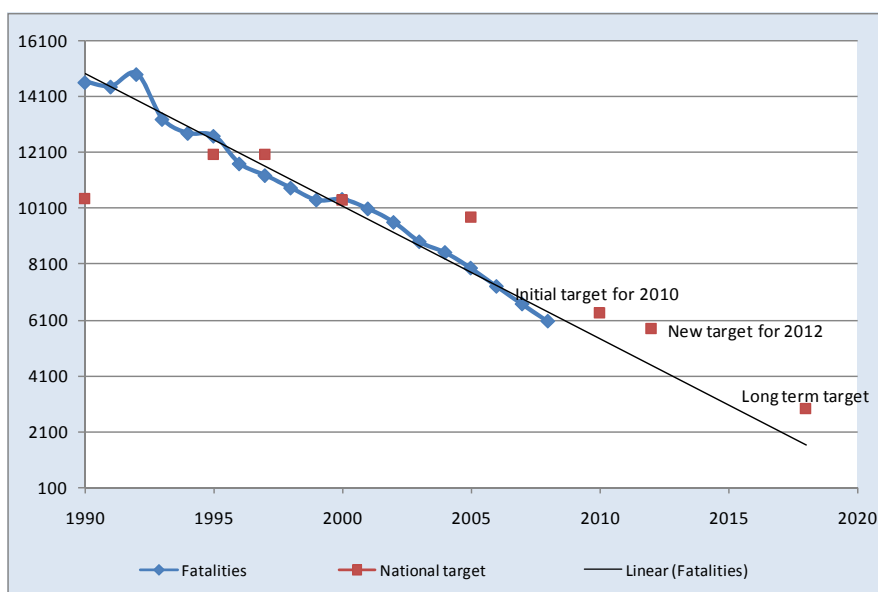
2. Deaths within 24 days, equivalent 5750 deaths within 30 days.



The 8<sup>th</sup> national traffic safety program has four strategic objectives and eight pillars. The four strategic objectives are:

- Coping with declining birth rate and aging society.
- Improving safety for pedestrians
- Encouraging citizens to improve their awareness
- Utilising new technologies.

Figure 5. Trend in progress towards road fatality target



## 6. Recent safety measures (2007-2009)

### ❖ Road user behaviour, enforcement

- Stricter enforcement of parking regulations
- Old drivers (+75) have been required since 2008 to:
  - have their eyesight and hearing checked when they renew their licence.

### ❖ Licensing, regulation

- The Road Traffic Law was revised in June 2008 and is now in force.
  - Seat belts are now compulsory in rear seats of passenger cars as well as front seats
  - In the case of violation on the motorways, one penalty point is given.
  - Drivers aged 75 and above, and those who are hearing impaired, have to display a special sticker on their car. The penalty for not doing so is one point and a fine of 4 000 yen.
- Drivers who do not giving priority to pedestrians at pedestrians crossing incur fines.

❖ **Education and communication**

- Education of pedestrians: promotion of the wearing reflective clothing.

❖ **Infrastructure**

- Sophisticated signal lights (e.g. LED) have been installed in residential areas where there is a high rate of collisions with pedestrians and bicyclists.
- The number of stop signs is being increased.

# KOREA<sup>1</sup>

## 1. General comments on trends for 2008

The number of road fatalities, which has shown a decreasing trend since the early 1990s, fell further in 2008, to 5 870.

The 2008 decrease in road fatalities coincided with a decrease in mobility, partly due to the economic recession. In 2008, vehicle-kilometres decreased by 12% in comparison to 2007.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Between 1970 and 2008, the number of fatalities increased by more than 65% and the number of injury crashes by more than 470%, while the number of vehicles rose by a factor of more than 150.

Fatalities peaked in 1991 at 13 429. Since then, road deaths have decreased, with some fluctuations. Between 1991 and 2004, the number of traffic casualties was halved.

Factors involved in the decrease in traffic accidents include the implementation of strict enforcement procedures, legislation making front seat belt use compulsory (1990), sanctions against drink driving (from 1988) and installation of speed-monitoring cameras (starting in 1997). These measures led, for example, to reductions in the number of alcohol-related fatalities (-40%) and fatalities due to speeding (-50%).

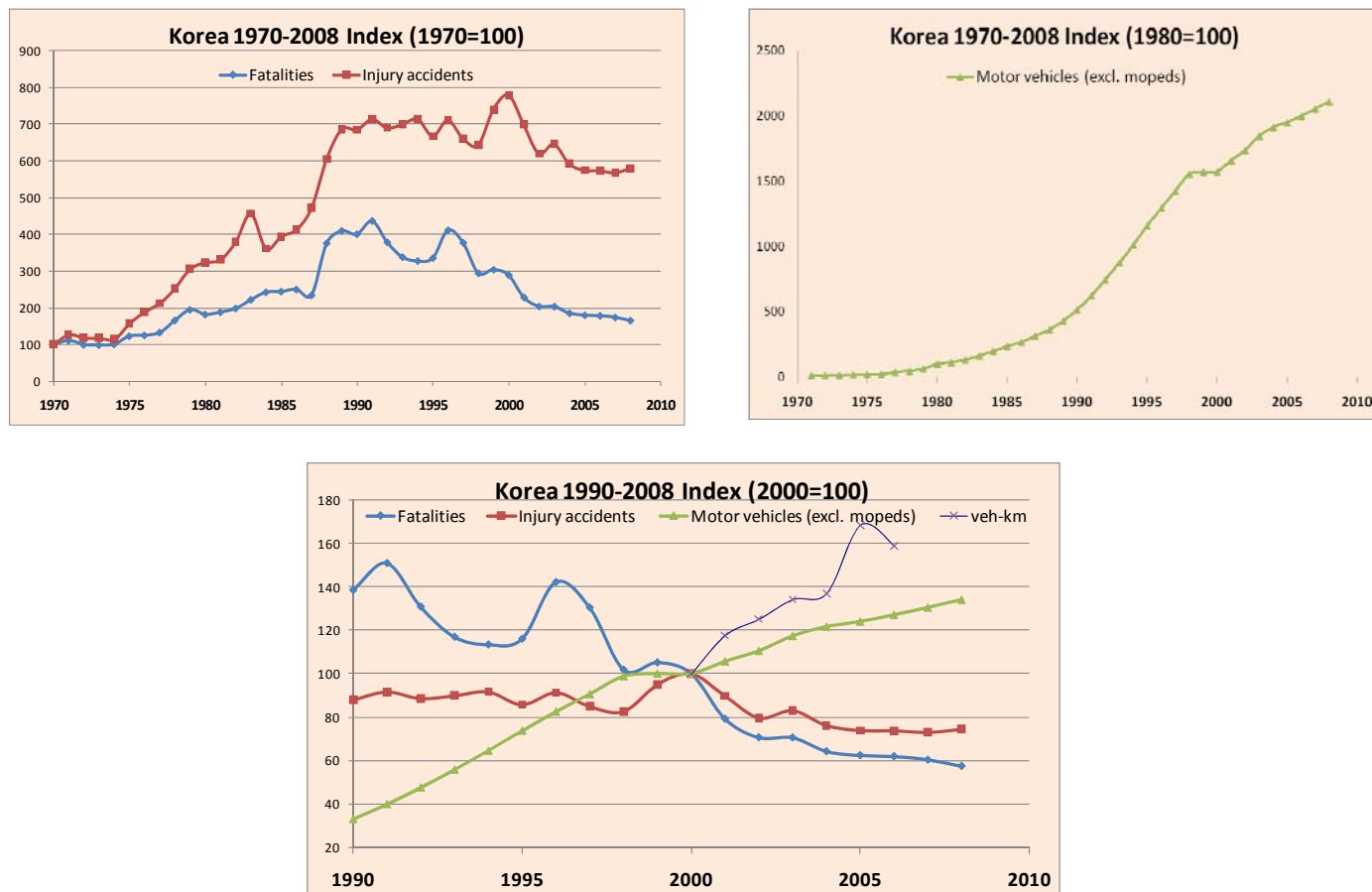
After 2004, the rate of decrease slowed. The government therefore adopted a national road safety plan, "Cutting road fatalities by half by 2010" (compared with 2005). The project had a strong focus on pedestrian safety to reduce the very high death rates for that group.

Table 1. Number of road fatalities, seriously injured and injury crashes, 1970-2008

	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	% change over		
												2007-2008	2000-2008	1970-2008
Fatalities	3529	14174	10236	8097	7222	7212	6563	6376	6327	6166	5870	-4.8%	-42.7%	66.3 %
Injury crashes	37243	255303	290481	260579	231026	240832	220755	214171	213745	211662	215822	2.0%	-2.57%	479.5%

1. Source: IRTAD, Ministry of Land, Transport and Maritime Affairs

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008



### ❖ Time series for key risk indicators

Between 2000 and 2008, the mortality rate, expressed in terms of deaths per 100 000 population, decreased by 44%.

Table 2. Risk indicators  
1970, 1980, 1990, 2000, 2008

Rates (reported)	1970	1980	1990	2000	2008	% change over	
						2000-2008	1990-2008
Deaths/100 000 population	11.0	16.9	33.1	21.8	12.1	-44%	-63%
Deaths/10 000 motor vehicles	-	67.9	28.9	6.9	2.9	-58%	--90%
Deaths/billion veh-km	-	-	-	49.5	20.1	-59%	-
Motorisation (number of vehicles/1 000 inhabitants)	-	24.9	114.2	317.6	339.0	7%	+197%

## 3. Recent development of accident trends

### ❖ Road users

All user groups except moped riders have benefited from the overall improvement in safety since the 1990s. Between 1990 and 2008, the number of pedestrians killed decreased by almost 70% and the number of bicyclists

killed by 52%. There was a sharp increase in the number of moped riders killed, in line with the number of registered mopeds, which rose by 43% between 2000 and 2008.

In 2000-2008, all user groups, again excepting moped riders, benefited from a sharp decrease in the number of fatalities. The one user group to see only moderate reduction was bicyclists.

Table 2. **Reported fatalities by road user group  
1990, 2000, 2007 and 2008**

									% change over		
	1990		2000		2007		2008		2007-2008	2000-2008	1990-2008
<b>Passenger car occupants</b>	2100	15%	2792	27%	1470	24%	1342	23%	-9%	-52%	-36%
<b>Bicyclists</b>	644	5%	317	3%	302	5%	310	5%	3%	-2%	-52%
<b>Mopeds</b>			343	3%	542	9%	490	8%	-10%	43%	
<b>Motorcycles and scooters</b>	1674	12%	1221	12%	734	12%	740	13%	1%	-39%	-56%
<b>Pedestrians</b>	7063	50%	3764	37%	2304	37%	2137	36%	-7%	-43%	-70%
<b>Other</b>	2692	19%	1799	18%	813	13%	851	14%	5%	-53%	-68%

#### ❖ Age groups

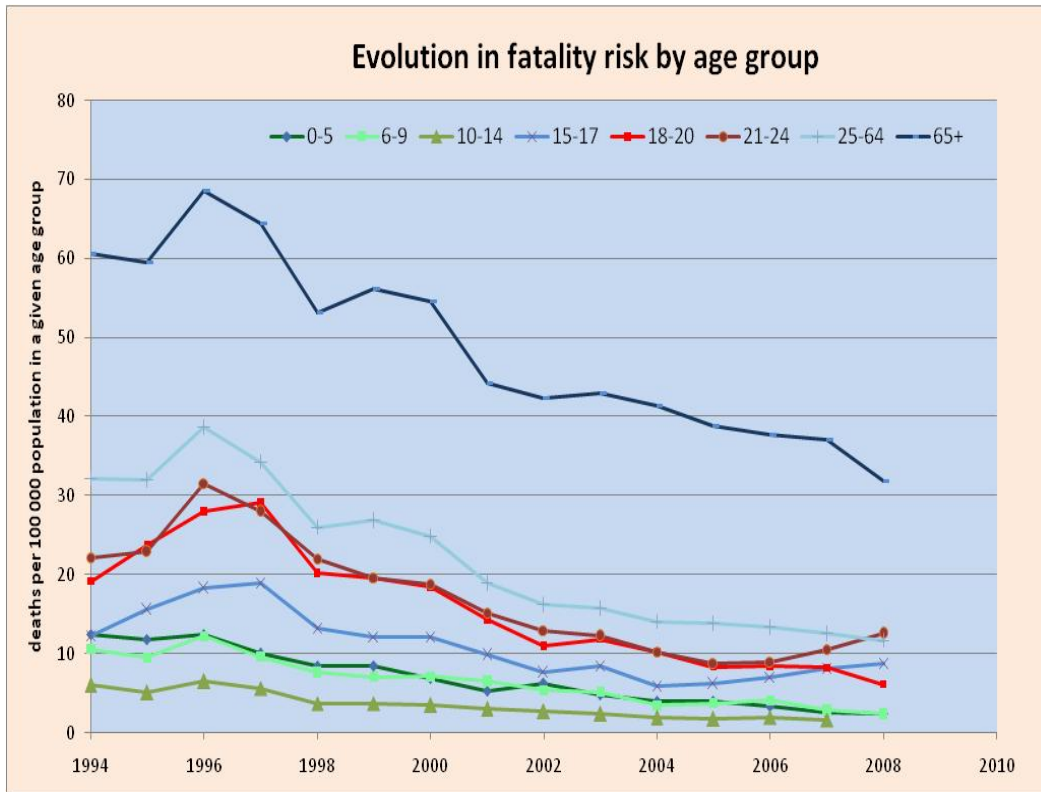
Since 2000, the reduction in fatalities has benefited all age groups, but particularly the youngest group (0-14), for which fatalities decreased by 68%, from 588 in 2000 to 191 in 2008. The number of fatalities among road users aged 15 to 24 also decreased by more than 50%.

The oldest user group (>65), by contrast, has seen only moderate reduction. Unlike in most other OECD countries, this group is the most at risk in traffic, with a death rate twice that of the general population.

Table 3. **Reported fatalities by age group**

				% change over:	
	2000	2007	2008	2007-2008	2000-2008
<b>0-5</b>	275	72	69	-4%	-75%
<b>6-9</b>	202	72	56	-22%	-72%
<b>10-14</b>	111	58	66	14%	-41%
<b>15-17</b>	263	160	189	18%	-28%
<b>18-20</b>	459	152	116	-24%	-75%
<b>21-24</b>	573	292	319	9%	-44%
<b>25-64</b>	6474	3573	3436	-4%	-47%
<b>&gt;65</b>	1853	1786	1615	-10%	-13%

Figure 2. Evolution of fatality risks by age group  
(deaths per 100 000 population in a given group)  
1990-2008



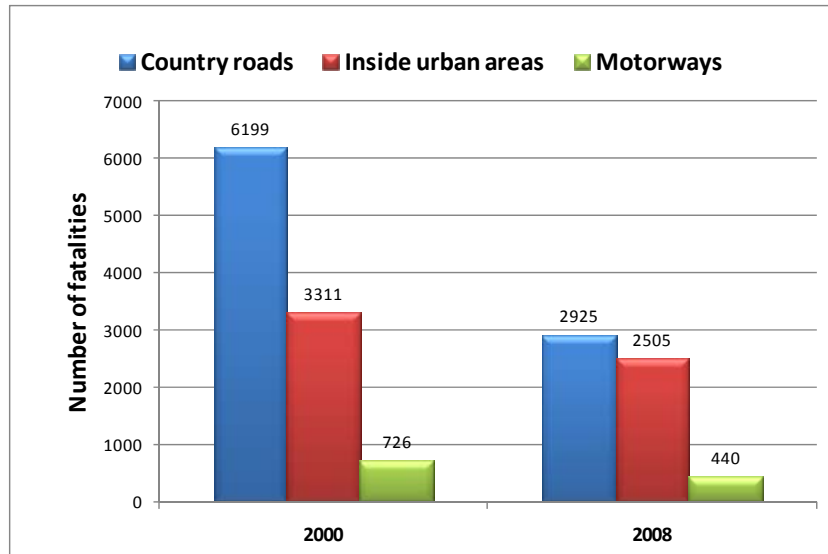
#### ❖ Accident locations

In 2008, 50% of fatal crashes occurred on country roads, 42.5% in urban areas and 7.5% on motorways. Since 2000, the greatest reduction has been that achieved on country roads.

Table 4. Reported fatalities by type of road

				% change over	
	2000	2007	2008	2007-2008	2000-2008
Inside urban areas	3311	2467	2505	+2%	-24%
Country roads	6199	3207	2925	-9%	-53%
Motorways	726	492	440	-11%	-39%

Figure 3. **Fatalities by type of road  
2000 and 2008**



#### 4. Recent development of driving behaviour

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##### ❖ Drink driving

The maximum authorised BAC is 0.5 g/l. The number of alcohol-related crashes more than tripled between 1990 and 2008, rising from 7 703 to 26 873.

##### ❖ Speed

The speed limits on regular roads are 60 km/h for one-lane roads and 80 km/h for two lanes. The speed limit is 90 km/h on motorways in urban areas and 100 or 110 km/h on motorways outside urban areas. A law revising speed limits is now under consideration. The speed limit in urban areas will be reduced to below 60 km/h regardless of road width.

##### ❖ Seat belts

Seat belt use has been compulsory in front seats since 1990 on all roads. The use of rear seat belts on motorways was made compulsory in 2008. The rate of seat belt use in passenger cars in 2009 was around 80% in front seats and 10% in rear seats.

Table 5. Evolution in seat belt use by car occupants<sup>1</sup>

	2007	2008	2009
<b>General</b>	82%	76%	78%
<b>Front seat – driver</b>	92%	89%	88%
<b>Front seat – passenger</b>	71%	78%	74%
<b>Rear seat – passengers</b>	4%	4%	12%
<b>Motorway – driver</b>	92%	89%	88%

## 5. National road safety strategies and targets

### ❖ National road safety strategies

The current road safety plan was adopted in 2007 and covers 2008-2012. The main objective is to halve the number of fatalities by 2012, in comparison to 2007, to fewer than 3 000.

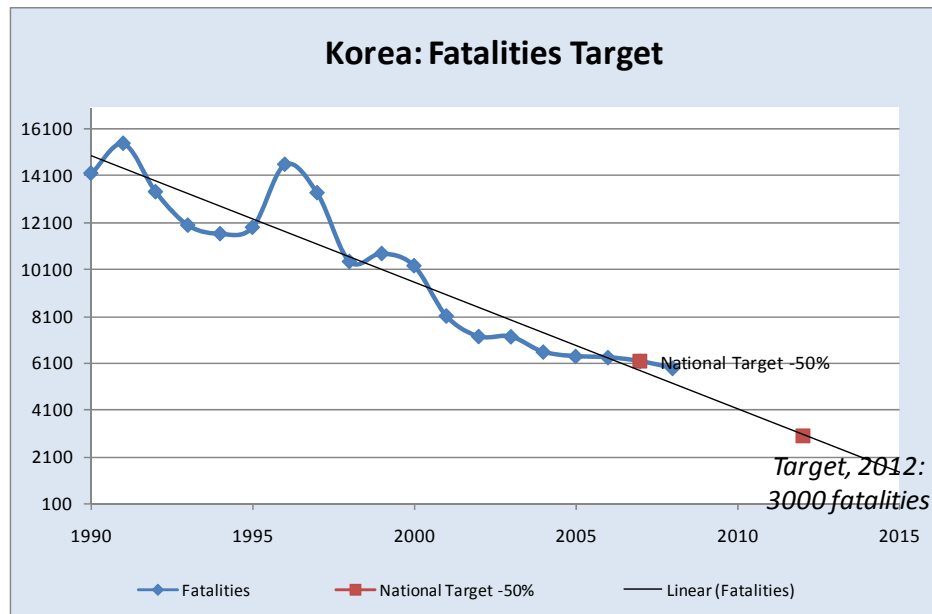
The national road safety plan comprises 5 strategic fields and 20 main measures as described below.

Strategic fields	Main measures
Improved Pedestrian Safety	<ul style="list-style-type: none"> <li>➤ Installation of facilities to reduce jaywalking</li> <li>➤ Assurance of sight distance for pedestrians at night</li> <li>➤ Improvement of pedestrian safety facilities</li> <li>➤ Adoption of Silver Zone for the aged</li> </ul>
Improved Commercial Vehicle Safety	<ul style="list-style-type: none"> <li>➤ Use of digital tachographs</li> <li>➤ Traffic safety audits for commercial vehicles</li> <li>➤ Experience-oriented safe driving training centres</li> </ul>
Advanced Speed Management and Road Facilities	<ul style="list-style-type: none"> <li>➤ Introduction of Zone 30 for residential areas</li> <li>➤ Classification for speeding enforcement standard</li> <li>➤ Road safety audit and inspection</li> <li>➤ Relocation of traffic signals</li> <li>➤ Black Spot Program and Hazardous Location Improvement Program</li> <li>➤ Removal of roadside obstacles (trees, poles, etc.)</li> <li>➤ Development of Pedestrian Protection Performance Standards</li> <li>➤ Development of Transportation Safety Information Management System</li> </ul>
Improved Road Safety Awareness	<ul style="list-style-type: none"> <li>➤ Nationwide campaigns and enforcement (seat belt use, child restraint use, no drinking, no speeding, cyclist helmet use)</li> <li>➤ School education (Road Safety Program)</li> <li>➤ Increase in the number of speed-monitoring cameras</li> </ul>
Improved Emergency Medical Service	<ul style="list-style-type: none"> <li>➤ Minimisation of time taken to access accident sites</li> <li>➤ Enhancement of emergency medical capabilities</li> </ul>

1. From the results for highway users in “The Survey on Traffic Culture Index” conducted by the Korea Transportation Safety Authority.



Figure 4. Trends towards target



## 6. Recent safety measures (2007-2009)

### ❖ Road user behaviour, enforcement

- Reinforcement of drink driving enforcement (April 2009): three years in jail or a fine (maximum equivalent to almost EUR 585)
- Compulsory experience-oriented safe driving education for drivers who caused serious traffic accidents (2009)

### ❖ Licensing, regulation

- Revision of the Transportation Safety Law (June 2008), adopting new road and transport safety audits, experience-oriented safe driving education, local government safety plans, etc.
- Road safety audit and inspection (July 2008)

### ❖ Education and communication

- Launch of experience-oriented safe driving training centre (March 2009)
- Campaign on wearing seat belt in rear seat (November 2009)
- Regular school education on first aid (2009)
- Road Supporters (March 2009): This is a road traffic safety campaign conducted by Korea Transportation Safety Authority (TS). TS employees carry road safety equipment (emergency signal signs, night flares, etc.) in their vehicles. When they meet drivers in emergencies, the Road Supporters offer safety support activities, such as traffic control or emergency signalling, before police or emergency vehicles arrive.

- Commercial Vehicle Safety Project, “Chunsa1 2020” (2009): To reduce traffic accidents caused by commercial vehicles, TS chose 1 000 transport businesses and black spots with the highest traffic accident records. The concept of the project is based on the Pareto principle, which states that, for many events, roughly 80% of the effects come from 20% of the causes. The hope is that monitoring these high-risk companies and spots will lead to a reduction in total traffic accidents. Experts from TS offer safety management consultation, education, and safety audits for the companies and spots.

#### ❖ Vehicles

- Standardisation of motorcycle production (2009)
- Reinforcement of vehicle safety standards to improve pedestrian protection (2009)

### 7. Major research undertaken in 2007-2009

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- KOTI,<sup>2</sup> TS, KRRI,<sup>3</sup> KT<sup>4</sup> (2010-2014). *Integrated Greenhouse Gas Management System in Transport Sector*. It consists of three research themes: 1) Integrated Greenhouse Gas Management System in Transport Sector; 2) Integrated Eco-Driving Management System; 3) Pedestrian Environment Assessment System. Planned investment in this programme amounts to EUR 5.8 million over the five years.
- TS (2010), *A Study on National Bicycle Safety Plan*. It is a study to support the introduction of a bicycle safety law and a nationwide plan.
- TS (2009), *A Study on Total Vehicle Kilometres of Korea*.
- TS (2007, 2008, 2009), *A Survey on Traffic Culture Index of Cities in Korea*.
- TS (2009), *Development of Sustainable Transport and Logistics System*.
- KOTI (2009~2010), *Integrated information system for management and auditing of road safety*.
- KOTI (2008~2009), *Planning for Sustainable Transport and Logistics System Development*.
- ROTA (2009), *A Study on Socio-Psychological Determine Factors in Drink Driving*.
- ROTA (2009), *A Study on Standardization of Illumination Traffic Safety Mark*.

### 8. References – Useful websites and references

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<b>Ministry of Land, Transport and Maritime Affairs</b>	(English) <a href="http://english.mltm.go.kr/intro.do">http://english.mltm.go.kr/intro.do</a>
<b>Korea Transportation Safety Authority</b>	(English) <a href="http://eng.ts2020.kr/">http://eng.ts2020.kr/</a>
<b>Korea Transport Institute</b>	(English) <a href="http://english.koti.re.kr/">http://english.koti.re.kr/</a>
<b>Road Traffic Authority</b>	(English) <a href="http://eng.rota.or.kr/Eng/Main/main.jsp">http://eng.rota.or.kr/Eng/Main/main.jsp</a>
<b>Statistics Korea</b>	(English) <a href="http://kostat.go.kr/nso_main/nsoMainAction.do?method=main&amp;catgrp=eng2009">http://kostat.go.kr/nso_main/nsoMainAction.do?method=main&amp;catgrp=eng2009</a>
<b>Korea Transport Database</b>	(English) <a href="http://www.ktdb.go.kr/ktdbeng/">http://www.ktdb.go.kr/ktdbeng/</a>

1 . The name means ‘1000 companies and spots’ in Korean.  
 2. Korea Transport Institute (www.koti.re.kr).  
 3. Korea Railroad Institute (www.krri.re.kr).  
 4. Korea Telecommunication (www.kt.com).

# MALAYSIA<sup>1</sup>

## 1. General comments on trends for 2008

The number of road fatalities increased by 3.9% in 2008 to 6 257 fatalities. Some road users, however, saw improvements, including bus passengers (-36%), van passengers (-27%) and pedestrians (-6.0%).

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Over the last 10 years, fatalities decreased by 13.7% and the number of injured persons by nearly 50%.

The mortality rate is rather high (23.7 deaths/100 000 population). However, the risk (in terms of deaths per distance travelled) decreased significantly (-39%) over the past 10 years, due to the large increase in motorization in Malaysia.

Table 1. Number of road fatalities and injury crashes, 1970-2008

								% change over	
	1998	2000	2001	2005	2006	2007	2008	2008-2007	2008-1998
<b>Absolute numbers</b>									
<b>Fatalities</b>	5 740	6 035	5 849	6 200	6 287	6 282	6 527	3.90	13.71
<b>Injured road users</b>	49 964	44 165	44 624	40 812	29 138	27 717	25 747	-7.11	-48.47
<b>Seriously injured or hospitalised road users</b>	12 068	9 790	8 680	9 395	9 253	9 273	8 868	-4.37	-26.52
<b>All casualties</b>	55 704	50 200	50 473	47 012	35 425	33 999	25 767	-24.21	-38.96
<b>Rates</b>									
<b>Deaths/100 000 population</b>	25.3	26.0	25.1	23.7	23.6	23.1	23.5	1.73	-7.11
<b>Deaths/vehicles</b>	6.28	5.7	5.17	4.18	3.98	3.73	3.70	-0.80	-41.08
<b>Deaths/billion veh-km</b>	28.75	26.25	23.93	19.58	18.69	17.60	17.30	-1.70	-38.78

1. Source: MIROS

### 3. Recent development of accident trends

#### ❖ Road users

Table 2 illustrates the evolution in fatalities by road user group since 2002. Road safety has deteriorated in absolute numbers. However, there have been some successes with a number of user groups, including pedestrians, bicyclists and van passengers.

Motorcyclists represent 60% of all road fatalities, and safety in this category is a growing concern.

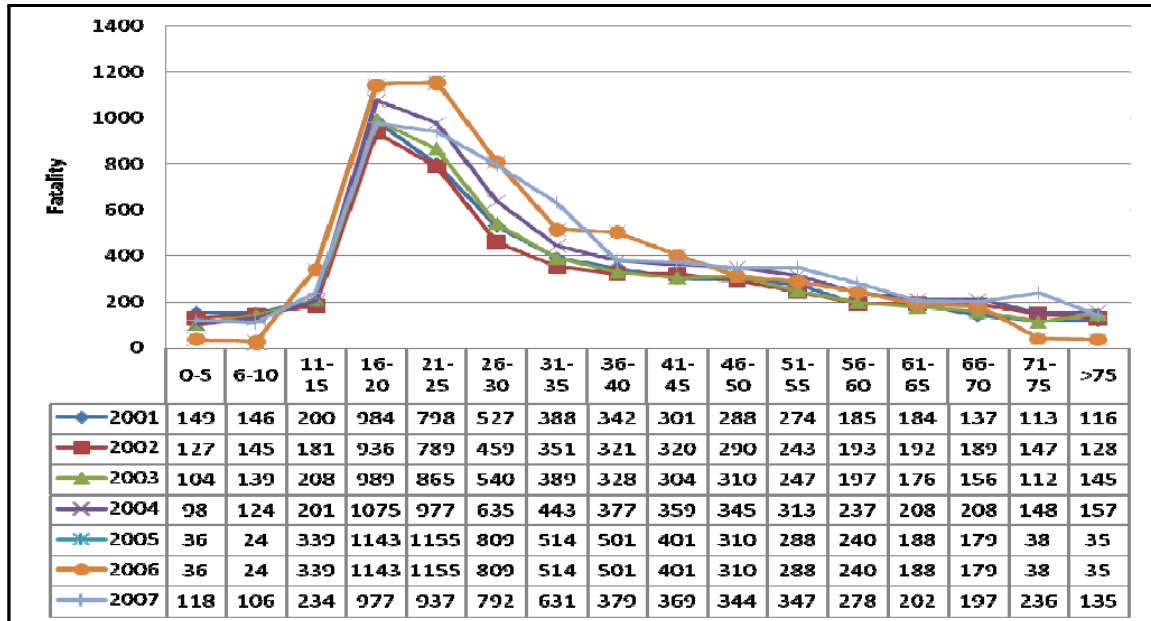
Table 2. **Reported fatalities by road user group  
2002-2008**

Road user group	2002	%	2007	%	2008	%	% change over	
							2007-2008	2002-2008
Pedestrian	650	11%	636	10%	598	9%	-6.0%	-8%
Motorcycle	3 429	58%	3 646	58%	3 898	60%	6.9%	14%
Bicycle	261	4%	190	3%	203	3%	6.8%	-22%
Car	1 023	17%	1 228	20%	1 335	20%	8.7%	30%
Van	156	3%	133	2%	96	1%	-27.8%	-38%
Bus	45	1%	75	1%	48	1%	-36.0%	7%
Lorry	197	3%	204	3%	195	3%	-4.4%	-1%
4-wheel	74	1%	99	2%	106	2%	7.1%	43%
Others	56	1%	71	1%	48	1%	-32.4%	-14%
<b>Total</b>	<b>5 891</b>	<b>100%</b>	<b>6 282</b>	<b>100%</b>	<b>6 527</b>	<b>100%</b>	<b>3.9%</b>	<b>11%</b>

#### ❖ Age groups

Young people (16-25) are the main victims of traffic, as illustrated in Figure 1.

Figure 1. Reported fatalities by age group  
2001-2007

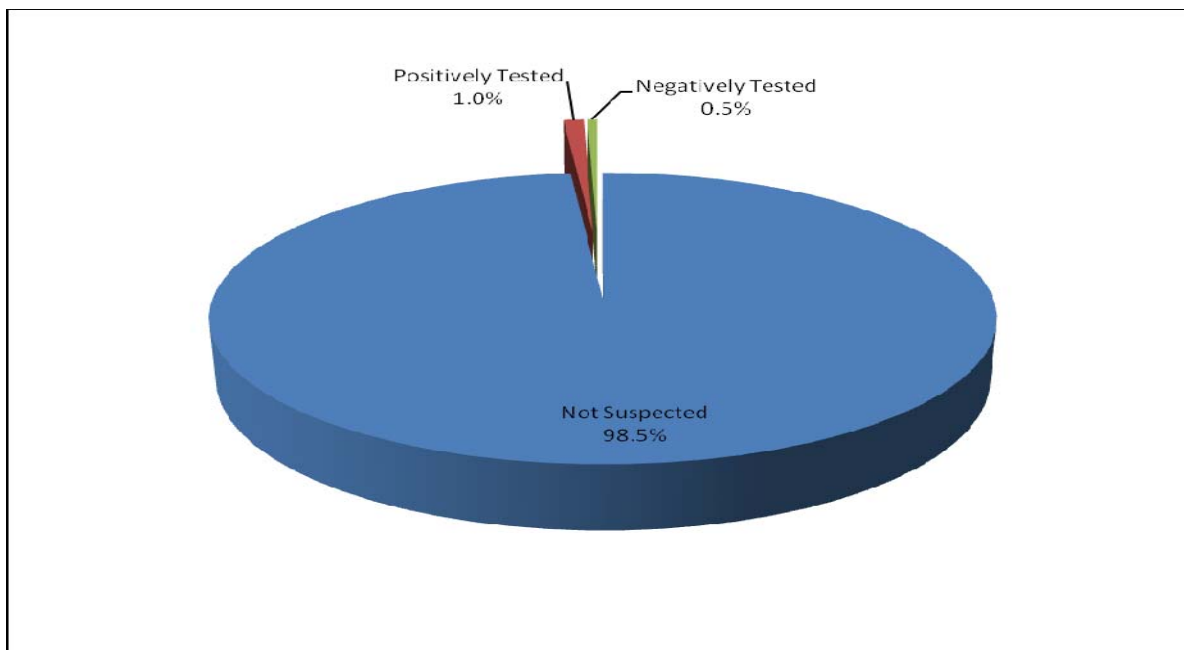


#### 4. Recent development of driving behaviour

##### ❖ Drink driving

Drink driving is not an issue in Malaysia. Only 1% of driver fatalities tested positively for BAC.

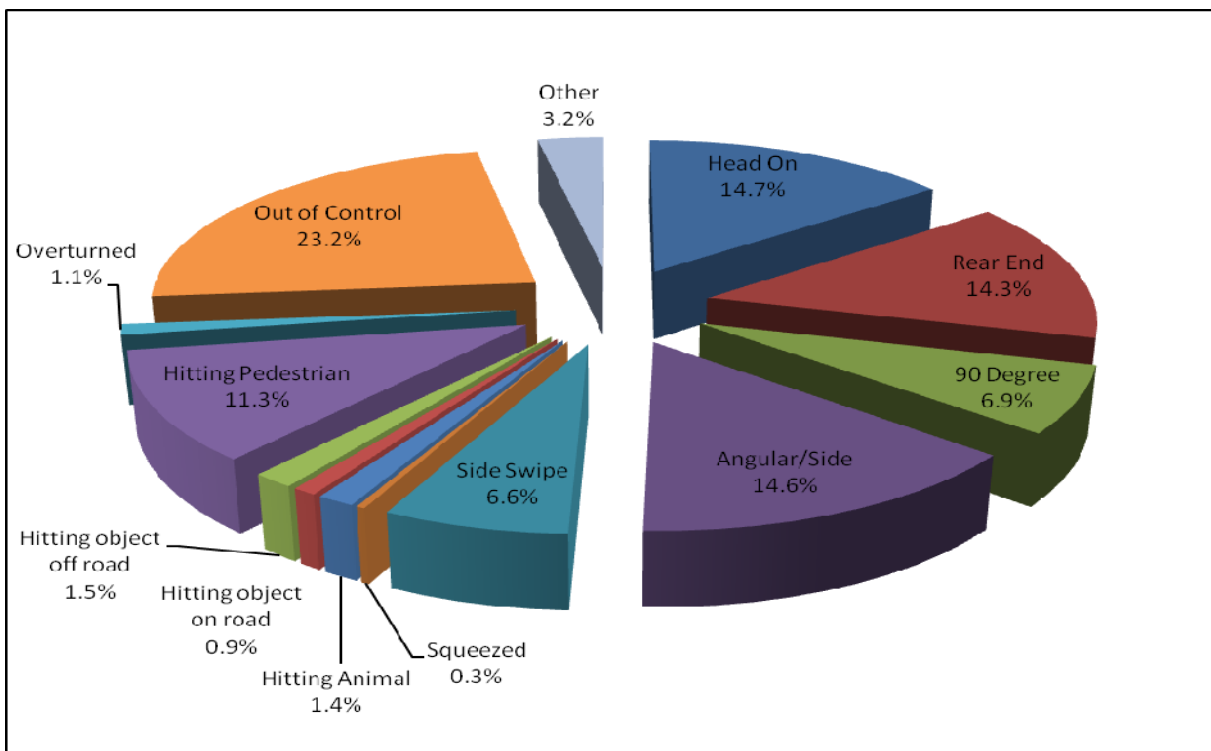
Figure 2. Reported driver fatalities by drink driving 2007



❖ **Speed**

Speeding is an issue in Malaysia. The collision type with the highest incidence of fatal accidents was “Out of Control”, which can be associated with speeding. In 2007, 23.2% of fatal accidents were in this category, followed by Head-On collisions (14.7%).

Figure 3. **Reported fatal accidents by collision type, 2007**

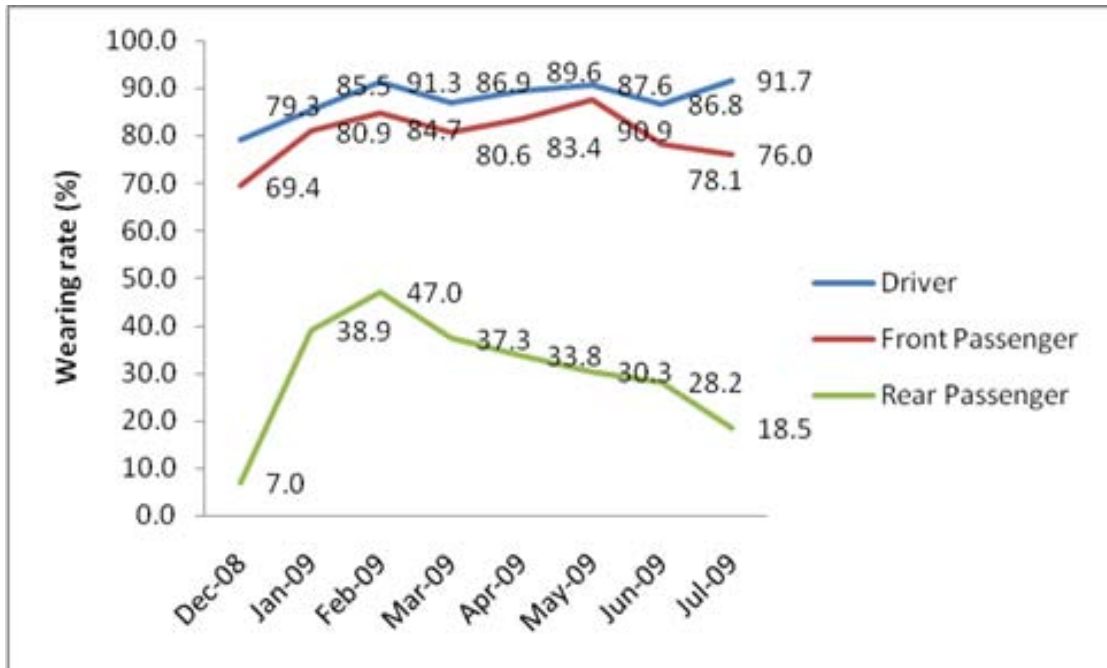


❖ **Seat belts and helmets.**

Seat belt use has been compulsory in front seats since 1978 and in rear seats since 2009. The rear seat belt regulation has been enforced since 1 January 2009 for all types of passenger vehicles.

Figure 4 shows the evolution in the seat belt usage rate in recent months.

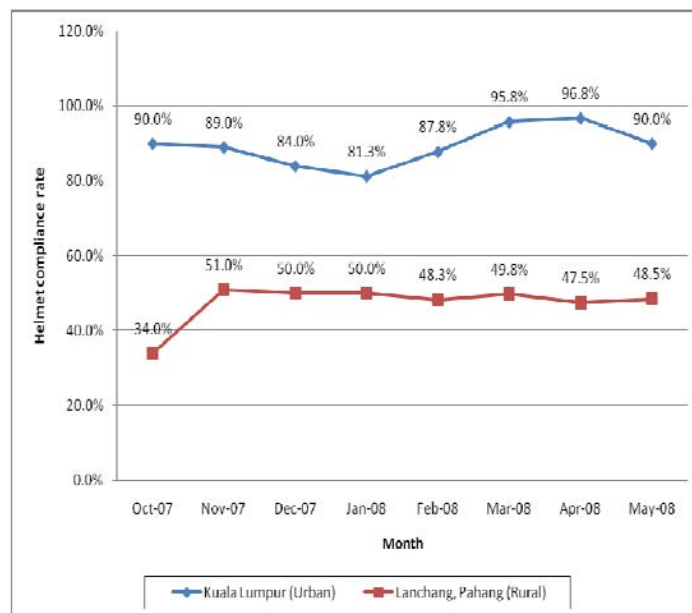
Figure 4. **Seat belt use for car occupants, December 2008 - July 2009**



Helmet wearing has been compulsory for motorcycles since 1973.

Figure 5 illustrates the evolution in the wearing rate for helmets in Kuala Lumpur and in a rural area.

Figure 5. **Helmet wearing rate, 2007-2008**



## 5. National road safety strategies and targets

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Malaysia adopted a road safety plan 2006-2010. The strategy includes the following goals:

Targets	Results as of 2008
Reduce the number of road deaths per 10 000 vehicles by 52.4% from 4.2 in 2005 to 2.0 in 2010	3.7
Reduce the death rate per 100 000 population from 23 in 2005 to 10 in 2010	23.5
Reduce the death rate per billion vehicle-kilometres from 18 in 2005 to 10 in 2010	17.30

## 6. Recent safety measures (2007-2009)

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### ❖ Changing road user attitude

- Road Safety Education taught in all schools for Year 1 as part of Bahasa Malaysia
- Media campaigns via television, radio, cinema and newspaper
- Community-based programmes

### ❖ Motorcyclists

- Vehicle Enhancing Materials
- National Helmet Initiative
- Helmet manufacturers must comply with SIRIM or a higher standard

### ❖ Motorcycles / Infrastructure

- **Motorcycle lane program.** Segregation of motorcycles from the mainstream traffic. There are two types of motorcycle lanes, exclusive and non-exclusive. Exclusive motorcycle lanes fully segregate motorcycles from mainstream traffic with a guardrail while non-exclusive motorcycle lanes separate motorcycles from mainstream traffic using chevron markings only.

### ❖ Vehicle

- The rear seat belt regulation for most types of passenger vehicles with a capacity up to eight passengers has been enforced from 1 January 2009.
- A new design standard for Buses has been adopted: UNECE Regulations 66 & 88 and R36.
- All new car models are to be equipped with ABS brakes, two front airbags and rear seat belts as a standard feature for new cars.
- Introduction of R58 guidelines for rear under-run protection in lorries and trailers is in progress.

### ❖ Pedestrians

- "Take your child safely across" programme
- Pedestrian safety in schools
- Traffic calming in school areas (pilot study)



## 7. Major research undertake in 2007-2009

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The Malaysian Institute of Road Safety Research published a number of research reports, including:

- Road Safety Education Programme
- Pilot Project on Electronic Enforcement
- Evaluation and Upgrading of the Driver System in Malaysia
- Profile and Risk Index of Drivers in Malaysia
- Pilot Project on Optimally Designed Traffic Lights
- Effectiveness of the Traffic Calming Schemes
- National Accident and Injury Database System
- Accident and Injury Costing in Malaysia
- VKT and Travel Surveys
- Safety and Pedestrian Protection System
- Design of Motorcycle Terminals
- Guardrails and Barriers System
- Policy and Design of Road Furniture and Landscape in Malaysia
- Real-World Crashworthiness Programme
- Community Crash Helmet Programme
- Motorcycle Visibility Programme
- Driving under the Influence of Drugs and Alcohol

## 8. References – Useful websites and references

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<b>MIROS - Malaysian Institute of Road Safety Research</b>	<a href="http://www.miros.gov.my/">http://www.miros.gov.my/</a>
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# NETHERLANDS<sup>1</sup>

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## 1. General comments on trends for 2008

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Numbers of road fatalities and hospitalisations, which have shown a decreasing trend, fell further in 2008 to 750 fatalities and 9 310 reported hospitalised. The decrease in fatalities mainly concerned persons dying between 11 and 30 days after the crash.

Positive developments were seen with pedestrians and car occupants, as well as on 80 km/h roads. There was no progress in numbers of bicycle fatalities or fatalities on 50 km/h roads.

The 2008 decrease in road fatalities coincided with a decrease in mobility. The number of fatalities per billion person-kilometres in 2008 was almost equal to that of 2007. The economic situation may have affected mobility (motor vehicle-kilometres), mode choice and the vehicle fleet renewal rate. New vehicle sales in the Netherlands dropped by 20% between August 2007-July 2008 and August 2008-July 2009.

## 2. Long term trends

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### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Statistics in the Netherlands distinguish between *reported* and *real* numbers of crashes. The former category covers crashes reported by the police, while real numbers are higher as they take into account data from sources such as hospitals and death certificates.

Between 1970 and 2008, the number of fatalities decreased by nearly 80% and the number of injury crashes by 60%, while the number of vehicles tripled. In recent years (2000-2008), the number of fatalities continued to fall, by 37.5%.

Recent research on serious traffic injuries shows that the police-reported number of casualties hospitalized is not a good indicator of serious injury. The research derived a new series of MAIS 2+ casualties for 1993-2008. It showed a decrease over 1993-2006 and an increase in the last two years. Further research is expected.

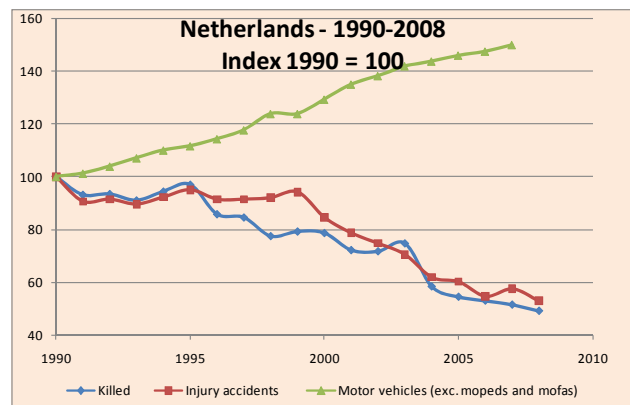
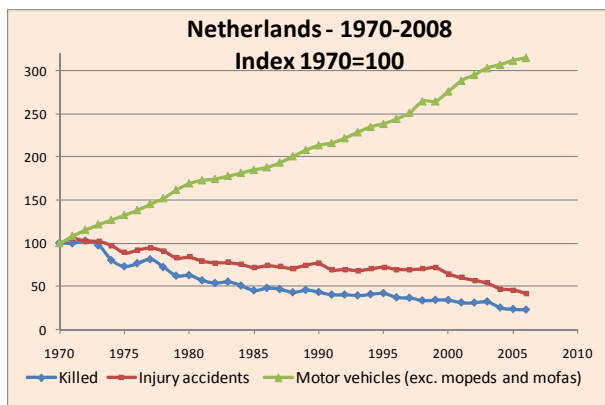
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1. Source: IRTAD, SWOV, Netherlands Ministry of Transport.

Table 1. Number of road fatalities, seriously injured and injury crashes, 1970-2008

Reported numbers	1970	1980	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	% change over		
													2007-2008	2000-2008	1970-2008
Fatalities	3181	1996	1376	1082	993	987	1028	804	750	730	709	677	-4.5%	-37%	-79%
Seriously injured (hospitalised)		18.616	13.658	11.505	11.028	11.018	10.596	9.487	9.401	9.051	9.683	9.310	-3.9%	-32%	
Injury crashes <sup>1</sup>	8.883	49.383	44.915	37.947	35.313	33.538	31.635	27.760	27.013	24.527	25.819	23.708	-8.2%	-38%	-60%
<b>Real numbers</b>															
Fatalities				1166	1083	1069	1088	881	817	811	791	750	-5,2%	-36%	
Seriously injured (MAIS 2+)				16.700	16.500	16.100	16.500	16.300	16.200	15.300	16.700	17.600	5,9%	5,6%	

Figure1. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008



#### ❖ Time series for key risk indicators

Between 1970 and 2008, the mortality rate, expressed in terms of deaths per 100 000 population, decreased by 83%.

Table 2. Risk indicators 1970, 1980, 1990, 2000, 2008

Rates (reported number)	1970	1980	1990	2000	2008	% change over:	
						2000-2008	1970-2008
Deaths/100 000 population	24.6	14.2	9.24	6.82	4.13	-40%	-83%
Deaths/10 000 motor vehicles		4.26	2.37	1.42	0.75	-47%	
Deaths/per billion veh-km		26.7	14.2	9.1	5.4 (2007)	-41%	
<b>Rates (real number)</b>							
Deaths/100 000 population				7.35	4.57	-38%	

1. Because of under-reporting and changes in the reporting rate of slight injury crashes, this indicator is not to be used.

### 3. Recent development of accident trends

#### ❖ Road users

The Dutch success in achieving traffic safety is largely due to a key principle of sustainable safety: separating fast and slow (vulnerable) traffic.

All user groups, but especially vulnerable road users, have benefited from the improvement. Between 1970 and 2008, the number of pedestrians and moped or mofa riders killed decreased by more than 90%. The number of bicyclists killed fell by 72%. The sharp decrease in the number of moped/mofa riders killed was in line with the the number of such vehicles in traffic, which fell by 75% between 1970 and 2008 (Figure 2). In contrast, pedestrian and bicycle mobility have not decreased.

The only user group which has seen only moderate reduction is motorcyclists. The number of fatalities among motorcyclists fluctuates with the use of the motorbike, which in turn fluctuates with fashion.

In 2000-2008, all user groups benefited from a sharp decrease in the number of fatalities. The decrease was more marked for moped and mofa riders and pedestrians, and somewhat slower for motorcyclists. In 2008, pedestrians and moped/mofa riders were the user groups which saw the largest decrease in fatalities, while the number of motorcyclists killed increased. Many combinations of traffic modes showed no decrease (the number of fatalities in single-vehicle car accidents has been almost stable since 1990).

One of the Netherlands's main long-term goals is to reduce the number of fatalities in single-vehicle crashes and those in involving mopeds and motorcycles.

Table 3. Reported fatalities by road user group  
1970, 2000, 2007 and 2008

									% change over		
	1970		2000		2007		2008		2007-2008	2000-2008	1970-2008
<b>Passenger car occupants</b>	1322	42%	513	47%	334	47%	330	49%	-1.2%	-36%	-75%
<b>Bicyclists</b>	512	16%	198	18%	147	21%	145	21%	-1.4%	-27%	-72%
<b>Mopeds</b>	540	17%	107	10%	60	8%	43	6%	-28.3%	-60%	-92%
<b>Motorcycles and scooters</b>	85	3%	89	8%	64	9%	67	10%	+4.7%	-25%	-21%
<b>Pedestrians</b>	609	19%	106	10%	86	12%	56	8%	-34.9%	-47%	-91%
<b>Other</b>	113	4%	69	6%	18	3%	36	5%	+100%	-48%	-68%

Figure 2. Relative evolution of the number of motorised two-wheelers in traffic and the number of reported moped/mofa riders and motorcyclists killed in traffic

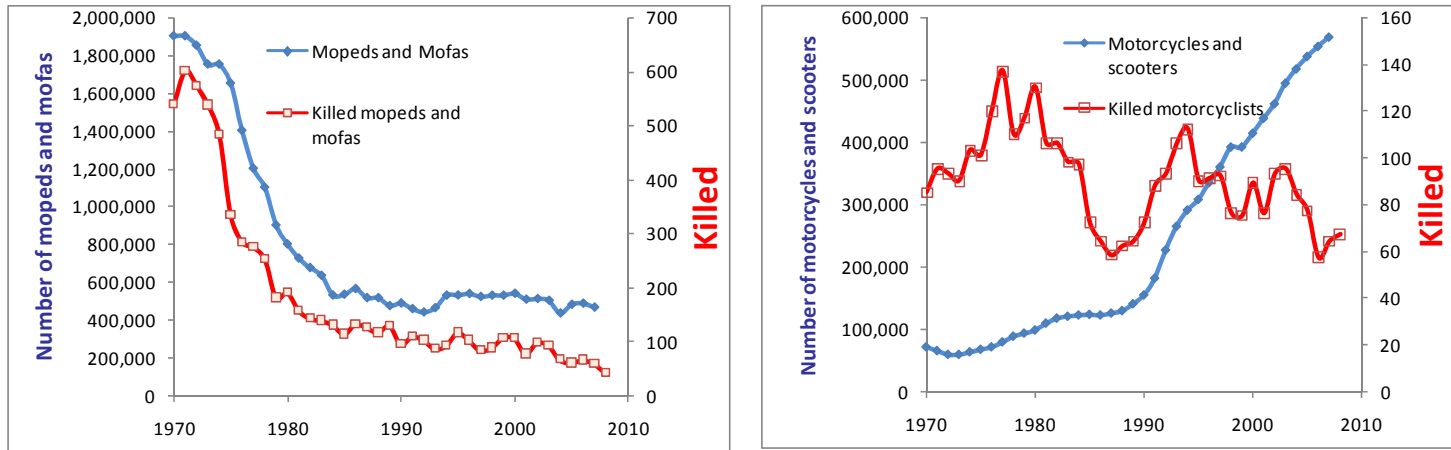


Table 4 illustrates the relative fatality risk for the different road user groups. For a motorcyclist, the risk of dying in a traffic crash is 21 times higher than that for a car occupant.

Table 4. Relative fatality risk by road user group (average 2004-2008)

	Reported fatalities (annual average 2004-2008)	Deaths (inside or on the vehicle) per million vehicles	Average kilometrage per vehicle	Deaths (inside or on the vehicle) per billion vehicle/km
<b>Pedestrians</b>	72	-		
<b>Bicycles</b>	156	11	1.000	11
<b>Mopeds</b>	57	121	2.000	63
<b>Motorcycles</b>	70	131	2.000	64
<b>Car and van occupants</b>	355	45	15.000	3,0
<b>Heavy goods vehicles</b>	9	69	50.000	1,3

#### ❖ Age groups

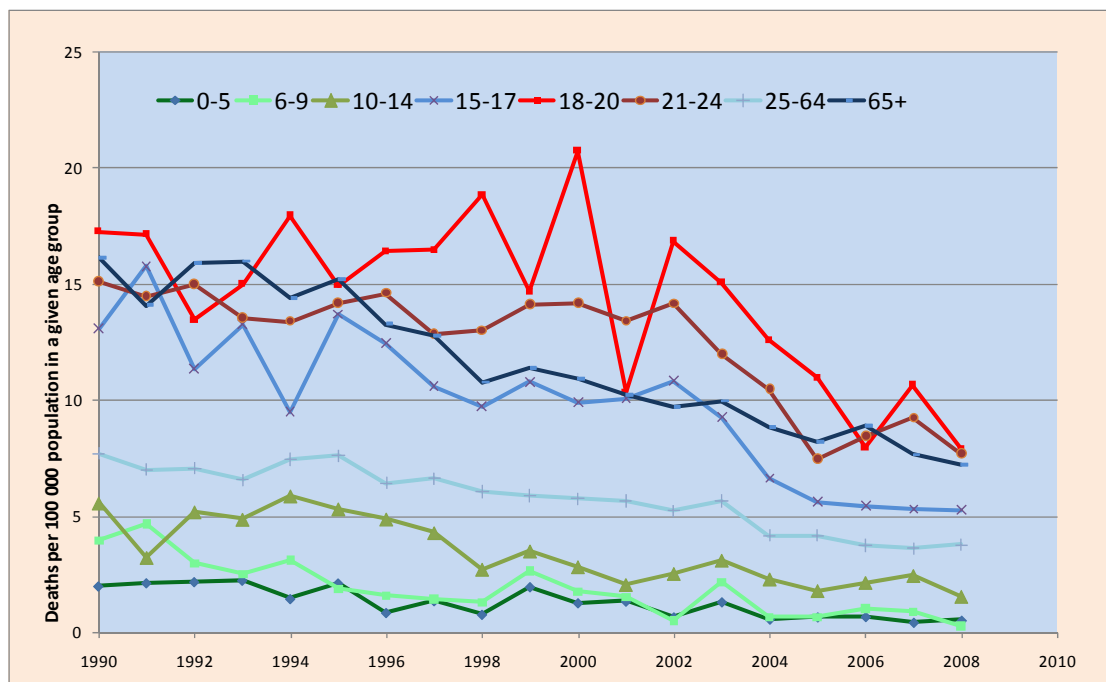
The number of fatalities varies with age. Inexperienced riders and drivers are killed more often in traffic, as are vulnerable road users. Most bicyclists who are killed are between the ages of 12 and 25, and the largest age group for car driver fatalities is 18 to 25.

Since 1970, the reduction in fatalities has benefited all age groups, but the most impressive reduction concerned the youngest group (0-14), for which fatalities decreased by 95%, from 459 in 1970 to 23 in 2008.

Table 5. Reported fatalities by age group

							% change over		
	1970	1980	1990	2000	2007	2008	2007-2008	2000-2008	1970-2008
0-5	175	36	22	15	5	6	20.0%	-60.0%	-97%
6-9	144	78	28	14	7	2	-71.4%	-85.7%	-99%
10-14	140	89	50	27	24	15	-37.5%	-44.4%	-89%
15-17	222	147	81	54	32	32	0.0%	-40.7%	-86%
18-20	280	253	129	118	63	47	-25.4%	-60.2%	-83%
21-24	309	206	152	109	71	60	-15.5%	-45.0%	-81%
25-64	1 263	726	607	510	326	341	4.6%	-33.1%	-73%
>65	648	461	307	235	181	174	-3.9%	-26.0%	-73%

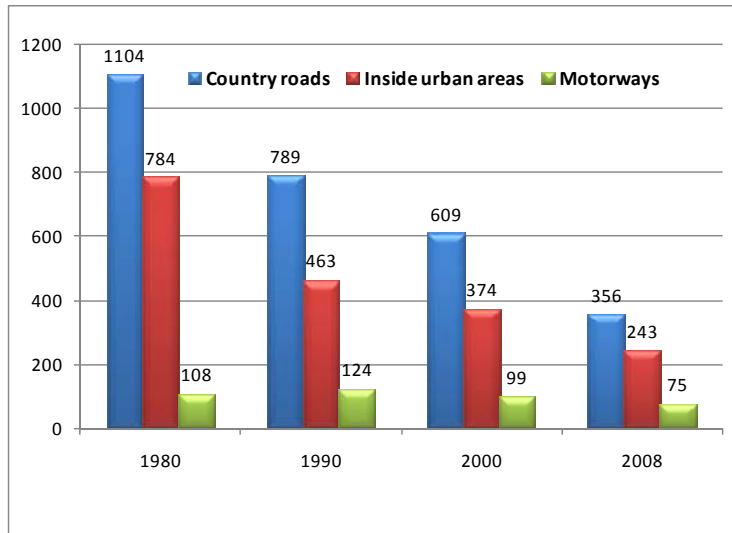
Figure 3. Evolution of fatality risks by age group  
(deaths per 100 000 population in a given group)  
1990-2008



#### ❖ Accident locations

Around 50% of fatal crashes occur on rural roads, 36% in urban areas and 11% on motorways. The decrease in fatalities over the last 20 years has been achieved mainly through improvement of urban and rural roads. Traffic has been significantly increasing on motorways, which explains why the reduction in fatalities has more limited for that category (Figure 4).

Figure 4. Reported fatalities by type of road  
1980, 1990, 2000 and 2008



In 2008, the greatest reduction was achieved in urban areas.

Table 6. Reported fatalities by type of road

	1980	1990	2000	2007	2008	% change over		
						2008-2007	2008-2000	2008-1980
Inside urban areas	784	463	374	270	243	-10%	-35%	-69%
Country roads	1104	789	609	365	356	-2%	-42%	-68%
Motorways	108	124	99	74	75	1%	-24%	-31%

#### 4. Recent development of driving behaviour

##### ❖ Drink driving

Until 2006, the BAC limit in the Netherlands was 0.5 g/l for all drivers. Since 2006, a lower limit of 0.2 g/l has applied for novice drivers (first five years). Driving under the influence of alcohol and/or drugs was a contributing factor in an estimated 30% of fatal crashes in 2008. The prevalence of driving under the influence of alcohol on weekend nights is stable at 3%. Among novice drivers the prevalence is higher at 5%, and in about half of these cases the BAC is between 0.2 ‰ and 0.5‰.

##### ❖ Speed

The development of driving speeds on different road types is mixed. On roads with speed limits of 50 km/h and 80 km/h, the number of violations is rising. On motorways (120 km/h), the tendency since 2005 has been an increasing V90 speed<sup>1</sup>. The V90 on motorways with a limit of 100 km/h is slightly decreasing and thus shows a positive development.

The introduction of new road types has reduced the speed limits on many roads. In 1998, 15% of urban roads had speed limits of 30 km/h or less. As a result of the conversion of 50 km/h roads into 30 km/h in residential

1. Speed below which 90% of the motorists are driving

areas, 70% of urban roads had limits of 30 km/h or less in 2008. A similar development took place on rural roads (excluding state roads): in 1998, 3% of the road length had a limit of 60 km/h. By 2008, the percentage had risen to 60%. These infrastructure developments have reduced driving speeds on these roads substantially.

On motorways, environmental measures to reduce emissions and noise have been introduced on about 3% of the system, which entailed decreasing speed limits from 120 km/h or 100 km/h to 80 km/h.

#### ❖ **Seatbelts and helmets**

Seatbelt use has been compulsory in front seats since 1975, and in rear seats since 1992. The rate of seatbelt use is around 95% in front seats and 80% in rear seats in passenger cars. For vans, the rate of use is lower.

Table 7. **Evolution in seatbelt use for car occupants**

	1980	1990	2000	2005	2008
<b>General</b>	-	-	-	-	-
<b>Front seat – driver</b>	-	-	79%	92%	95%
<b>Front seat – passenger</b>	-	-	80%	90%	94%
<b>Rear seat</b>	-	19%	32%	64%	81%
<b>Motorway – driver</b>	-	-	-	-	-
<b>Rural roads – driver</b>	73%	78%	86%	93%	96%
<b>Urban areas – driver</b>	57%	59%	74%	91%	95%

Helmet wearing has compulsory on motorcycles since 1972 and on mopeds (up to 50cc, maximum speed 45 km/h) since 1975. A helmet is not compulsory on mofas (up to 50cc, maximum speed 25 km/h) and bicycles.

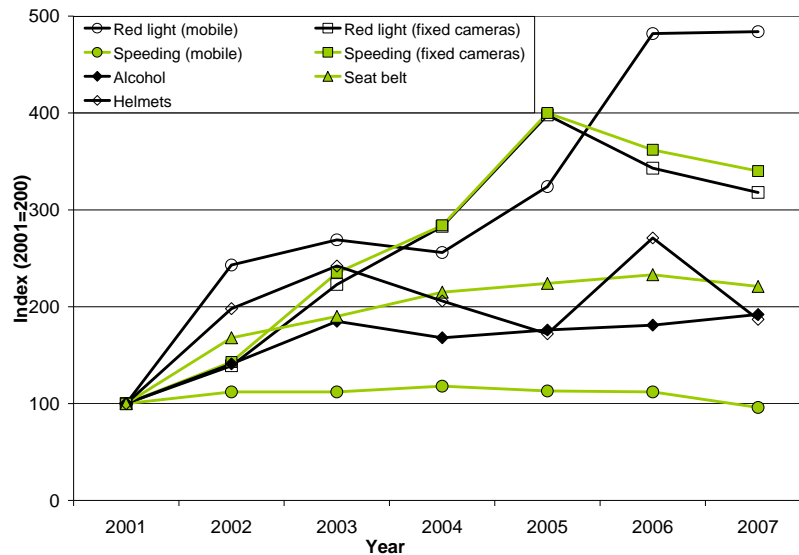
The percentage of riders wearing a helmet depends on vehicle type: nearly all motorcycle riders wear helmets. In 2008, 96% of moped riders, but very few mofa riders, wore helmets. Although the use of moped helmets by passengers increased in 2008, only 75% wore them.

#### ❖ **Enforcement**

Traffic enforcement regarding helmets and seat belts, running of red lights, alcohol use and speeding has increased since 2001, although it has levelled off in recent years.



Figure 5. Index of the number of checks on road users by regional police for traffic offences 2001-2007



Source: BVOM; see [R-2008-12](#).

## 5. National road safety strategies and targets

### Road Safety Strategic Plan 2008-2020

Road safety policy in the Netherlands is guided by a philosophy of sustainable road safety based on several key concepts, including: the human being is the reference standard; prevention is preferable to a curative approach; and the five safety principles of road functionality, homogeneity of mass and/or speed and direction, physical and social forgivingness, recognition and predictability of roads and behaviour, and state awareness.

The 2005 Mobility Policy Document set ambitious goals, including reduction of annual fatalities to no more than 500 by 2020 and of hospitalized casualties to at most 12 250. These goals necessitate ambitious policies, which led to elaboration of the Road Safety Strategic Plan 2008-2020. It is based on the three successful cornerstones of recent years: cooperation, an integral approach and sustainable safety. The 2008-2020 policy relies on two approaches:

- Apply traditional measures to continue building on what has successfully been done for years.
- Focus on specific areas that require targeted attention:
  - vulnerable groups
  - tougher approach to people who cause unsafe traffic situations.

Innovative solutions are an integral part of the range of measures that will be implemented.

### ❖ Safety targets and subtargets

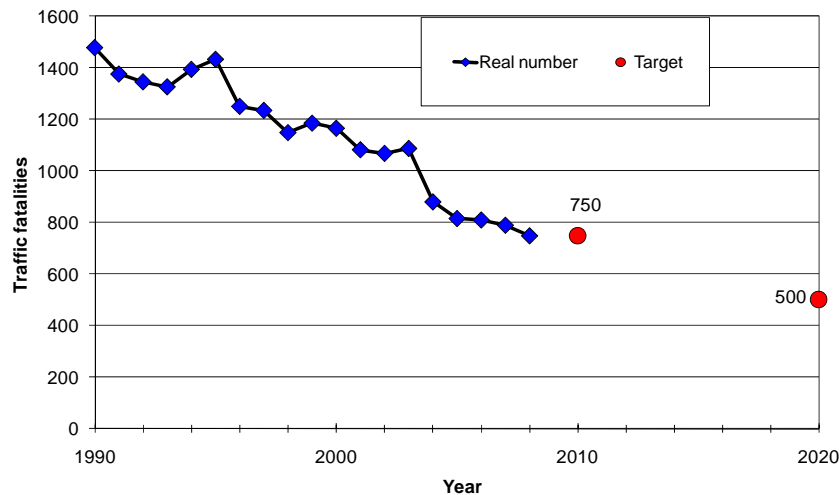
In 2008, in light of the good results achieved, new safety targets were adopted:

- fewer than 500 fatalities by 2020 (750 by 2010)
- fewer than 12 250 hospitalized casualties by 2020 (17 000 by 2010).



If current development and effort continue, the target for 2020 with respect to fatalities seems feasible. It will be much more difficult to achieve the target for hospitalized traffic victims.

Figure 6. Trend in progress towards road fatality target



## 6. Recent safety measures (2007-2009)

### ❖ Road user behaviour, enforcement

- Light Educational Measure Alcohol (LEMA) for drivers who slightly exceed the maximum allowed amount of alcohol (October 2008)
- Educational Measure dangerous Behaviour (EMG): aggressive motor vehicle drivers must follow a special course (October, 2008)
- 20% increase in the amount of fines (April 2008)
- An “alcolock” law is under preparation

### ❖ Licensing, regulation

- New category of driving licence for mopeds (October 2009)
- Ban on mobile phone use for light moped riders (May 2009)
- Speed limit of 90 km/h on trunk roads and motorways for any car or delivery van with a light trailer (May 2009)
- Compulsory post-test for truck drivers (March 2009)
- Obligatory post-test for bus drivers (September 2008)
- New driving test (January 2008)
- New regulation on driving times and rest periods for heavy vehicles (European Directive) (April 2007)
- Practical exam for light moped riders (under preparation, January 2010)
- Accompanied driving (under preparation, January 2011)

The proposal would allow young people to start driving lessons at age 16.5 and obtain their driving licence at 17 upon passing a standard driving exam. Then, until they are 18, they would be able to drive only when accompanied by an experienced driver who met certain requirements in terms of driving experience and behaviour. From the age of 18 it will remain possible to pass the driving test and drive unaccompanied immediately afterwards.

## ❖ Education and communication

- Educational campaigns to prevent blind spot crashes (August 2008)
- Information campaign on fatigue (June 2008)

## ❖ Vehicles

- All lorries within the European Union must have blind spot mirrors (under preparation, January 2011)

## 7. Major recent or ongoing research (2007-2009)

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- Schoon C.C., Doumen M.J.A., Bruin D. de (2008). [\*\*De toedracht van dodehoekongevallen en maatregelen voor de korte en lange termijn\*\*](#) Een ongevalanalyse over de jaren 1997-2007, verkeersobservaties en enquêtes onder fietsers en vrachtautochauffeurs en bijlagen (***The circumstances of blind spot crashes and short- and long-term measures. A crash analysis over the years 1997-2007. Traffic observations, and surveys among cyclists and lorry drivers and appendices***), SWOV, [R-2008-11A](#) and [R-2008-11B](#).
- Aarts L.T., Weijermars W.A.M., Schoon C.C., Wesemann, P. (2008). [\*\*Maximaal 500 verkeersdoden in 2020: waarom eigenlijk niet?\*\*](#) Maatregelpakketten en effectschattingen om te komen tot een aangescherpte verkeersveiligheidsdoelstelling (***A maximum of 500 road deaths in 2020: why not? Measures and effect estimates aimed at achieving a more ambitious road safety target***), SWOV, [R-2008-05](#).
- Schermers G., Reurings M.C.B. (2009, forthcoming), ***Verkeersveiligheidseffecten van de invoering van Anders Betalen voor Mobiliteit Een doorkijk naar de periode tot 2040 (Road safety impact of another way of paying for mobility)***  
To minimize congestion after 2012, motor vehicle drivers will pay a higher fee to use the motorway and some A-roads. This will be compensated by a decrease of taxes on new vehicles and general road tax. It is estimated that mobility will decrease by 10% in 2020 with respect to the development without this plan. The number of fatalities and hospitalized casualties will decrease by between 3% and 7%.
- Reurings M.C.B., Bos N.M. (2009, forthcoming), [\*\*Ernstig gewonde verkeersslachtoffers in Nederland in 1993-2008\*\*](#). *Het werkelijke aantal in ziekenhuizen opgenomen verkeersslachtoffers met een MAIS van ten minste 2. (Seriously injured road crash casualties in the Netherlands in the period 1993-2008; The real number of in-patients with a minimum MAIS of 2)*. SWOV, R-2009-12.  
In the Netherlands a “seriously injured traffic casualty” has usually been defined as a hospitalized casualty (at least one night in hospital). SWOV research shows that these persons were not always seriously injured. The minister of transport decided that future road traffic safety monitoring should take into account only the casualties actually seriously injured by including only those with a Maximum AIS (Abbreviated Injury Scale) of at least 2. The report gives the real number of seriously injured for 1993-2008 by this new definition and describes the new method of estimating real numbers.
- Weijermars W.A.M. (2009, forthcoming), [\*\*Tien jaar Duurzaam Veilig. Verkeersveiligheidsbalans 1998-2007. \(Ten years of Sustainable Safety\*\*](#). Road safety analysis 1998-2007). SWOV. R-2009-14.

## 8. References – Useful websites and references

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<b>Key Figures Road Safety in the Netherlands</b>	English (2008): <a href="http://www.rijkswaterstaat.nl/dvs/Images/Road%20safety%20in%20the%20NL%20key%20figures%202008_tcm178-237833.pdf">www.rijkswaterstaat.nl/dvs/Images/Road%20safety%20in%20the%20NL%20key%20figures%202008_tcm178-237833.pdf</a> Dutch (2009): <a href="http://www.verkeerenwaterstaat.nl/english/Images/strategischplan-E_tcm249-249506.pdf">www.verkeerenwaterstaat.nl/english/Images/strategischplan-E_tcm249-249506.pdf</a>
<b>Road Safety Strategic Plan 2008-2020</b>	<a href="http://www.verkeerenwaterstaat.nl/english/Images/strategischplan-E_tcm249-249506.pdf">www.verkeerenwaterstaat.nl/english/Images/strategischplan-E_tcm249-249506.pdf</a>
<b>SWOV fact sheets</b>	<a href="http://www.swov.nl/UK/Research/Publicaties/inhoud/factsheets.htm">www.swov.nl/UK/Research/Publicaties/inhoud/factsheets.htm</a>

# NEW ZEALAND<sup>1</sup>

## 1. General comments on trends for 2008

The number of road fatalities fell by 13% in 2008, to 366. The decrease coincided with a slight decrease in the number of vehicle-kilometres travelled.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

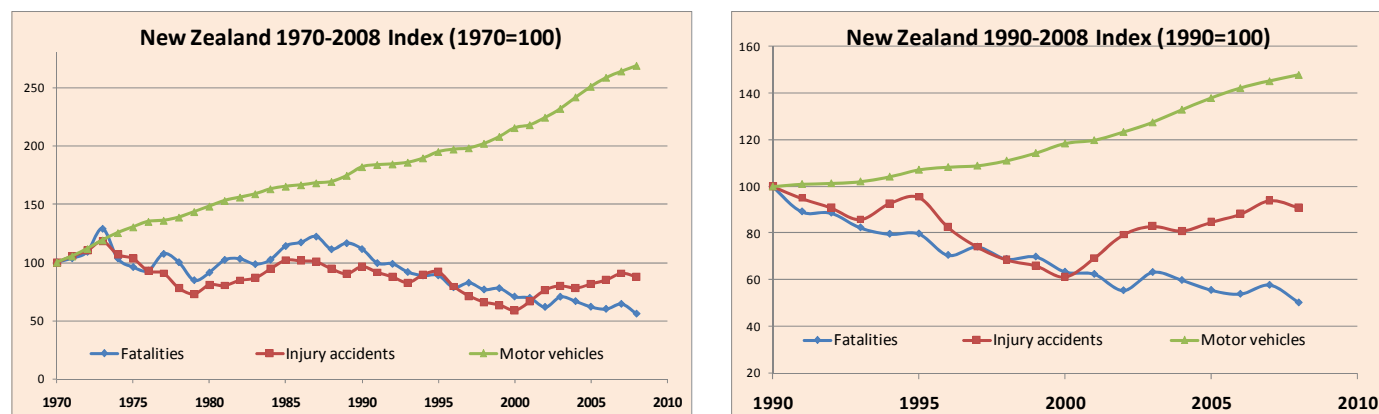
Between 1970 and 2008, the number of fatalities decreased by more than 40% and the number of injury crashes by 12%, while the number of vehicles almost tripled. In recent years (2000-2008), the number of fatalities continued to fall, by 21%. Since 2000, the distance travelled has increased by 8%.

Table 1. Number of road fatalities, seriously injured and injury crashes, 1970-2008

												% change over		
	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	2007-2008	2000-2008	1970-2008
Fatalities	655	729	462	455	404	461	436	405	393	421	366	-13%	-21%	-44%
Injury crashes	13 297	12 818	7 830	8 865	10 162	10 615	10 368	10 849	11 293	12 043	11 647	-3%	+49%*	-12%

\* Note that comparison of police-reported casualties and hospital data suggest there was an improvement in the rate of crash reporting by police after 2001.

Figure 2. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008



<sup>1</sup> Source: IRTAD, Ministry of Transport of New Zealand

### ❖ Time series for key risk indicators

Between 1970 and 2008, the mortality rate, expressed in terms of deaths per 100 000 population, decreased by 63%.

Table 2. Risk indicators  
1970, 1980, 1990, 2000, 2008

Rates (reported)	1970	1980	1990	2000	2008	% change over	
						2000-2008	1970-2008
Deaths/100 000 population	23.0	18.9	21.4	12.1	8.6	-29%	-63%
Deaths/10 000 motor vehicles	5.4	3.3	3.3	1.8	1.1	-37%	-79%
Deaths/per billion veh-km	-	-	-	12.4	9.1	-27%	-
Motorisation (number of vehicles/1 000 inhabitants)	423.8	563.3	644.6	679.2	760.8	12%	80%

### 3. Recent development of accident trends

#### ❖ Road users

All user groups, but especially vulnerable road users, have benefited from the improvement. Between 1970 and 2008, the number of pedestrians killed decreased by almost 70%. The number of bicyclists killed fell by 64%. The number of fatalities among motorcyclists decreased by more than 70%.

In 2000-2008, all user groups benefited from a decrease in the number of fatalities. The decrease was more marked for motorcyclists. In 2008, passenger car occupants saw the largest decrease in fatalities.

Table 3. Reported fatalities by road user group  
1970, 2000, 2007 and 2008

									% change over		
	1970		2000		2007		2008		2007-2008	2000-2008	1970-2008
<b>Passenger car occupants</b>	467	71%	358	77%	308	73%	<b>258</b>	70%	-16%	-28%	-45%
<b>Bicyclists</b>	28	4%	19	4%	12	3%	<b>10</b>	3%	-17%	-47%	-64%
<b>Motorised two-wheelers</b>	43	6%	31	7%	41	10%	50	14%	22%	61%	16%
<b>Pedestrians</b>	99	15%	35	8%	45	11%	31	8%	-31%	-11%	-69%
<b>Other</b>	18	3%	19	4%	16	4%	17	5%	6%	-11%	-6%

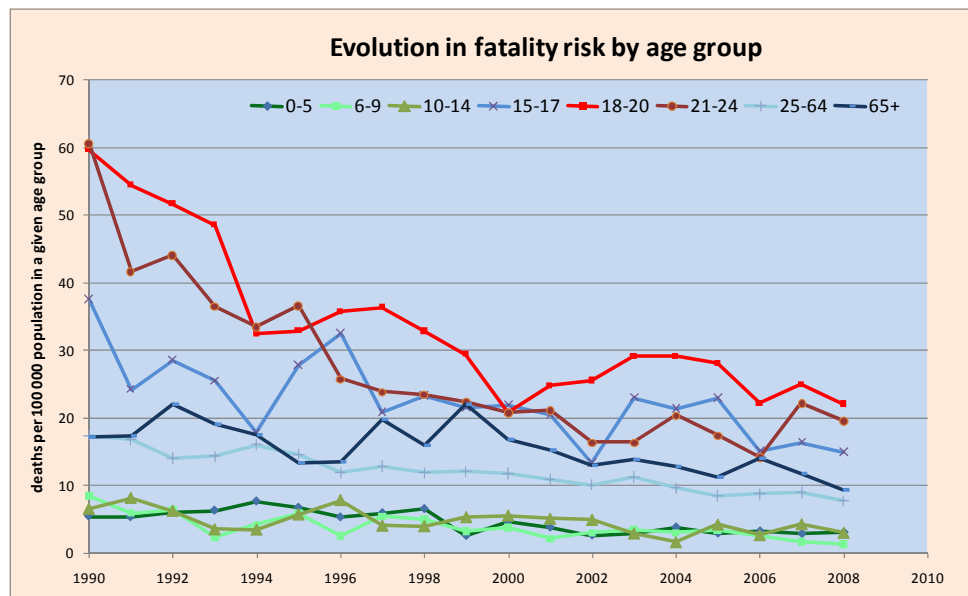
#### ❖ Age groups

Since 1970, the reduction in fatalities has benefited all age groups, but the highest reduction concerned the youngest group (0-14), for which fatalities decreased by 73%, from 63 in 1970 to 23 in 2008.

Table 4. Reported fatalities by age group

	1970	1980	1990	2000	2007	2008	% change over		
							2007-2008	2000-2008	1970-2008
0-5	30	29	18	16	10	11	10%	-31%	-63%
6-9	28	18	17	9	4	3	-25%	-67%	-89%
10-14	25	16	17	16	13	9	-31%	-44%	-64%
15-17	58	52	65	36	32	29	-9%	-19%	-50%
18-20	91	102	108	34	46	42	-9%	24%	-54%
21-24	76	88	131	42	52	46	-12%	10%	-39%
25-64	267	218	290	232	197	171	-13%	-26%	-36%
>65	71	67	65	76	62	50	-19%	-34%	-30%

Figure 2. Evolution of fatality risks by age group  
(deaths per 100 000 population in a given group)  
1990-2008



#### ❖ Accident locations

In 2008 the large majority of fatal crashes occurred on country roads. The decrease in fatalities over the last 20 years has been achieved mainly through improvement of urban roads.

Figure 3. Reported fatalities by type of road  
1980, 1990 and 2008

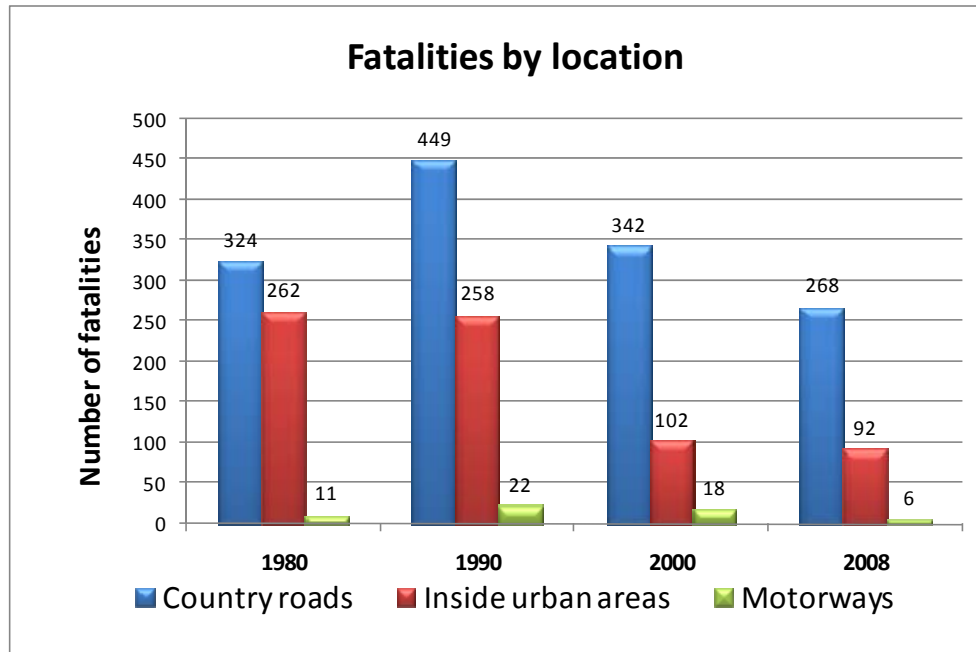


Table 5. Reported fatalities by type of road

	1980	1990	2000	2007	2008	% change over		
						2007-2008	2000-2008	1980-2008
Inside urban areas	262	258	102	105	92	-12%	-10%	-65%
Country roads	324	449	342	308	268	-13%	-22%	-17%
Motorways	11	22	18	8	6	-25%	-67%	-45%

#### 4. Recent development of driving behaviour

##### ❖ Drink driving

The maximum authorised BAC is 0.8 g/l. Table 7 indicates the number and percentage of drivers killed with a BAC above 0.8 g/l.

Table 6. Number and percentage of drivers killed with a BAC > 0.8 g/l,  
2001-2008

Drivers killed with excess alcohol	2001	2002	2003	2004	2005	2006	2007	2008*
Number	55	60	70	69	58	54	65	59
Percent	21%	24%	27%	27%	25%	24%	27%	28%



## ❖ Speed

Table 7 illustrates the level of speeding in New Zealand.

Table 7. Percentage of drivers above the posted speed limit, 2001-2008

Speed (survey unimpeded speeds)	2001	2002	2003	2004	2005	2006	2007	2008*
% exceeding open road 100 km/h limit	47%	43%	39%	39%	36%	32%	29%	30%
% exceeding urban 50 km/h limit	79%	76%	72%	67%	63%	63%	63%	64%

## ❖ Seat belts and helmets

Seat belt use has been compulsory in front seats since 1972 and in rear seats since 1979. The rate of seatbelt use is around 95% in front seats and 87% in rear seats (Table 8).

Helmet wearing has been compulsory on motorcycles since 1956 if travelling over 50km/h and since 1973 at all speeds. Helmet wearing has been compulsory on mopeds (up to 50cc, maximum speed 45 km/h) since 1973.

A helmet has been compulsory on bicycles since 1994.

Table 8. Evolution in seat belt and helmet usage rate, 2001-2008

Seat belts used/Helmets worn	2001	2002	2003	2004	2005	2006	2007	2008*
Adult front seat	92%	92%	92%	94%	95%	95%	95%	95%
Adult rear seat	70%	78%	81%	86%	86%	89%	87%	87%
Child restraint – under 5 years	82%	86%	86%	87%	89%	91%	91%	90%
Bicycle helmets	94%	89%	89%	92%	91%	94%	92%	92%

## 5. National road safety strategies and targets

**Road Safety to 2010** was adopted in 2002. It provides a direction for road safety in New Zealand and describes the results the government wants to achieve by 2010. New Zealand has set overall road safety goals in relation to social cost, deaths, and hospitalisations to the end of the year 2010 (Table 9).

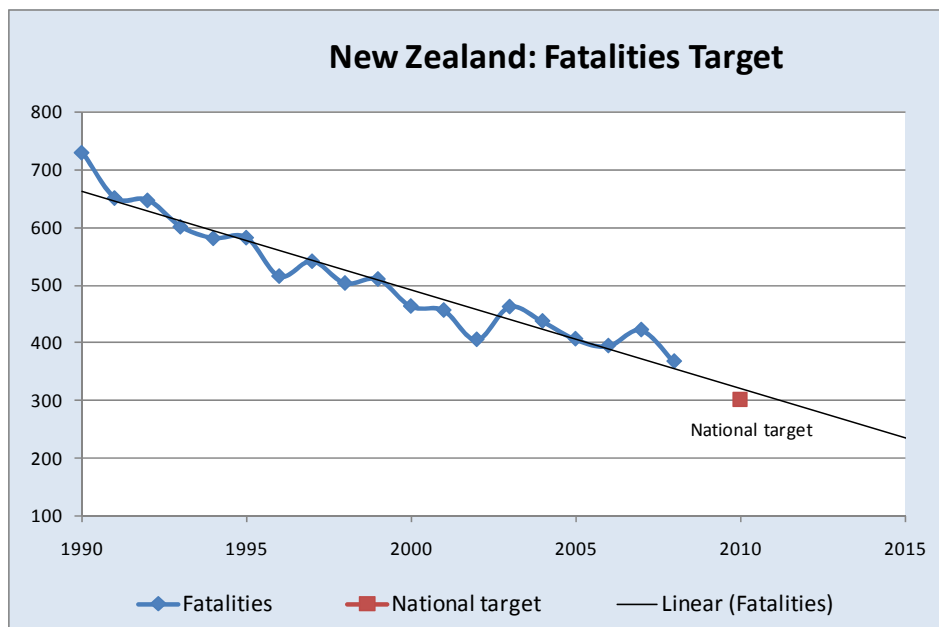
A new strategy to 2020, *Safer Journeys*, is being developed and discussed, with public consultations having taken place from August to October 2009.

Table 9. Road safety goals

		Goals 2010 not exceeding
Social cost <sup>1</sup>	\$ billion	2.15
	Cents per vehicle-kilometre	4.4
	\$ per person	650
	\$ per vehicle	940
Deaths <sup>2</sup>	Total	300
	Rate per billion veh-km	6.1
	<b>Rate per 100 000 persons</b>	<b>7.3</b>
	Rate per 10 000 vehicles	1.1
Hospitalisations <sup>3</sup>	Total	4 500
	Rate per billion veh-km	90
	Rate per 100 000 persons	110
	Rate per 10 000 vehicles	16
	Hospitalisations for more than 1 day	2 200
	Hospitalisations for more than 3 days	1 400

Progress made towards the target of no more than 300 deaths by December 2010 is illustrated in Figure 4.

Figure 4. Trend in progress towards road fatality target



1. The cost of crashes resulting only in property damage is excluded because the data are unreliable and the cost is relatively small. Social costs are expressed in June 2001 prices.
2. Deaths include injuries that result in death within 30 days of the crash.
3. Hospitalisations are the number of hospital admissions in each area reported by the New Zealand Health Information Service. Along with fatalities, the numbers of people hospitalised for more than one and more than three days have been included as measures of more serious injuries.

## 6. Recent safety measures (2007-2009)

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### ❖ Road user behaviour, enforcement

**Ban on hand-held cell phones.** The land transport road user rule was amended in August 2009 to include a ban on the use of hand-held mobile phones while driving. One study has shown that using a mobile phone while driving can as much as quadruple a driver's risk of being involved in a crash.

## 7. References – Useful websites and references

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New Zealand's road safety strategy to 2020	<a href="http://www.transport.govt.nz/saferjourneys/">http://www.transport.govt.nz/saferjourneys/</a>
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# NORWAY<sup>1</sup>

## 1. General comments on trends for 2008

In 2008, the number of fatalities was 255, up by 9% from the 233 deaths in 2007. However, preliminary data for 2009 show a sharp decrease in the number of casualties.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Between 1970 and 2008, the number of fatalities decreased by more than 50%, while the number of vehicles almost tripled. In recent years (2000-2008), the number of fatalities continued to fall, by 25%. Since 2000 the distance travelled has increased by 19%.

An in-depth investigation of fatal accidents since 2005 shows that 38% of the fatalities resulted from single-vehicle accidents and 32 % were from frontal collisions.

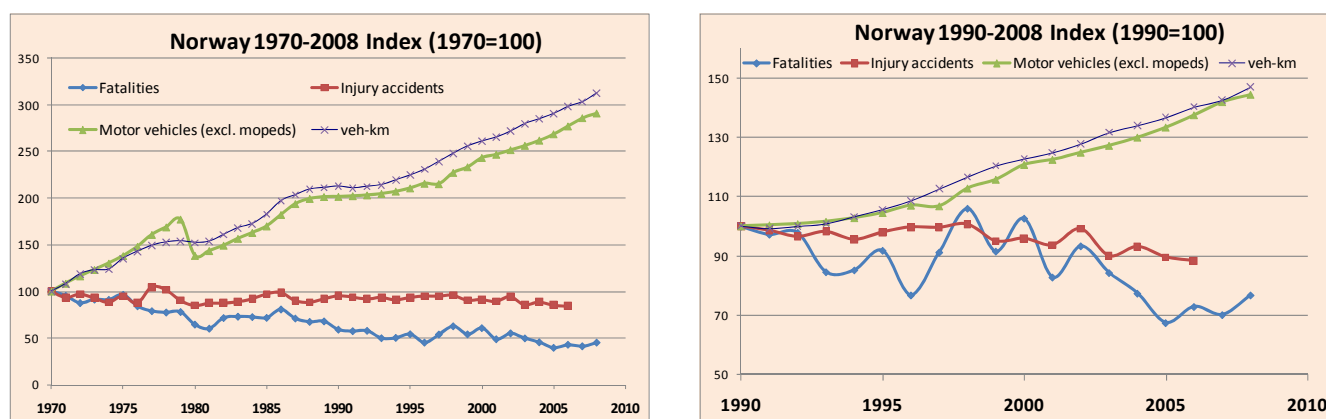
High speed was one of the most significant causal factors in these accidents, and lack of seat belt use was a main contributing factor in the consequences of many accidents.

Table 1. **Number of road fatalities, seriously injured and injury crashes 1970-2008**

	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	% change over:		
												2007-2008	2000-2008	1970-2008
Fatalities	560	332	341	275	312	282	258	223	242	233	255	9%	-25%	-54%
Injury crashes	9 266	8 801	8 440	8 244	8 724	7 921	8 194	7 883	7 776	7 997	7 537	-6%	-11%	-19%

1. Source: IRTAD, Norwegian Public Road Administration

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles  
1970-2008



### ❖ Time series for key risk indicators

Between 1970 and 2008, the mortality rate, expressed in terms of deaths per 100 000 population, decreased by 63%.

Table 2. Risk indicators  
1970, 1980, 1990, 2000, 2008

Rates (reported)						% change over	
	1970	1980	1990	2000	2008	2000-08	1970-2008
Deaths/100 000 population	14.6	8.9	7.8	7.6	5.4	-29%	-63%
Deaths/10 000 motor vehicles	5.1	2.4	1.5	1.3	0.8	-38%	-84%
Deaths/billion veh-km	-	19.3	12.0	10.5	6.1	-42%	-
Motorisation (number of vehicles/1 000 inhabitants)	284.4	371.2	520.9	592.7	671.7	13%	136%

## 3. Recent development of accident trends

### ❖ Road users

All user groups, but especially vulnerable road users, have benefited from the improvement in safety. Between 1970 and 2008, the number of pedestrians killed decreased by more than 80%. The number of bicyclists killed fell by almost 80%. The number of fatalities among moped riders decreased by more than 80%.

In 2000-2008, passenger car occupants were the user group which saw the largest decrease in fatalities.

In 2008, bicyclist and pedestrian fatalities increased.

Table 3. Reported fatalities by road user group  
1970, 2000, 2007 and 2008

									% change over:		
	1970		2000		2007		2008		2007-08	2000-08	1970-2008
Passenger car occupants	248	44%	224	66%	158	68%	149	58%	-6%	-33%	-40%
Bicyclists	42	8%	13	4%	7	3%	10	4%	43%	-23%	-76%
Mopeds	29	5%	6	2%	7	3%	5	2%	-29%	-17%	-83%
Motorcycles and scooters	26	5%	40	12%	33	14%	32	12%	-3%	-20%	23%
Pedestrians	182	33%	47	14%	23	10%	33	13%	43%	-30%	-82%
Other	33	6%	11	3%	5	2%	26	10%	420%	136%	-21%

Table 4 illustrates the relative fatality risk for the different road user groups. For a motorcyclist, the risk of dying in a traffic crash is five times higher than that for a car occupant.

Table 4. Relative fatality risk by road user group (average 2004-2008)

	Reported fatalities (annual average 2004-2008)	Deaths (inside or on the vehicle) per million vehicles	Average kilometrage per vehicle
Pedestrians	29		
Bicycles	8		
Mopeds	5	n	
Motorcycles	33	279	
Car and van occupants	164	(including heavy vehicles) 59	13 541.25
Other (small trucks, heavy trucks, buses)	4		82 445.50

#### ❖ Age groups

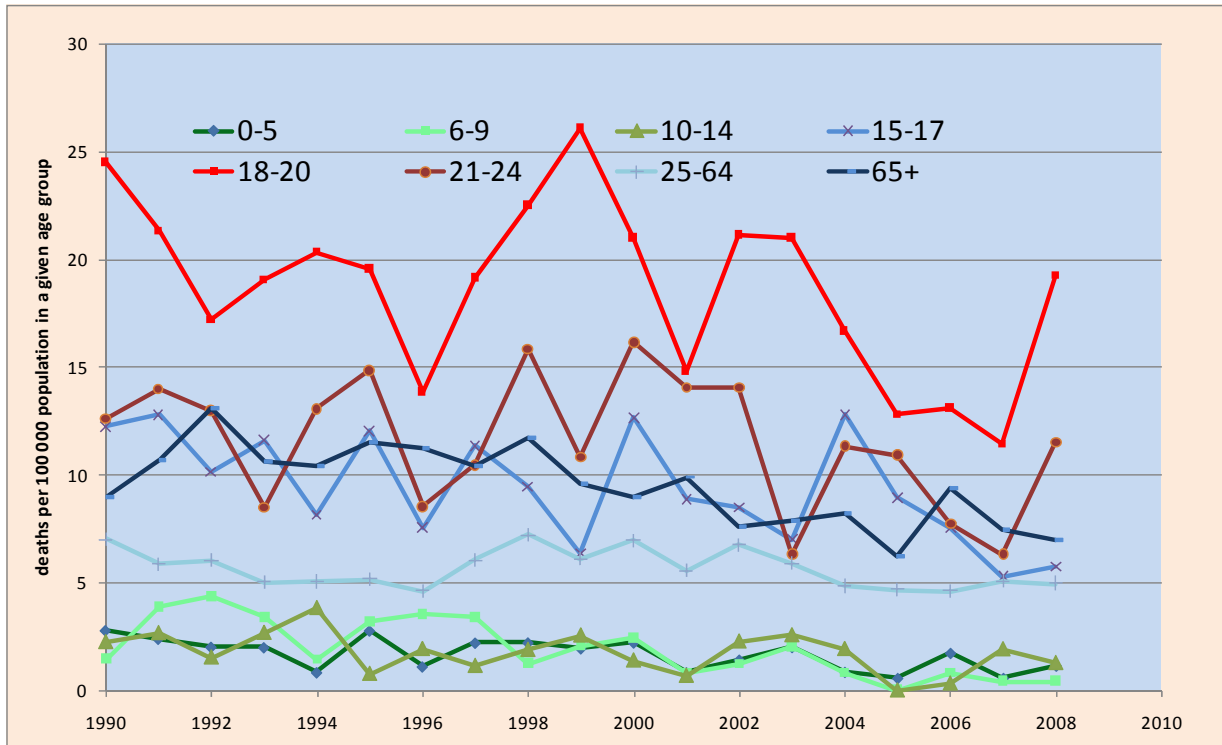
The number of fatalities varies with age. Since 2000, the reduction in fatalities has benefited most age groups, but the highest reduction concerned the youngest group (0-14), for which fatalities decreased by 50%, from 18 in 1980 to 9 in 2008. The only age group which has seen an increase is 18- to 20-year-olds.

Young people (18-24) are the age group the most at risk, with a mortality rate almost three times that of the general population.

Table 5. Reported fatalities by age group

							% change over:		
	1970	1980	1990	2000	2007	2008	2007-08	2000-08	1970-2008
0-5	-	9	9	8	2	4	100%	-50%	-%
6-9	-	14	3	6	1	1	0%	-83%	-%
10-14	-	10	6	4	6	4	-33%	0%	-%
15-17	34	35	23	20	10	11	10%	-45%	-68%
18-20	-	52	49	34	20	35	75%	3%	-%
21-24	-	46	34	36	14	26	86%	-28%	-%
25-64	186	121	146	165	127	126	-1%	-24%	-32%
>65	131	75	62	61	51	48	-6%	-21%	-63%

Figure 2. Evolution of fatality risks by age group  
(deaths per 100 000 population in a given group)  
1990-2008



#### 4. Recent development of driving behaviour

##### ❖ Drink driving

An in-depth investigation of accidents that occurred in 2005-2008 showed that alcohol and drug abuse was a contributing factor in 22% of accidents, on average. In 2008 the figure was 27%.

##### ❖ Speed

The in-depth investigation of fatal accidents for 2005-2008 showed that excessive speed was a contributing factor in 46% of accidents, on average, with the figure for 2008 being 51%.

The authorities have adopted a strategy with a special focus on people aged 16 to 24. A national campaign for 2009-2012 was launched, targeting drivers who consider themselves responsible even though they exceed the speed limit. The goal is to improve drivers' knowledge of the relationship between speed and crash risk and reduce the number of fatalities and seriously injured by changing speeding behaviour.

Speed section control will be implemented in two sections selected based on their crash risk.

Furthermore, Norway is seeking to make speeding socially unacceptable.

## ❖ Seat belts and helmets

Seat belt use has been compulsory in front seats since 1975 and in rear seats since 1985. The rate of seat belt use in front seats is around 89.0% in rural areas, 94.3% outside rural areas, and 91.6% on motorways. There is no monitoring of seat belt use in rear seats yet, but it is estimated to be seven to eight percentage points lower.

Every four years the Norwegian Public Roads Administration investigates attitudes and self-reported behaviour among traffic participants. The results for 2008 showed that the seat belt usage rate for car drivers was 97%, unchanged from 2002 and 2004. The survey also questioned car passengers for the first time: 82% said they had used the seat belt the last time they travelled in a car.

Table 6. Evolution in seat belt use by car occupants

	1980	1990	2000	2005	2008
<b>Motorways – driver</b>	-%	-%	91%	8%9	94%
<b>Rural roads – driver</b>	90%	91%	92%	92%	94%
<b>Urban areas – driver</b>	74%	67%	78%	87%	90%

Helmet wearing has been compulsory on motorcycles and mopeds since 1977. Helmet use is not compulsory on bicycles.

## 5. National road safety strategies and targets

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Norway has adopted a Vision Zero project based on the experience of Sweden. The project is part of the National Plan of Action for Traffic Safety 2002-2011. The government has decided that Vision Zero is the basis for traffic safety activities in Norway. Vision Zero was first discussed in the parliament when the National Transport Plan 2002-2011 was introduced and also featured in discussion of the National Transport Plan 2006-2015.

In the document “Road Traffic Safety 2002-2011” the government stated:

*The Government views the large number of killed and injured in road traffic as a serious national concern. Therefore, a vision of no one being killed or permanently disabled has been established as a basis for the long-term traffic safety effort. The vision means that the Government, in addition to conducting a policy with the goal of reducing the total number of accidents, will focus strongly on measures that can reduce the most serious accidents.*

The Norwegian Vision Zero involves the entire transport system. The intent is to reduce the total number of accidents, but the main emphasis is put on serious accidents that can lead to fatalities and serious injuries.

As part of its 2010-2019 National Transport Plan, Norway adopted a target of reducing the number of people killed and seriously injured by 33% between 2009 and 2020.



## 6. Major research undertaken in 2007-2009

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- Drink driving with heavy vehicles. Prevalence, accident risk and possible counter measures, 1021/2009 (Terje Assum, Alena Katharina Høy, TØI (The Institute of Transport Economics, Oslo).
- Speed: Attitude, knowledge and behaviour, 1005/2009 (Agathe Backer-Grøndahl, TØI (The Institute of Transport Economics, Oslo).

## 7. References – Useful websites and references

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<b>Public road administration</b>	<a href="http://www.vegvesen.no">www.vegvesen.no</a>
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# POLAND<sup>1</sup>

## 1. General comments on trends for 2008

The number of road fatalities fell in 2008 to 5 437, a 3% decrease from 2007. The most progress was achieved for bicyclists (-13%) and pedestrians (-2%), while the situation worsened for moped and motorcycle riders.

## 2. Long term trends

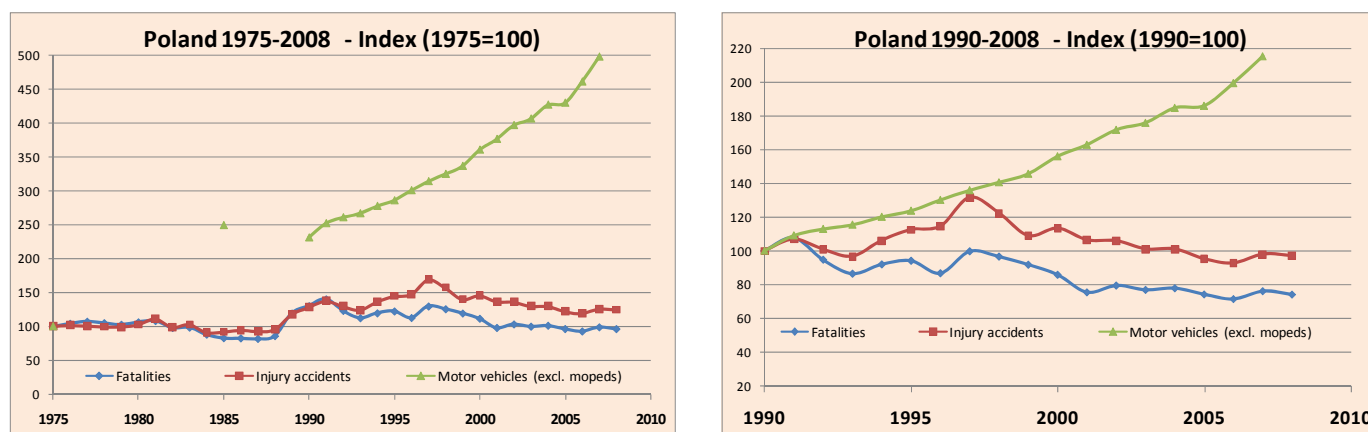
### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Between 1970 and 2008, the number of fatalities increased by almost 60% and the number of injury crashes by 17%, while the number of vehicles rose by a factor of almost six. In recent years (2000-2008) the upward trend was broken and both the number of fatalities and the number of injury crashes fell by 14%.

Table 1. Number of road fatalities and injury crashes  
1970-2008

	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	% change over:		
												2007-2008	2000-2008	1970-2008
Fatalities	3 446	7 333	6 294	5 534	5 827	5 640	5 712	5 444	5 243	5 583	5 437	-3%	-14%	58%
Injury crashes	41 813	50 532	57 331	53 799	53 559	51 078	51 069	48 100	46 876	49 536	49 054	-1%	-14%	17%

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles  
1970-2008



1. Source: IRTAD ; Motor Transport Institute.

### ❖ Time series for key risk indicators

Between 1970 and 2008, the mortality rate, expressed in terms of deaths per 100 000 population, increased by 35%.

Table 2. Risk indicators  
1970, 1980, 1990, 2000, 2008

Rates (reported)	1970	1980	1990	2000	2008	% change over:	
						2000-2008	1970-2008
Deaths/100 000 population	10.6	16.8	19.2	16.3	14.3	-13%	35%
Deaths/10 000 motor vehicles	12.1	10.9	8.1	4.5	2.8	-37%	-77%
Deaths/billion veh-km	-	-	-	12.4	9.1	-	-
Motorisation (number of vehicles/1 000 inhabitants)	87.3	153.8	236.8	365.0	510.8	40%	485%

### 3. Recent development of accident trends

#### ❖ Road users

In 2000-2008, all user groups except motorcyclists benefited from a decrease in the number of fatalities. The decrease was more marked for passenger car occupants. In 2008, the number of fatalities among motorcyclists continued to increase, rising by more than 20% from 2007. For a motorcyclist, the risk of dying in a traffic crash is double that for a car occupant.

Table 3. Reported fatalities by road user group  
2000, 2007 and 2008

	2000		2007		2008		% change over:	
							2007-2008	2000-2008
Passenger car occupants	2 709	43%	2 582	46%	2 540	46%	-2 %	-7 %
Bicyclists	692	11%	498	9%	433	8%	-13 %	-38 %
Mopeds	75	1%	59	1%	87	1%	+47%	+16%
Motorcycles and scooters	178	3%	215	4%	262	5%	22%	47%
Pedestrians	2 256	36%	1 951	35%	1 882	35%	-4%	-17%
Other	383	6%	278	5%	233	5%	-16 %	-40%

Table 4. **Accidents with motorcyclists in Poland  
2001-2008**

Year	Accidents		Killed			Injured		
	Total number of accidents involving motorcyclists	% of total number of accidents	Total number killed in accidents with motorcyclist involvement	Number of motorcycle drivers and passengers killed	% of total number killed	Total number of injured in accidents with motorcyclist involvement	Number of motorcycle drivers and passengers injured	% of total number injured
2001	1 668	3%	198	169	3%	1 937	1 528	2%
2002	1 712	3%	189	167	3%	1 992	1 562	2%
2003	1 618	3%	170	145	3%	1 821	1 444	2%
2004	1 524	3%	210	181	3%	1 714	1 391	2%
2005	1 443	3%	183	157	3%	1 540	1 290	2%
2006	1 588	3%	185	164	3%	1 732	1 428	2%
2007	1 924	4%	243	215	4%	2 121	1 781	3%
2008	2 486	5%	300	262	5%	2 707	2 270	4%
change 08/07	29%		23%	22%		28%	27%	
change 08/01	49%		52%	55%		40%	49%	

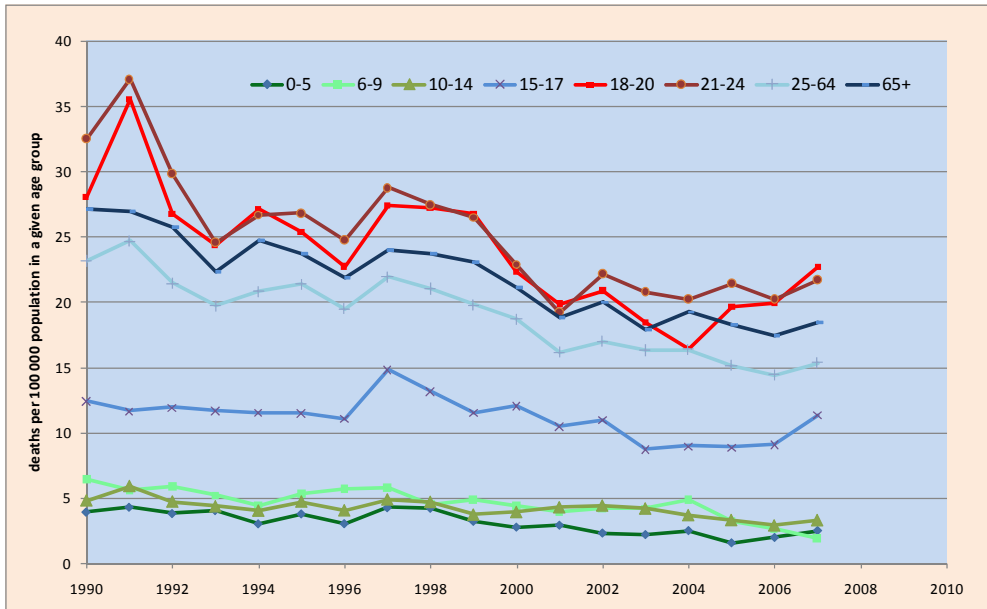
❖ **Age groups**

Since 1990, the reduction in fatalities has benefited all age groups, but the highest reduction concerned the youngest group (0-14), for which fatalities decreased by from 471 in 1990 to 156 in 2007.

Table 5. **Reported fatalities by age group  
1990, 2000, 2007**

				% change over
	1990	2000	2007	1990-2007
<b>0-5</b>	139	66	54	-61%
<b>6-9</b>	176	89	29	-84%
<b>10-14</b>	156	112	73	-53%
<b>15-17</b>	223	245	180	-19%
<b>18-20</b>	455	443	385	-15%
<b>21-24</b>	636	583	569	-11%
<b>25-64</b>	4 493	3 751	3 251	-28%
<b>&gt;65</b>	1 055	1 004	946	-10%

Figure 2. Evolution of fatality risks by age group  
(deaths per 100 000 population in a given group)  
1990-2008



❖ Accident locations

In 2008 the large majority of fatal crashes occurred on country roads and in urban areas. The decrease in fatalities over the last 20 years has been achieved mainly through improvement of country roads.

Figure 3. Reported fatalities by type of road  
1980, 1990, 2008

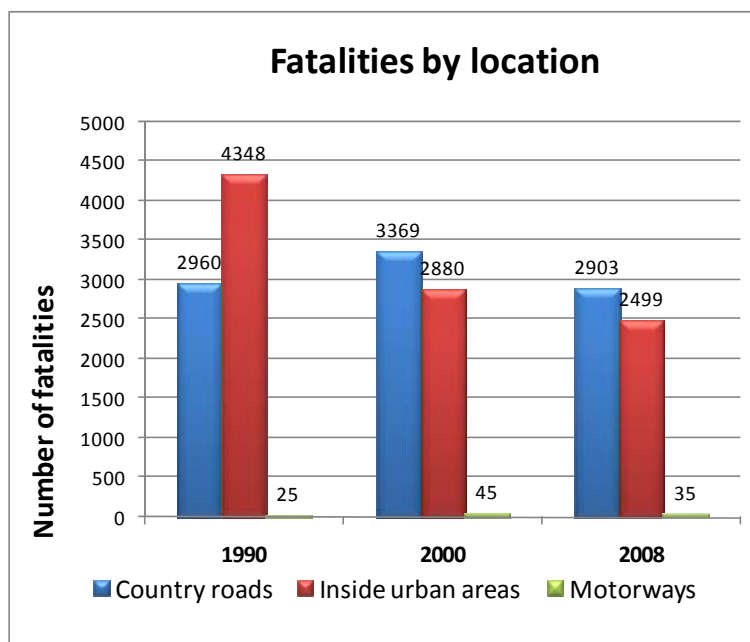


Table 1. Reported fatalities by type of road

					% change over		
	1990	2000	2007	2008	2007-2008	2000-2008	1990-2008
Inside urban areas	4348	2880	2549	2499	-2%	-13%	-43%
Country roads	2960	3369	2981	2903	-3%	-14%	-2%
Motorways	25	45	53	35	-34%	-22%	+40%

#### 4. Recent development of driving behaviour

##### ❖ Seat belts and helmets

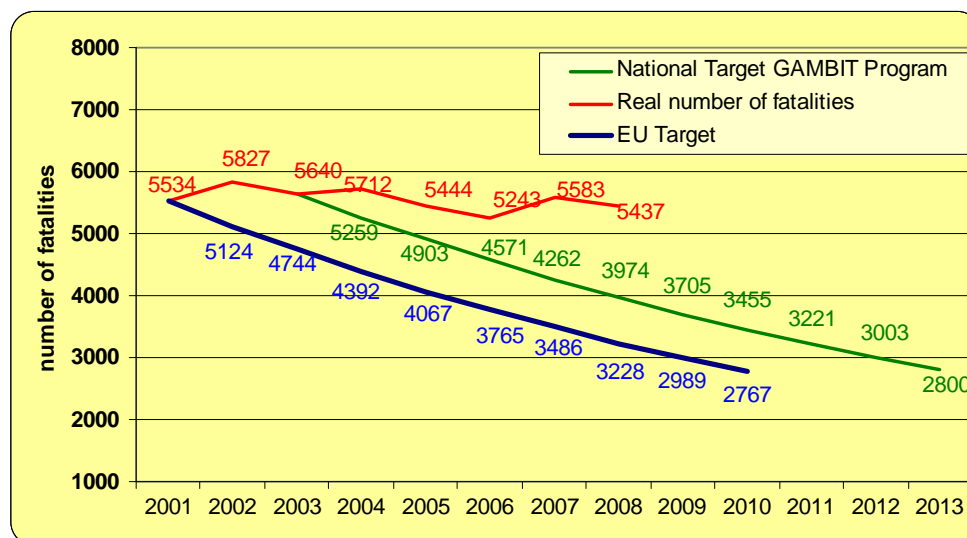
Seat belt use has been compulsory in front and rear seats since 1991. The rate of seat belt use is around 78% in front seats and 47% in rear seats.

Helmet wearing has been compulsory on motorcycles and mopeds since 1997.

A helmet is not compulsory on bicycles.

#### 5. National road safety strategies and targets

Figure 4. Trend in progress towards road fatality target



#### 6. Recent safety measures (2007-2009)

##### ❖ Road user behaviour, enforcement

The Polish police have evaluated a special schedule of control and surveillance of road user behaviour, including speeding and seat belt use, as well as particular road vehicle groups such as school buses or trucks.

Enforcement has been increased concerning:

- speed (in 2008, 200 speed cameras were installed, and installation of another 200 was planned for 2009);
- alcohol and drug use in traffic;
- seat belt use.

## 7. Major research undertaken in 2007-2009

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Poland is an active partner of the EU DRUID project (Driving under the Influence of Drugs, Alcohol and Medicines) ([www.druid-project.eu](http://www.druid-project.eu)).

## 8. References – Useful websites and references

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<b>Ministry of Infrastructure</b>	<a href="http://www.mi.gov.pl">www.mi.gov.pl</a>
<b>National Road Safety Council</b>	<a href="http://www.krbrd.gov.pl">www.krbrd.gov.pl</a>
<b>Motor Transport Institute</b>	<a href="http://www.its.waw.pl">www.its.waw.pl</a>

# PORTUGAL<sup>1</sup>

## 1. General comments on trends for 2008

In 2008 the number of fatalities decreased by 9,1 % in comparison to 2007.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities and injury crashes

Between 1970 and 2008, the number of fatalities decreased by 45% while the number of vehicles was multiplied by 7. In recent years (2000-2008), the decrease of fatalities was sustained (-52%).

Table 1. Number of road fatalities and injury crashes  
1970-2008

	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	% change over		
												2007-08	2000-08	1970-2008
Fatalities	1 615	2 646	1 857	1 671	1 675	1 546	1 294	1 247	969	974	885	-9.1%	-52%	-45%
Injury crashes	22 662	45 110	44 159	42 521	42 219	41 495	38 930	37 066	35 680	35 311	33 613	-4.8%	-24%	+48%

Figure 1 gives an overview of the changes in the number of fatalities, injury accidents and motor vehicles since 1970.

**Between 1970 and 1989**, there was an annual average increase in road deaths (+3.5%) and injury accidents (+3.9%). The number of fatalities reached a peak in 1975 with 3 051 persons killed. At the same time, the number of vehicles rose by 8.3% on average.

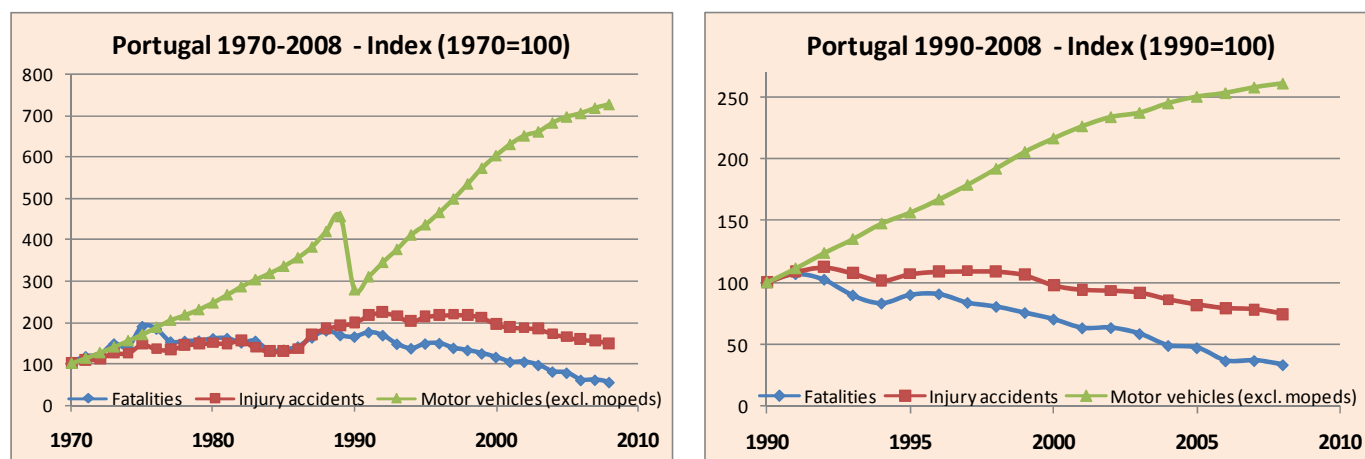
**Between 1990 and 2000** there was a steady decrease in the number of fatalities and injury crashes. On a yearly average, the number of fatalities fell by 3.2%

**Since 2000**, the decreasing rate has accelerated. Between 2000 and 2008, the average annual decrease rate was 8.4%.

1. Source: IRTAD, Autoridade Nacional de Segurança Rodoviária



Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles  
1970-2008



Note: there was a change in the data source for motor vehicles in 1990

#### ❖ Time series for key risk indicators

Between 1970 and 2008, the mortality rate (expressed in terms of deaths per 100 000 population), decreased by more than 50%.

Table2. Risk indicators  
1970, 1980, 1990, 2000, 2008

Rates (reported)	1970	1980	1990	2000	2008	% change over:	
						2000-2008	1970-2008
Deaths/100 000 population	18.6	27.7	28.3	18.1	8.7	-51,9%	-53,2%
Deaths/10 000 motor vehicles	20.5	13.3	12.1	3.9	1.5	-61.5%	-92.7%
Deaths/per billion veh-km	-	-	-	-	-	-	-
Motorisation (number of vehicles/1 000 inhabitants)	91	207.9	233.6	462.4	564	+22%	+519.8%

### 3. Recent development of accident trends

#### ❖ Road users

Between 1970 and 2008, all user groups benefited from safety improvements with the exception of motorcyclists, for whom fatalities increased 136.7%. The greatest improvements concerned moped riders (-78.2%) and pedestrians (-74.6%).

Table 3. Reported fatalities by road user group  
1970, 2000 and 2008

							% change over	
	1970		2000		2008		2000-2008	1970-2008
<b>Bicyclists</b>	131	8%	56	3%	42	5%	-25,0%	-67,9%
<b>Mopeds</b>	325	20%	225	12%	71	8%	-68,4%	-78,2%
<b>Motorcycles and scooters</b>	49	3%	212	11%	116	13%	-45,3%	+136,7%
<b>Passenger cars</b>	412	26%	732	39%	358	40%	-51,1%	-13,1%
<b>Pedestrians</b>	611	38%	384	21%	155	18%	-59,6%	-74,6%
<b>Others</b>	88	5%	248	13%	143	16%	-42,3%	+62,5%
<b>Total</b>	1 615	100%	1 857	100%	885	100%	-52,3%	-45,2%

#### ❖ Age groups

Between 1970 and 2008, all age groups except the older group (65+) benefited from safety improvements, with the greatest improvements concerning children (0-14). The number of older citizens (65+) killed in traffic accidents increased by 49% due, partly, to the ageing of the population.

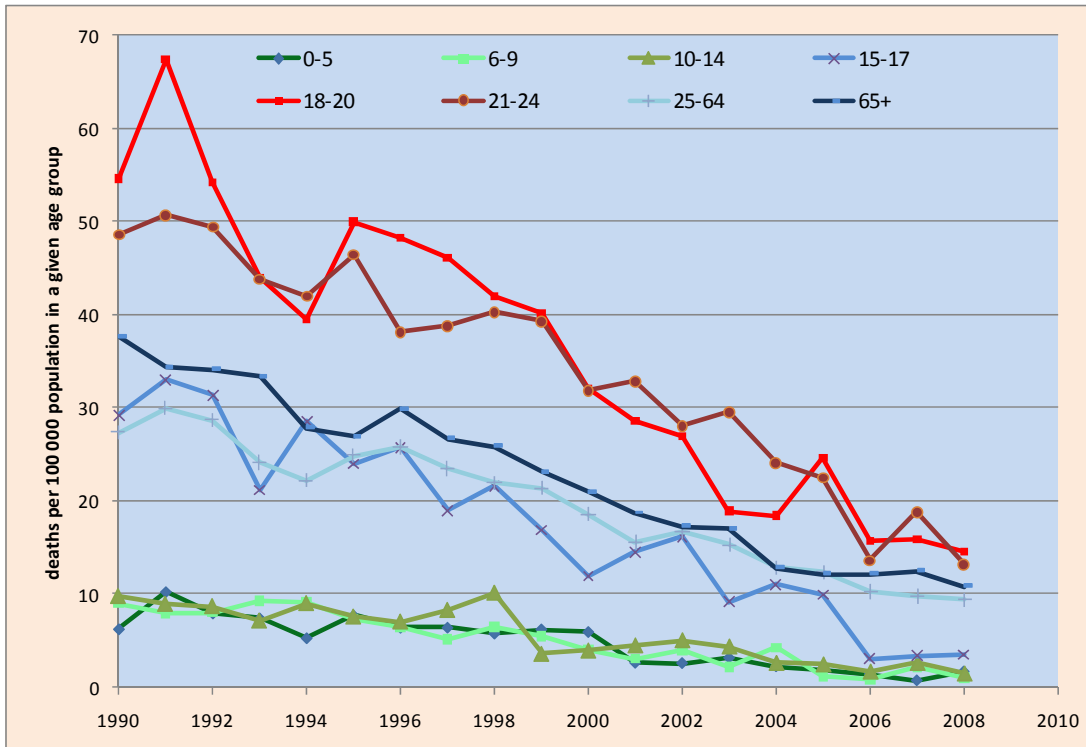
More recently (since 2000), the older age groups (25-64, and 65+) have shown a slower decrease than the other groups.

Table 4. Reported fatalities by age group

					% change over	
	1970	1990	2000	2008	2000-2008	1970-2008
<b>0-5</b>	86	42	34	10	-70,6%	-88%
<b>6-9</b>	60	47	18	5	-72,2%	-92%
<b>10-14</b>	63	73	23	8	-65,2%	-87%
<b>15-17</b>	56	138	52	11	-78,8%	-80%
<b>18-20</b>	67	255	155	49	-68,4%	-27%
<b>21-24</b>	141	301	200	64	-68,0%	-55%
<b>25-64</b>	868	1 277	1 013	537	-47,0%	-38%
<b>&gt;65</b>	132	461	342	197	-42,4%	49%
<b>Total</b>	1 615	2 646	1 857	885	-52,3%	-45%

Young people (18-20 and 21-24) have a much higher mortality rate (about twice as high) than the general population (see figure 2).

Figure 2. Evolution of fatality risks by age group  
(deaths per 100 000 population in a given group)  
1990-2008



❖ Accident locations

In 2008, 42% of fatal crashes occurred on rural roads, 47.1% in urban areas, and 10.9% on motorways.

Figure 3. Reported fatalities by type of road  
1990, 2000 and 2008

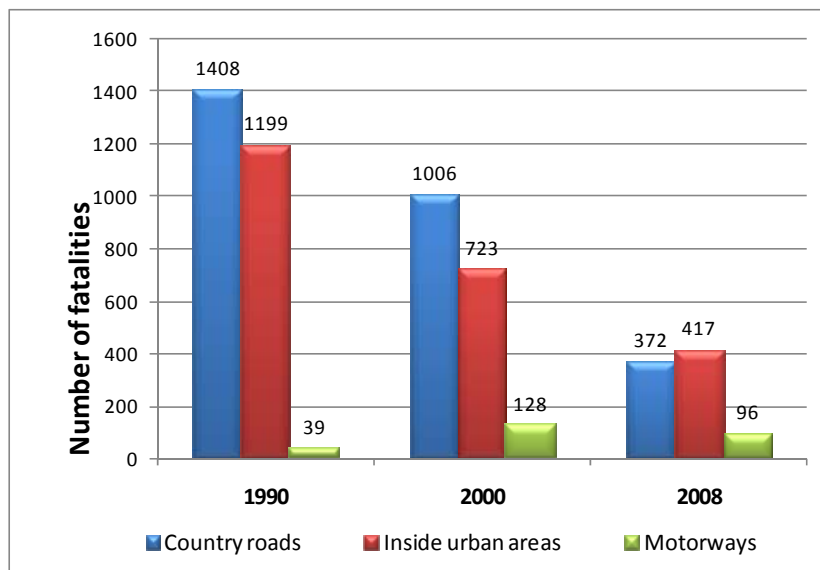


Table 5. **Reported fatalities by type of road**

	1990	2000	2008	% change over	
				2000-2008	1990-2008
<b>Country roads</b>	1 408	1 006	372	-63,0%	-73,6%
<b>Inside urban areas</b>	1 199	723	417	-42,3%	-65,2%
<b>Motorways</b>	39	128	96	-25,0%	+46,2%

#### 4. Recent development of driving behaviour

##### ❖ Drink driving

In Portugal, the maximum authorised BAC is 0.5 g/l. According to official statistics, 5.7% of fatal crashes involved a driver with a BAC above the limit. The data, however, may be largely underestimated as not all drivers are checked.

##### ❖ Speed

Not available.

##### ❖ Seatbelts and helmets

Seatbelt use has been compulsory in front seats since 1978 (outside urban areas), and in rear seats since 1994. The rate of seatbelt use was 87% in front seats and 16% in rear seats in 2004.

Table 6. **Evolution in seatbelt use for car occupants**

	2000	2004	2008
<b>General</b>	80%	83%	NA*
<b>Front seat</b>	85%	87%	NA*
<b>Rear seat</b>	11%	16%	NA*

\*NA – not available

Helmet wearing is compulsory on all motorised two wheelers. Helmet is not compulsory on bicycles.

#### 5. National road safety strategies and targets

##### ❖ National road safety strategies

In 2009, the Council of Ministers approved the *Estratégia Nacional de Segurança Rodoviária – ENSR* (the National Road Safety Strategy – NRSS) which sets new road safety targets for the period 2008–2015. However the need to assess and monitor how NRSS unfolds and performs suggests two time-frames: 2008-2011 and 2012-2015. The main quantitative goal is expressed in terms of reduction in the mortality rate (killed per population).

- 78 deaths *per* million inhabitants by 2011
- 62 deaths *per* million inhabitants by 2015.

(In 2008, there were 82 deaths per million population).

Following a diagnostic of the current safety problems, the following ten Strategic Objectives have been established:

- ✓ Two-wheeled motor vehicle drivers
- ✓ Light vehicle drivers
- ✓ Pedestrians
- ✓ Road circulation inside urban areas
- ✓ Driving under the effect of alcohol and drugs
- ✓ Speeding
- ✓ Safety devices
- ✓ Trauma management
- ✓ Vehicles
- ✓ Road infrastructure

❖ **Safety targets and sub-targets**

Regarding the set of targets that Portugal adopted in 2003 for the year 2009, the current results are described in table 7. Most of the targets were reached in 2008.

Figure 4. Trend in progress towards road fatality target

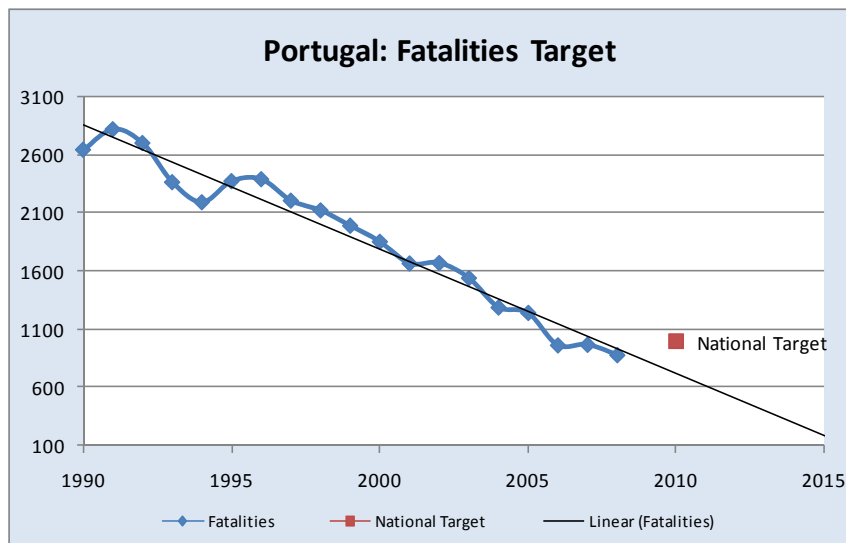


Table 7. Current road safety targets in Portugal (target year =2009)

Type	Targets (in % or absolute figures)	Base year	Target year	Base year figure	Current results (2008)
Fatalities <sup>1</sup>	-50%	1998-2000	2009	1 748	776 (-55%)
Seriously injured	-50%	1998-2000	2009	7 597	2 606 (-65%)
Pedestrians: <i>Decrease in the number of pedestrians killed or seriously injured in an accident</i>	-60%	1998-2000	2009	K=346 SI=1538	K=136 (-61%) SI=529 (-66%)
Two-wheeled motor vehicle users: <i>Decrease in the number of TWMV users killed or seriously injured in an accident</i>	-60%	1998-2000	2009	K=438 SI=2227	K=164 (-63%) SI=634 (-71%)
Front/rear seatbelt wearing rates: <i>increase in seatbelt wearing rates</i>	<i>Fseatbelt</i> ≥90% <i>Rseatbelt</i> ≥60%	2000	2009	<i>Fseatbelt</i> =85% <i>Rseatbelt</i> =11%	Not available
Child restraints: <i>increase in child restraints wearing rate</i>	<i>Child restraints use rate</i> ≥70%	2000	2009	39%	Not available
Drinking and driving: <i>Decrease in the % of drivers killed in road accidents who were above the legal limit</i>	-50%	2001/2002	2009	27.5%	37,7%
Speed: <i>Decrease in the mean speeds inside and outside urban areas</i>	<i>Outside</i> = -5km/h <i>Inside</i> = -15km/h	2000	2009	<i>Different average speeds by type of road</i>	
Urban areas: <i>Decrease in the number of road users killed or seriously injured inside urban area</i>	-60%	1998-2000	2009	K=718 SI=4 715	K=366 (-49%) SI=1619 (-65%)

## 6. Recent safety measures (2007-2009)

### Legislation:

- ❖ Legislation regarding driving under the influence of drugs.
- ❖ Legislation related to physical, mental, psychological and technical skills of drivers and prospective drivers.

## 7. Major recent or ongoing research (2007-2009)

The National Authority for Road Safety (ANSR) in partnership with other public and private organisations has carried out several studies aimed at improving the understanding of specific issues, such as urban accidents, injury accidents involving pedestrians and two-wheeled motor vehicles.

1. Death within 24h (the correction factor=1.14 was not applied)

## 8. References – Useful websites and references

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<b>Autoridade Nacional de Segurança Rodoviária – ANSR (National Authority for Road Safety)</b>	<a href="http://www.ansr.pt">www.ansr.pt</a>
<b>Instituto Infra-estruturas Rodoviárias – InIR (Road infrastructure Institute)</b>	<a href="http://www.inir.pt">www.inir.pt</a>
<b>Instituto Mobilidade e Transportes Terrestres – IMTT (Mobility and Land Transport Institute)</b>	<a href="http://www.imtt.pt">www.imtt.pt</a>
<b>Estradas de Portugal – EP (Portuguese Roads Institute)</b>	<a href="http://www.estradasdeportugal.pt">www.estradasdeportugal.pt</a>
<b>Polícia Segurança Pública – PSP (Public Security Police)</b>	<a href="http://www.psp.pt">www.psp.pt</a>
<b>Guarda Nacional Republicana – GNR (National Republican Guard)</b>	<a href="http://www.gnr.pt">www.gnr.pt</a>

# SLOVENIA<sup>1</sup>

## 1. General comments on trends for 2008

The number of road fatalities fell in 2008 to 214, a decrease of 27% compared to 2007.

There was a general decrease in fatalities and injury accidents on all road types in 2008 compared to previous years, probably due to the Road Safety Act that came into force in 2008.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Between 1970 and 2008, the number of fatalities decreased by 65% while the distance travelled was multiplied nearly fivefold. In recent years (2000-2008), the number of fatalities has continued to fall, by 32% overall. Since 2000 the number of injury crashes has increased slightly.

Fatality numbers were highest in 1979, when 735 people died on the road. Since then the number of fatalities has steadily decreased, though with a period of relative stagnation between 2002 and 2007.

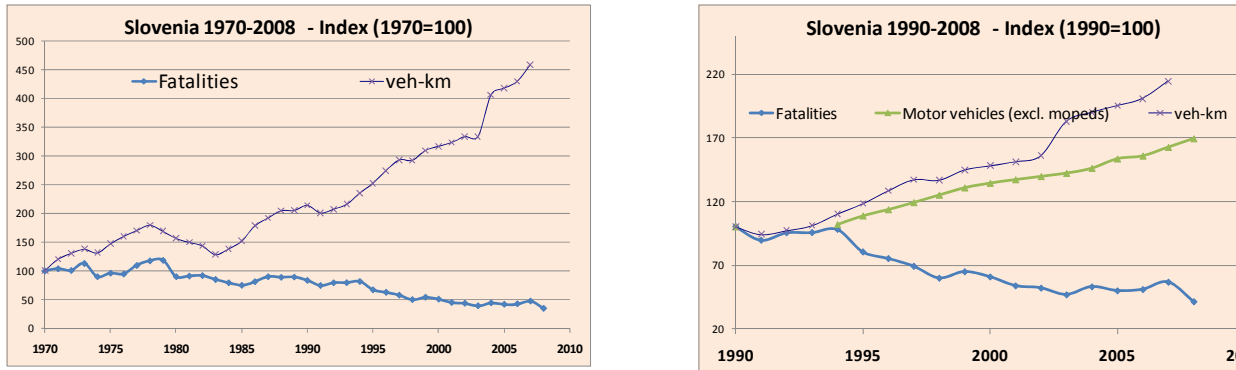
Table 1. Number of road fatalities and injury crashes  
1970-2008

											% change over		
	1970	2000	2001	2002	2003	2004	2005	2006	2007	2008	2008 - 2007	2008 - 2000	2008 - 1970
<b>Fatalities</b>	620	314	278	269	242	274	258	263	293	214	-27%	-32%	-65%
<b>Injury crashes</b>	-	8 951	9 596	10 541	11 910	12 890	10 509	11 622	11 640	9 165	-21%	2%	-

1. Source: IRTAD, Road Directorate of Slovenia



Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008



#### ❖ Time series for key risk indicators

Between 1970 and 2008, the mortality rate, expressed in terms of deaths per 100 000 population, decreased by more than 70%.

Table 2. Risk indicators  
1970, 1980, 1990, 2000, 2008

Rates (reported)	1970	1980	1990	2000	2008	% change over	
						2008 -2000	2008 -1970
Deaths/100 000 population	35.8	29.2	25.9	15.8	10.4	-34%	-71%
Deaths/10 000 motor vehicles	-	-	6.9	3.1	1.7	-46%	-
Deaths/billion veh-km	166.7	96.1	65.1	26.7	17.2	-36%	-90%
Motorisation (number of vehicles/1 000 inhabitants)	-	532.9	374.5	505.5	616.9	22%	-

### 3. Recent development of accident trends

#### ❖ Road users

Almost all user groups, especially bicyclists and pedestrians, have benefited from the improvement. Between 2000 and 2008, the number of pedestrians killed decreased by 35%, the number of bicyclists by 38% and the number of moped riders by 62%. However, the number of motorcyclists killed doubled in the same period.

In 2008, passenger car occupants saw the largest decrease in fatalities over 2007, while despite the overall good results during this year, the number of pedestrian fatalities increased significantly.

Table 3. **Reported fatalities by road user group  
2000, 2007 and 2008**

							% change	
	2000		2007		2008		2008-2007	2008-2000
Passenger car occupants	179	57%	181	62%	107	50%	-41%	-40%
Bicyclists	26	8%	17	6%	16	7%	-6%	-38%
Mopeds	21	7%	13	4%	8	4%	-38%	-62%
Motorcycles and scooters	19	6%	40	14%	38	18%	-5%	100%
Pedestrians	60	19%	32	11%	39	18%	22%	-35%
Other	9	3%	9	3%	5	2%	-44%	-44%
Total	314	100%	293	100%	214	100%	-27%	-32%

Table 4 illustrates the relative fatality risk for the different road user groups. For a motorcyclist, the risk of dying in a traffic crash is 40 times higher than that for a car occupant.

Table 4. **Relative fatality risk by road user group**

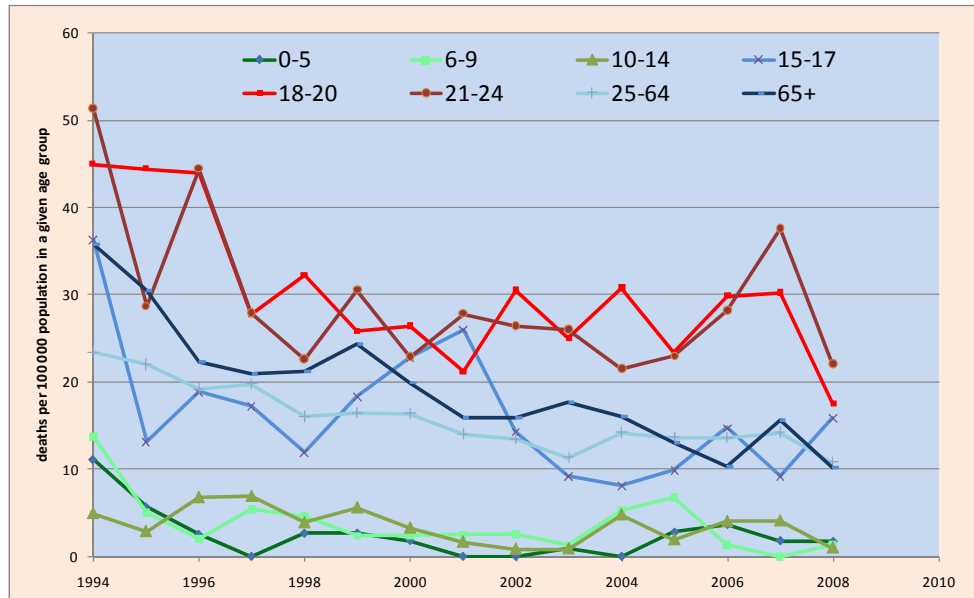
	Reported fatalities (annual average)	Deaths (inside or on the vehicle) per million vehicles	Average kilometrage per vehicle	Deaths (inside or on the vehicle) per billion vehicle*km
<b>Pedestrians</b>	39	-	-	-
<b>Bicycles</b>	16	-	-	-
<b>Mopeds</b>	8	198	-	-
<b>Motorcycles</b>	38	913	-	277
<b>Car and van occupants</b>	107	102	-	7
<b>Heavy goods vehicles</b>	3	36	-	2

❖ **Age groups**

Table 5. **Reported fatalities by age group  
2000, 2007 and 2008**

				% change over	
	2000	2007	2008	2008-2007	2008-2000
<b>0-5</b>	2	2	2	0%	0%
<b>6-9</b>	2	0	1	100%	-50%
<b>10-14</b>	4	4	1	-75%	-75%
<b>15-17</b>	18	6	10	67%	-44%
<b>18-20</b>	23	23	13	-43%	-43%
<b>21-24</b>	28	41	25	-39%	-11%
<b>25-64</b>	181	166	128	-23%	-29%
<b>&gt;65</b>	56	51	34	-33%	-39%

Figure 2. Evolution of fatality risks by age group (deaths per 100 000 population in a given group) 1990-2008



❖ Accident locations

In 2008, 61% of fatal crashes occurred on country roads, 34% on urban roads and 5% on motorways.

Figure 3. Reported fatalities by type of road 2000 and 2008

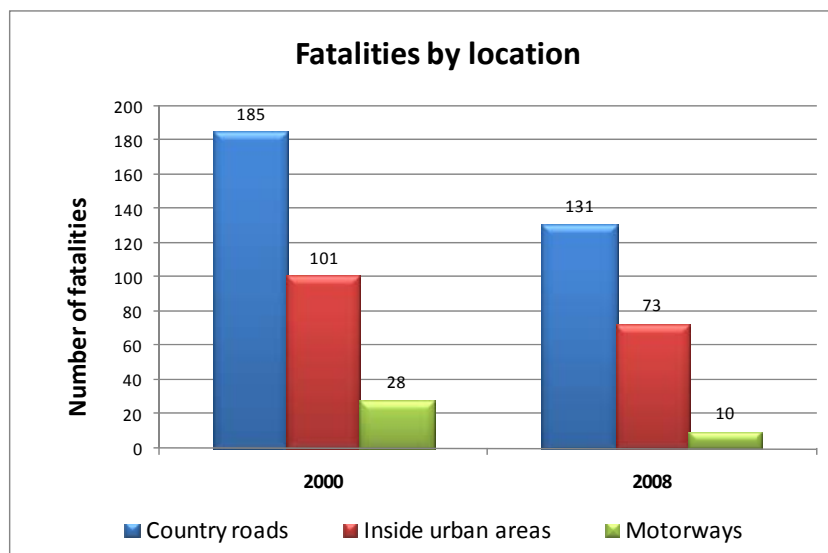


Table 6. **Reported fatalities by type of road**

	2000	2007	2008	% change over	
				2007-2008	2000-2008
Inside urban areas	101	94	73	-22%	-28%
Country roads	185	163	131	-20%	-29%
Motorways	28	36	10	-72%	-64%

#### 4. Recent development of driving behaviour

##### ❖ Drink driving

The maximum permissible blood alcohol content is 0.5 g/l. Driving under the influence of alcohol represents a major problem in Slovenia. Around one third of serious crashes involve persons with blood alcohol levels higher than that allowed by law. Some 40 000 drivers driving under the influence of alcohol are penalised by the police every year.

##### ❖ Speed

Speeding is the major cause of traffic accidents in Slovenia. Fatal accidents caused by speeding represented 48% of all fatal traffic accidents in Slovenia in 2008.

##### ❖ Seat belts and helmets

Seatbelt use has been compulsory in front seats since 1977 and in rear seats since 1998. The rate of seatbelt use is around 88% in front seats and 56% in rear seats.

There was a 2.5% increase in the seat belt usage rate on urban roads in 2008 compared to 2007, from 68.5% to 70%. The increase in the seat belt usage rate on rural roads and motorways was almost unnoticeable. In 2008 it amounted to 96.1% for rural roads and 92.6% for motorways.

Table 7. **Evolution in seat belt use by car occupants**

	2000	2005	2008
<b>General</b>	-	-	-
<b>Front seat – driver</b>	-	-	88,75%*
<b>Front seat – passenger</b>	-	-	87,4%*
<b>Rear seat</b>	-	-	56,5*
<b>Motorway – driver</b>	94%	95%	93%
<b>Rural roads – driver</b>	94%	94%	96%
<b>Urban areas – driver</b>	90%	87%	70%

Source: EURHIRES 2007-2008

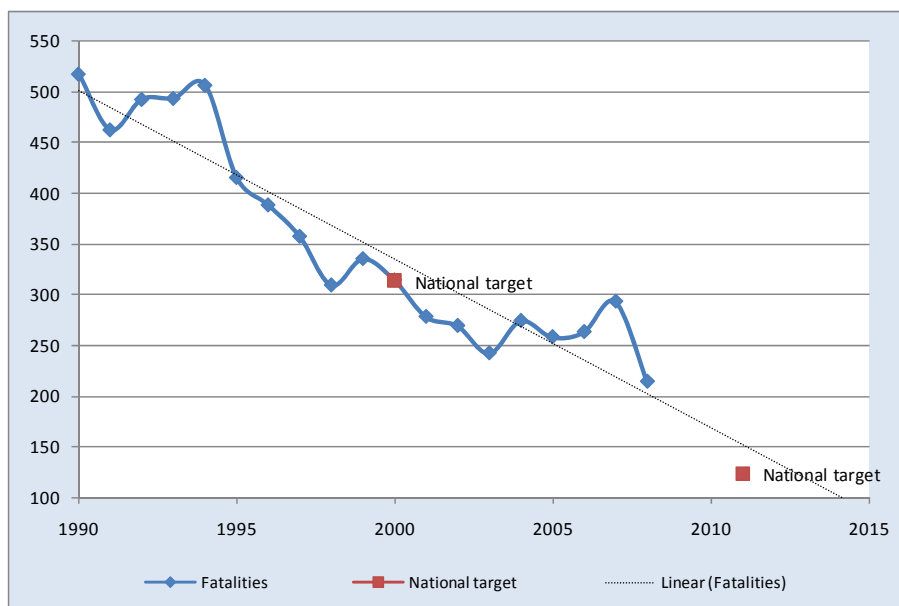
A helmet is not compulsory on bicycles (except for children under 14).

## 5. National road safety strategies and targets

The Road Safety Act came into force in 2008 (UL RS, n. 56/2008).

The target of the National Road Safety Programme is to achieve no more than 124 deaths in road traffic accidents in 2011. This goal is set in accordance with the EU goal of halving the number of deaths in road traffic accidents by 2010.

Figure 4. Trend in progress towards road fatality target



## 6. Recent safety measures (2007-2009)

### ❖ Road user behaviour enforcement – campaigns

- 8-22 February 2009: “Fasten your life!” – Activities for the promotion of seat belt usage. The campaign was launched on radio and TV stations and billboards, and promoted via different events.
- 25 February – 11 April 2009: “40 days without alcohol” – Activities for greater awareness about alcohol abuse. It was held in collaboration with the Slovenian Caritas and Med.Over.Net Institute.
- 20 April –23 August 2009: “Hurry slowly!” – Occasional week-long campaigns intended to increase awareness about the consequences of speeding. They included radio and TV spots and a billboard campaign.
- 31 January 2009: “Pedestrian” – Activities aiming to increase general pedestrian safety. The campaign included media campaigns and activities in primary schools.
- 26 March – 19 April 2009: “Do not overlook!” – Activities to increase two-wheeler safety. This preventive campaign included co-operation with government and civil institutions, especially the ones intended for motorcyclists. The campaign included radio and TV spots, billboards, online banners, etc.

- 3-13 March 2009: “Stop! Life has precedence” – Activities for better road safety on rail and interchange crossings. It included a media campaign with spots on local radio stations and billboard advertising.

## 7. Major research undertaken in 2007-2009

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- “Dangerous spots 2006-2008” – analysis and identification of dangerous spots on the Slovenian road network.

# SPAIN<sup>1</sup>

## 1. General comments on trends for 2008

In 2008, the number of road fatalities decreased by 19%. The improvement in 2008 benefited particularly the 25-34 age group (-28%), cyclists (-39%) and moped riders (-26%).

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Between 1970 and 2008, the number of fatalities decreased by 43%, while the number of vehicles was multiplied by seven. Between 2000-2008, the number of fatalities decreased by 46%, and in 2008 alone fatalities decreased by nearly 20%.

Table 1. Number of road fatalities and injury crashes, 1970-2008

	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	% change over		
												2007 -08	2000 -08	2008 - 1970
Fatalities	5 456	9 032	5 776	5 517	5 347	5 399	4 741	4 442	4 104	3 823	3 100	-19%	-46%	-43%
Injury crashes	57 968	101 507	101 729	100 393	98 433	99 987	94 009	91 187	99 797	10 0508	93 161	-7%	-8%	+61%

Since 1980, the following periods can be identified:

**Between 1983 and 1989 (base year 1982):** There was an increase in the number of fatalities, with a peak in 1989 when 9 344 persons died on the road. During this period, the vehicle fleet increased by 33% and the traffic volume outside urban areas increased by 41%.

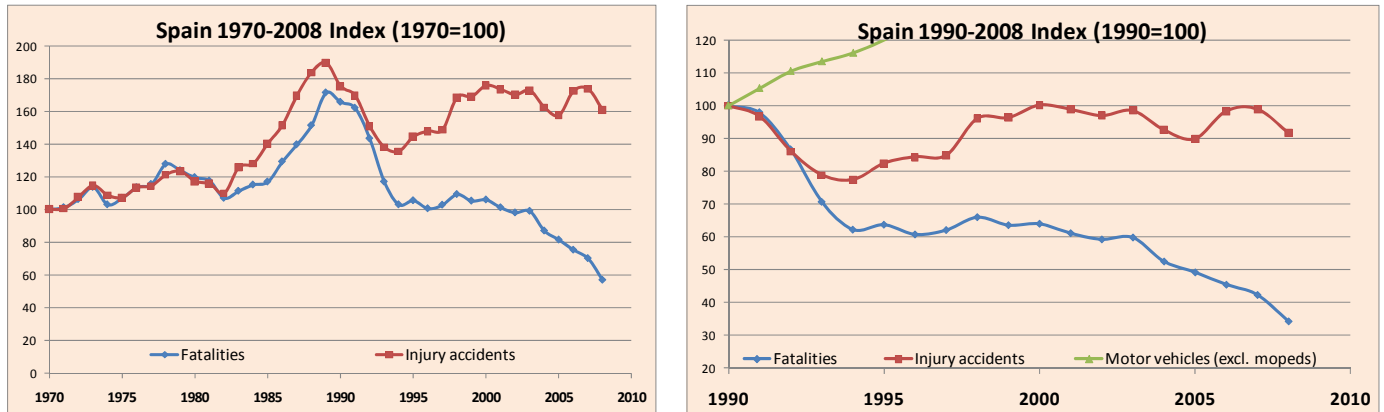
**Between 1990 and 1994 (base year 1989):** During this four-year period, the number of fatalities dropped by 39%. A new road safety law was approved and there was an enormous effort to improve high-capacity roads. Traffic volume outside urban areas increased by 17%.

**Between 1995 and 2003 (base year 1994):** There was no clear trend in the number of deaths, which varied up and down by 5%. Traffic volume outside urban areas increased by 76%, and in 2003 the length of high-capacity roads was 10 296 km whereas in 1994 it was 6 497 km.

**Since 2004 (base year 2003):** In 2004, the implementation of the 2004-2008 road strategic plan started. Between 2000 and 2008, the number of fatalities decreased by 42.6% while traffic volume to 2007 increased by 8.5%.

1. Source: IRTAD, DGT

Figure 1. Evolution in numbers of road fatalities, injury crashes, distance travelled and vehicles 1970-2008



#### ❖ Time series for key risk indicators

Between 1970 and 2008, the mortality rate, expressed in terms of deaths per 100 000 population, decreased by 68%. The number of deaths per 10 000 registered vehicles decreased by 92%.

Table 2. Risk indicators, 1970, 1980, 1990, 2000, 2007, 2008

Rates (reported)	1970	1980	1990	2000	2007	2008	% change over:	
							2008-2000	2008-1970
Deaths/100 000 population	16.03	17.65	23.2	14.5	8.6	6.8	-52%	-58%
Deaths/10 000 motor vehicles	12.4	6.4	5.8	2.5	1.3	1.0	-60%	-92%

Note: Motor vehicle data as of 31 December of each year.

### 3. Recent development of accident trends

#### ❖ Road users

Since 1980, all user groups, but especially car occupants and moped riders, have benefited from the improvement.

In recent years (2000-2008), improvements benefited moped riders the most. On the other hand – despite significant improvement in 2008 – motorcyclists are a growing concern, with a 26% increase in fatalities between 2000 and 2008.

Figure 2 illustrates the evolution in fatalities of moped and motorcycle riders in relation to the evolution in the number of motorised two-wheelers in traffic.



Table 3. Reported fatalities by road user group, 1990, 2000, 2007 and 2008

									% change over		
	1990		2000		2007		2008		2008-2007	2008-2000	2008-1990
<b>Bicyclists</b>	160	2%	84	1%	89	2%	54	2%	-39%	-36%	-66%
<b>Mopeds</b>	683	8%	474	8%	248	6%	183	6%	-26%	-61%	-73%
<b>Motorcycles and scooters</b>	792	9%	392	7%	632	17%	495	16%	-22%	26%	-38%
<b>Passenger car occupants</b>	5 034	56%	3 289	57%	1 821	48%	1 501	48%	-18%	-54%	-70%
<b>Pedestrians</b>	1 542	17%	898	16%	591	15%	502	16%	-15%	-44%	-67%
<b>Other</b>	823	9%	639	11%	442	12%	365	12%	-17%	-43%	-56%
<b>Total</b>	9 032	100%	5 776	100%	3 823	100%	3 100	100%	-19%	-46%	-66%

Figure 2. Relative evolution of the number of motorised two-wheelers in traffic and the number of reported moped riders and motorcyclists killed in traffic

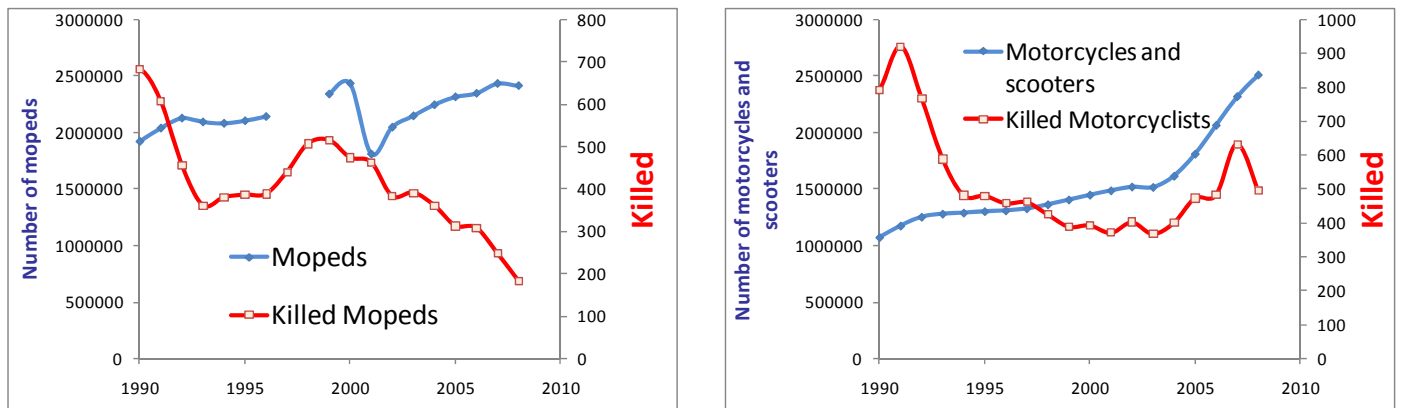


Table 4 illustrates the annual average number of fatalities for the different road user groups. Data on kilometres driven on both urban and non-urban roads are not available in Spain. Therefore, average risks can not be estimated.

Table 4. Relative fatality risk by road user group

	Reported fatalities (annual average 2004-2008)	Deaths (inside or on the vehicle) per 10 000 vehicles (annual average 2004-2008)	Average kilometrage per vehicle
<b>Pedestrians</b>	614	-	N.A.
<b>Bicycles</b>	78	-	N.A.
<b>Mopeds</b>	283	1,2	N.A.
<b>Motorcycles</b>	496	2,4	N.A.
<b>Car occupants</b>	2 100	1,0	N.A.
<b>Vans and heavy goods vehicles</b>	363	0,7	N.A.
<b>Buses</b>	21	3,6	N.A.
<b>Other</b>	88	-	N.A.
<b>Total</b>	4 042	-	N.A.

Note: Deaths per 10 000 vehicles per year for 2004-2008.

## ❖ Age groups

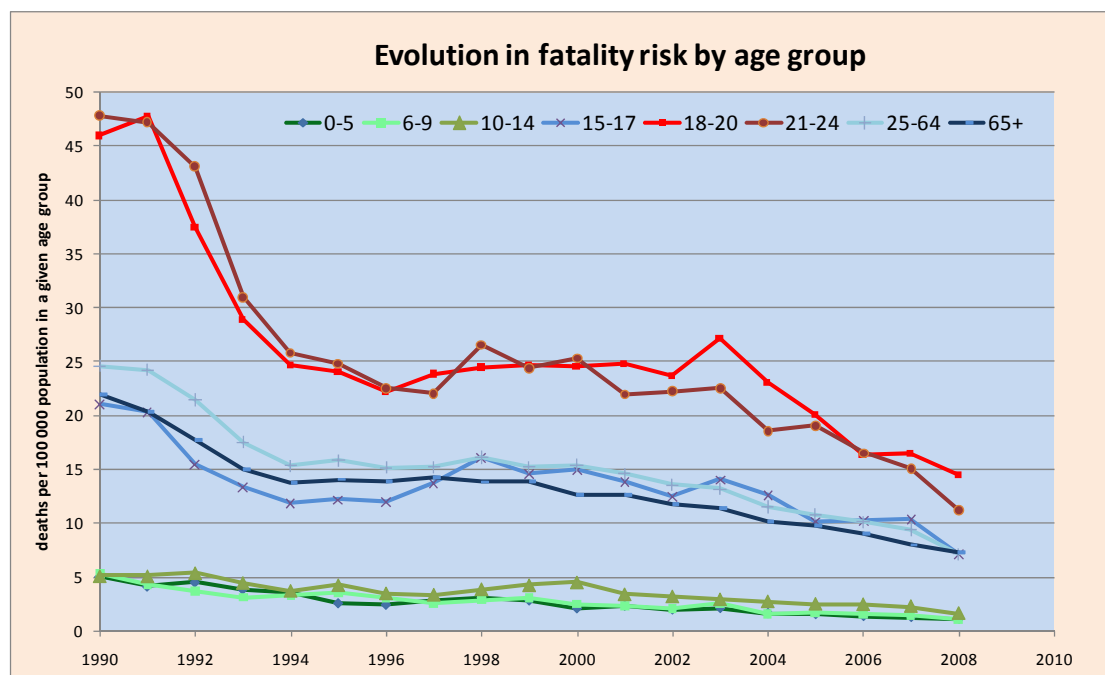
Since 1990, the reduction in fatalities has benefited all age groups, but the highest reduction concerned children and young people.

Young people (18-24) constitute a high risk group; however the mortality rate dropped significantly from 45 killed per 100 000 population in 1990 to 14 in 2008 for the 18-20 age group (Figure 3)

Table 5. Reported fatalities by age group

					% change over		
	1990	2000	2007	2008	2008-2007	2008-2000	2008-1990
0-5	129	46	35	31	-11%	-33%	-76%
6-9	111	40	26	19	-27%	-53%	-83%
10-14	160	95	47	34	-28%	-64%	-79%
15-17	417	223	136	95	-30%	-57%	-77%
18-20	902	422	229	210	-8%	-50%	-77%
21-24	1 266	661	325	256	-21%	-61%	-80%
25-64	4 759	3 267	2 382	1 851	-22%	-43%	-61%
>65	1 134	843	602	551	-8%	-35%	-51%
<b>Total</b>	<b>9 032</b>	<b>5 776</b>	<b>3 823</b>	<b>3 100</b>	<b>-19%</b>	<b>-46%</b>	<b>-66%</b>

Figure 3. Evolution of fatality risks by age group  
(deaths per 100 000 population in a given group)  
1990-2008



#### ❖ Accident locations

In 2008, 76% of fatal crashes occurred on rural roads, 20% on urban roads and 4% on motorways.

Figure 4. **Reported fatalities by type of road**  
1980, 1990 and 2008

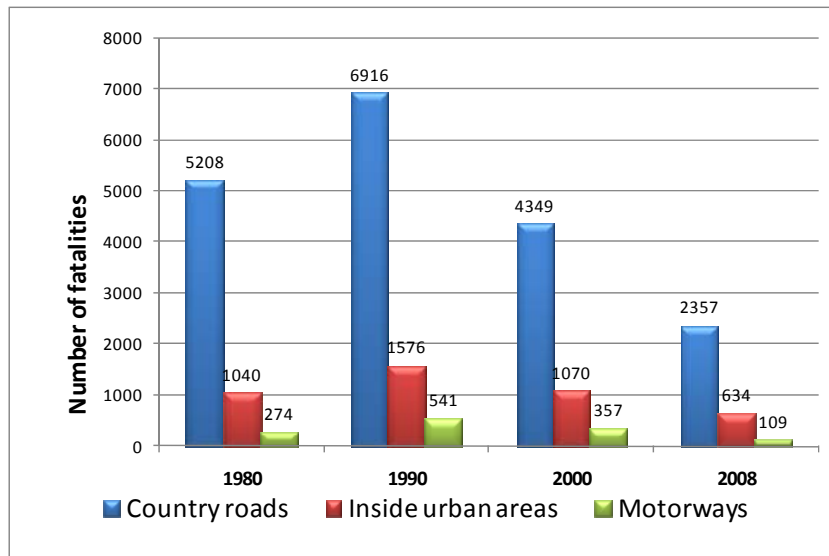


Table 6. **Reported fatalities by type of road**

	1990	2000	2007	2008	% change over		
					2008-2007	2008-2000	2008-1990
<b>Inside urban areas</b>	6 916	4 349	2 918	2 357	-19%	-46%	-66%
<b>Country roads</b>	1 576	1 070	741	634	-14%	-41%	-60%
<b>Motorways</b>	541	357	164	109	-34%	-69%	-80%

## 4. Recent development of driving behaviour

#### ❖ Drink driving

In Spain, the legal BAC limit is 0.5 g/l for general drivers and 0.3 g/l for novice and professional drivers.

In 2008, 31% of killed drivers had a BAC of 0.3 g/l or higher.

#### ❖ Speed

Speeding is a major concern in Spain and a contributing factor in about 28% of fatal crashes. Several speed management measures are being implemented (see section 6).

The percentage of drivers exceeding the speed limit by 20 km/h or less decreased from 25% in 2007 to 14% in 2008. The percentage of drivers exceeding the speed limit by more than 20 km/h decreased from 3% in 2007 to 1% in 2008. This information comes from fixed speed cameras.

## ❖ Seat belts and helmets

Seat belt use has been compulsory in front seats outside urban areas since 1974, and in front seats inside urban areas and rear seats since 1992.

Helmet use is compulsory for riders of all motorised two-wheelers. It is also compulsory for cyclists (except in built up areas).

Table 7 illustrates the evolution in seat belt and helmet wearing rates.

Table 7. Evolution in seat belt and helmet wearing rates

Evolution in seat belt wearing rate	2003	2005	2006	2008
Seat belt wearing rate: car driver urban areas	60%	69%	82%	80%
Seat belt wearing rate: car driver outside urban areas	86%	81%	92%	95%
Evolution in helmet wearing rate	2003	2005	2006	2008
Helmet wearing rate: moped urban areas	59%	93%	91%	97%
Helmet wearing rate: moped outside urban areas	70%	88%	94%	97%
Helmet wearing rate: motorcycle urban areas	78%	98%	98%	99%
Helmet wearing rate: motorcycle outside urban areas	93%	99%	99%	100%

## 5. National road safety strategies and targets

### ❖ National road safety strategies

In 2003, Spain adopted a Road Safety Strategic Plan for 2004-2008. The plan has three axes:

- In 2004 the Dirección General de Tráfico (DGT) introduced a group of special road safety special measures for 2004-2005 in order to achieve quick results: the Penalty Points driving license, creation of the National Road Safety Observatory, promotion of the Road Safety Council, a significant increase of traffic agents and the introduction of speed cameras on highways.
- Development of the 2005-2008 Key Strategic Action Plan, with active involvement of the civil society and other administrations.
- An Urban Road Safety Plan was developed to define a methodology for interventions in this specific area.

A Strategic Infrastructures and Transport Plan was approved in 2004. More information is available on [http://www.fomento.es/MFOM/LANG\\_CASTELLANO/DIRECCIONES\\_GENERALES/CARRETERAS/PEIT](http://www.fomento.es/MFOM/LANG_CASTELLANO/DIRECCIONES_GENERALES/CARRETERAS/PEIT)

### ❖ Safety targets

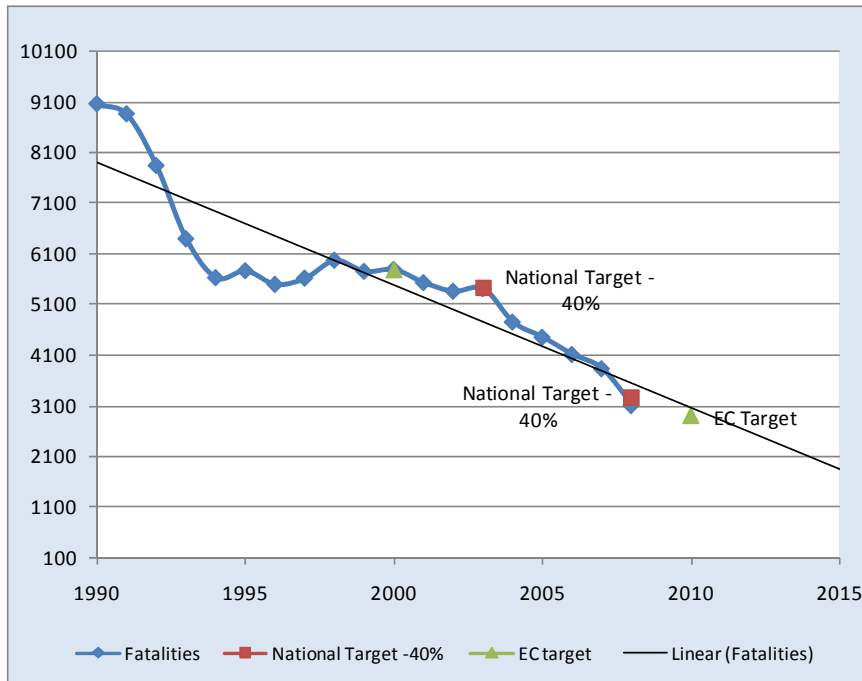
Spain's objective for 2008 was to reduce by 40% the number of road accident fatalities compared to 2003. The target was reached, with a 43% reduction in fatalities.

In relation to the EU target (reduction by 50% in the number of fatalities between 2000 and 2010), Spain has achieved a 44% reduction. If the trend continues it is possible to achieve the European target.

Other targets were established on vulnerable users killed, as well as those seriously injured. More information is available on [http://www.dgt.es/was6/portal/contenidos/documentos/seguridad\\_vial/planes\\_seg\\_vial/estrategico\\_seg\\_vial/estrategico\\_2005\\_2008\\_006.pdf](http://www.dgt.es/was6/portal/contenidos/documentos/seguridad_vial/planes_seg_vial/estrategico_seg_vial/estrategico_2005_2008_006.pdf).

A new safety plan with new targets is under development.

Figure 5. Trend in progress towards road fatality target



## 6. Recent safety measures (2007-2009)

### ❖ Institutions

- Creation, in 2007, of the administrative centre to manage fines generated by speed cameras.
- Specific Prosecution for Road Safety was created in 2006.
- The reform of the Spanish Penal Code was carried out at the end of 2007: main issues were regarding alcohol, speed and driving without licence.

### ❖ Road safety plans

- Development of the Urban road safety plan in 2007.
- Development of the fixed speed cameras plan in 2007.
- Launch of the Strategic Plan for Motorcycles in 2007.

### ❖ Speed

- 33 new fixed speed cameras were installed at sensitive locations in 2008. A new administrative centre was set up in 2008 to improve the effectiveness of the sanction process.

### ❖ Drink driving

- Increased enforcement for drink driving. The number of controls has doubled in five years.
- Promotion of non-alcoholic beer: 10% of consumption is now non-alcoholic.
- Promotion of designated drivers.

#### ❖ Use of safety devices

- Increased enforcement of safety belt and helmet use.
- Specific campaigns for the use of helmets in the south of Spain.

#### ❖ Enforcement (general)

- Special road surveillance and enforcement campaigns in 2008:
  - Speed controls: Two special speed control campaigns were carried out (April and August).
  - Controls on the use of safety belt (February).
  - Control on the use of motorcycle and moped crash helmet (May).
  - Control on the use of mobile telephones (November).
  - Special campaigns on alcohol tests (June and December).
  - Campaign on school buses (September).
  - Campaigns on trucks (March and October).
  - Campaign on buses (July).
  - Inspection on road works (July).

#### ❖ infrastructure

Signalling of black spots at the central government network.

A road safety master plan for built-up areas has been developed to serve as a guide for local authorities.

More information in English can be found on this link:

[http://www.dgt.es/portal/es/seguridad\\_vial/planes\\_seg\\_vial/tipo\\_seg\\_vial](http://www.dgt.es/portal/es/seguridad_vial/planes_seg_vial/tipo_seg_vial)

## 7. Major research undertaken in 2007-2009

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In 2008 different research was conducted, including:

- In-depth studies of 235 fatal motorcycle accidents outside urban areas.  
([http://www.dgt.es/was6/portal/contenidos/documentos/seguridad\\_vial/estudios\\_informes/1\\_Reunion\\_Motos\\_13062008\\_v\\_final.pdf](http://www.dgt.es/was6/portal/contenidos/documentos/seguridad_vial/estudios_informes/1_Reunion_Motos_13062008_v_final.pdf))
- Data-mining on motorcycles.
- Study of motor caravan mobility, current situation and measures to undertake.  
([http://www.dgt.es/was6/portal/contenidos/documentos/seguridad\\_vial/estudios\\_informes/Motorcaravanning\\_in\\_Spain.pdf](http://www.dgt.es/was6/portal/contenidos/documentos/seguridad_vial/estudios_informes/Motorcaravanning_in_Spain.pdf))

## 8. References – Useful websites and references

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<b>General traffic Directorate</b>	<a href="http://www.dgt.es">www.dgt.es</a>
<b>Research studies</b>	<a href="http://www.dgt.es/portal/es/seguridad_vial/estudios_informes">http://www.dgt.es/portal/es/seguridad_vial/estudios_informes</a>
<b>Motorcycle safety plan</b>	<a href="http://www.dgt.es/was6/portal/contenidos/documentos/seguridad_vial/planes_seg_vial/sectoriales/plan_sectorial006.pdf">http://www.dgt.es/was6/portal/contenidos/documentos/seguridad_vial/planes_seg_vial/sectoriales/plan_sectorial006.pdf</a>
<b>Safety Plan – Urban areas</b>	<a href="http://www.dgt.es/portal/es/seguridad_vial/planes_seg_vial/tipo_seg_vial">http://www.dgt.es/portal/es/seguridad_vial/planes_seg_vial/tipo_seg_vial</a>

# SWEDEN<sup>1</sup>

## 1. General comments on trends for 2008

In 2008, the number of road fatalities was 397, a 16% decrease from 2007. This decrease in fatalities coincided with a slight decrease in mobility.

The reduction in fatalities was general for all road user groups in 2008, compared to 2007. The 2008 figures largely correspond to the level of 2006. The biggest reduction in fatalities was for passengers in passenger cars. In 2008, there were only six children under age 15 among the fatalities, one of them a pedestrian.

## 2. Long term trends

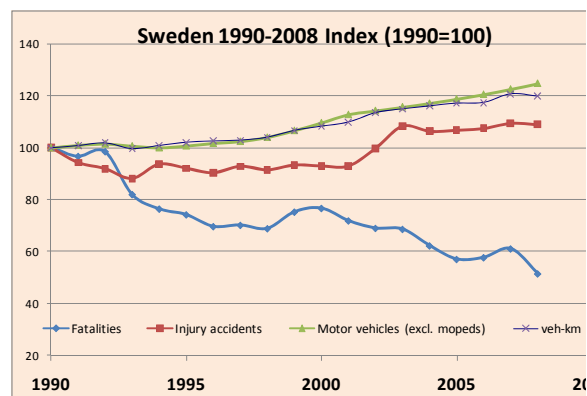
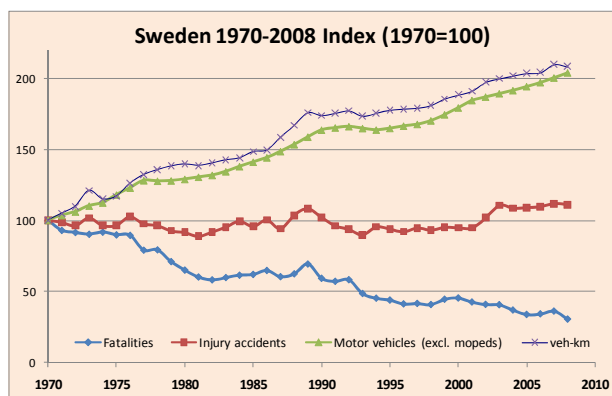
### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Between 1970 and 2008, the number of fatalities decreased by 70%, while the number of vehicles and the distance travelled doubled. In recent years (2000-2008), the number of fatalities fell by 33%, while the number of injury crashes and the number of injured road users continued to increase.

Table 1. Number of road fatalities and injury crashes  
1970-2008

	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	% change over		
												2007-08	2000-08	1970-2008
Fatalities	1 307	772	591	554	532	529	480	440	445	471	397	-16%	-33%	-70%
Injury crashes	16 636	16 975	15 770	15 767	16 919	18 365	18 029	18 094	18 213	18 548	18 462	-0%	17%	11%

Figure 1. Evolution in numbers of road fatalities, injury crashes, distance travelled and vehicles  
1970-2008



1. Source: IRTAD, Swedish Road Administration, VTI

### ❖ Time series for key risk indicators

Between 1970 and 2008, the mortality rate, expressed in terms of deaths per 100 000 population, decreased by 74%.

Table 2. Risk indicators  
1970, 1980, 1990, 2000, 2008

Rates (reported)	1970	1980	1990	2000	2008	% change over	
						2000-2008	1970-2008
Deaths/100 000 population	16.3	10.2	9.1	6.7	4.3	-35%	-74%
Deaths/10 000 motor vehicles	4.9	2.5	1.8	1.2	0.7	-41%	-85%
Deaths/billion veh-km	35.3	16.4	12.0	8.5	5.1	-39%	-85%
Motorisation (number of vehicles/1 000 inhabitants)	330.3	410.3	506.9	534.4	586.5	10%	78%

### 3. Recent development of accident trends

#### ❖ Road users

All user groups, but especially vulnerable road users, have benefited from the improvement. Between 1970 and 2008, the number of riders of mopeds killed decreased by 90%. The number of bicyclists killed fell by almost 80%, and the number of pedestrians killed fell by more than 80% (although the number of fatalities among motorcyclists decreased only by 4%). Improvements in moped fatalities must, however, be seen in conjunction with the decreasing use of this mode of transport (Figure 2).

In 2000-2008, the number of motorcyclists killed increased by 31% and the number of moped riders killed by 10%. In 2008, however, those user groups saw a large decrease in fatalities.

Table 3. Reported fatalities by road user group  
1970, 2000, 2007 and 2008

									% change over		
	1970		2000		2007		2008		2007-2008	2000-2008	1970-2008
<b>Passenger car occupants</b>	634	49%	393	66%	276	59%	233	59%	-16%	-41%	-63%
<b>Bicyclists</b>	141	11%	47	8%	33	7%	30	8%	-9%	-36%	-79%
<b>Mopeds</b>	108	8%	10	2%	14	3%	11	3%	-21%	10%	-90%
<b>Motorcycles and scooters</b>	53	4%	39	7%	60	13%	51	13%	-15%	31%	-4%
<b>Pedestrians</b>	308	24%	73	12%	58	12%	45	11%	-22%	-38%	-85%
<b>Other</b>	63	5%	29	5%	30	6%	27	7%	-10%	-7%	-57%



Figure 2. Relative evolution of the number of motorised two-wheelers in traffic and the number of reported moped riders and motorcyclists killed in traffic

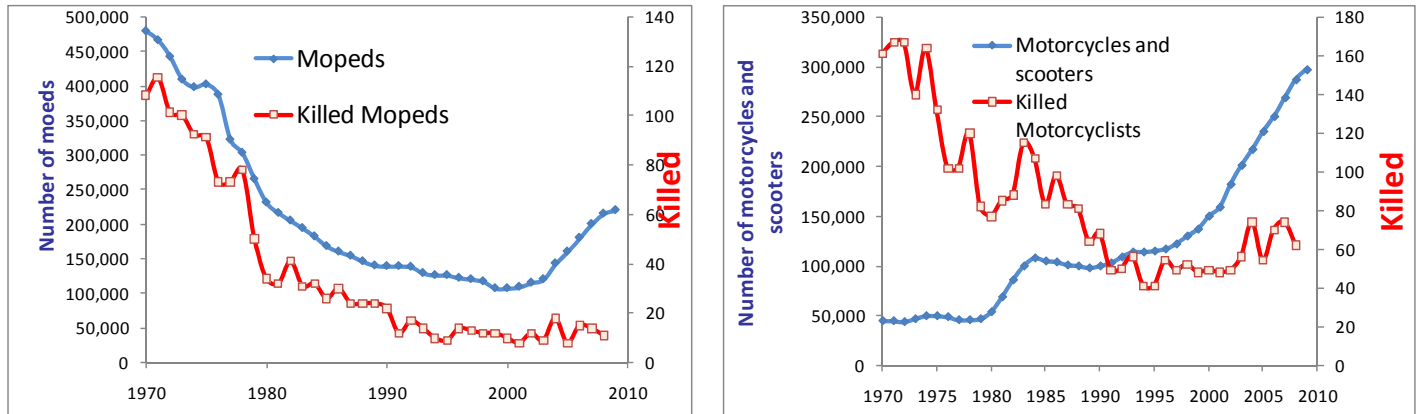


Table 4 illustrates the relative fatality risk for the different road user groups. For a motorcyclist, the risk of dying in a traffic crash is 15 times higher than that for a car occupant.

Table 4. Relative fatality risk by road user group (average 2004-2008)

	Reported fatalities (annual average 2004-2008)	Deaths (inside or on the vehicle) per million vehicles	Deaths (inside or on the vehicle) per billion veh-km
Pedestrians	55	-	na
Bicycles	31	5	na
Mopeds	13	88	47.8
Motorcycles	54	200	70.9
Car and van occupants	265	63	4.2
Heavy goods vehicles	21	43	1.8

#### ❖ Age groups

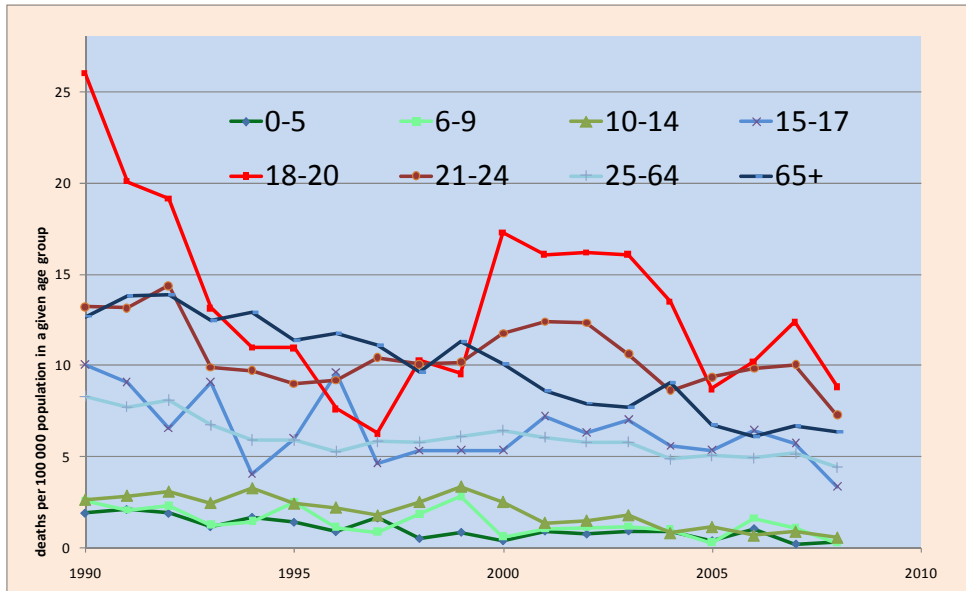
Since 1980, the reduction in fatalities has benefited all age groups, but the highest reduction concerned the younger groups.

Young people constitute a high risk group with a mortality rate twice as high as the older age groups.

Table 5. Reported fatalities by age group

	1980	1990	2000	2007	2008	% change over		
						2008-2007	2008-2000	2008-1980
0-5	22	12	2	1	2	-	0%	-91%
6-9	19	10	3	4	1	-75%	-67%	-95%
10-14	30	13	14	5	3	-40%	-79%	-90%
15-17	54	34	16	22	13	-41%	-19%	-76%
18-20	63	88	53	43	32	-26%	-40%	-49%
21-24	57	66	49	43	32	-26%	-35%	-44%
25-64	397	357	300	248	212	-15%	-29%	-47%
>65	206	192	154	105	102	-3%	-34%	-50%

Figure 3. Evolution of fatality risks by age group (deaths per 100 000 population in a given group) 1990-2008



❖ Accident locations

In 2008, 70% of fatal crashes occurred on rural roads, 25% on urban roads and 5% on motorways. The decrease in fatalities over the last 20 years has been achieved mainly through improvement of urban roads. This is chiefly due to improvements for pedestrians and bicyclists through construction of mini roundabouts, bicycle lanes and other countermeasures in infrastructure.

Figure 4. Reported fatalities by type of road 1980, 1990, 2000 and 2008

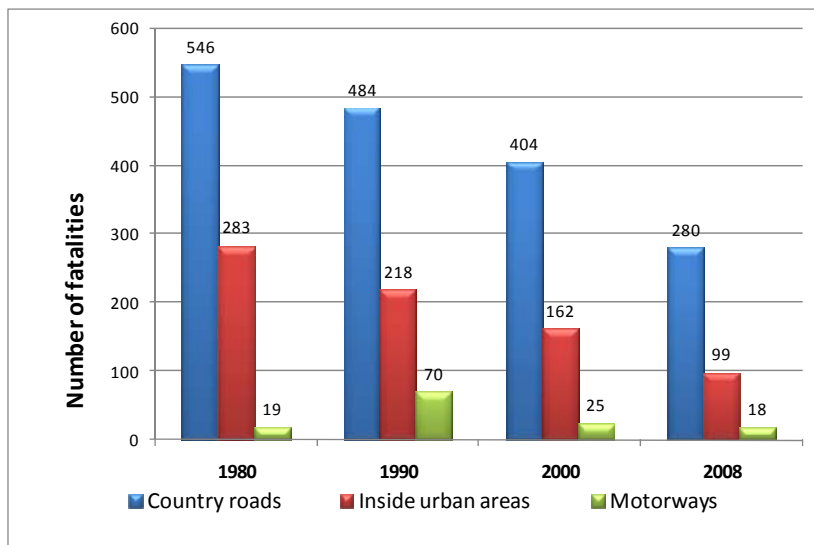


Table 6. Reported fatalities by type of road

	1980	1990	2000	2007	2008	% change over		
						2007-2008	2000-2008	1980-2008
Inside urban areas	283	218	162	127	99	-22%	-39%	-65%
Country roads	546	525	404	319	280	-12%	-31%	-49%
Motorways	19	29	25	25	18	-28%	-28%	-5%

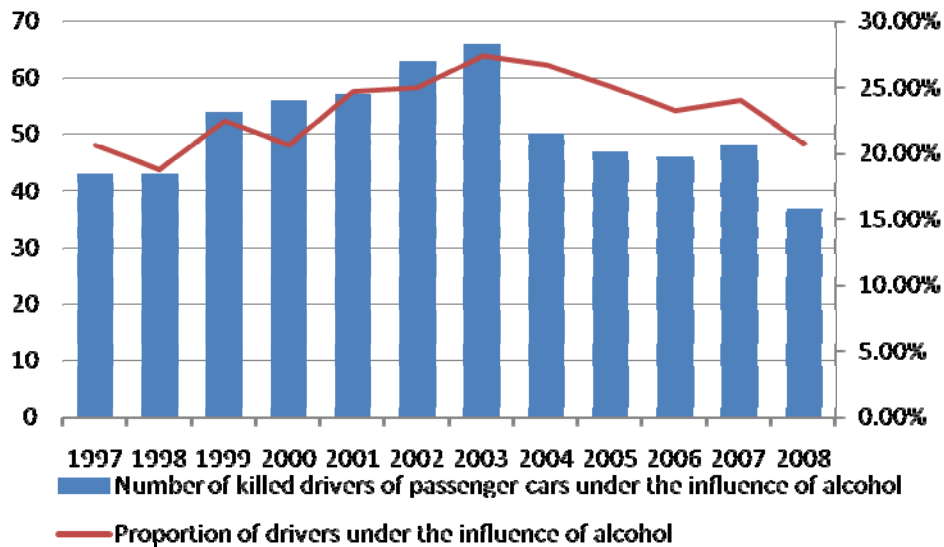
#### 4. Recent development of driving behaviour

##### ❖ Drink driving

In Sweden, the legal BAC limit is 0.2 g/l.

Figure 5 shows the evolution in the number of killed car drivers with a BAC above 0.2 g/l. In 2008, 25% of motor vehicle drivers killed in crashes were under the influence of alcohol.

Figure 5. Evolution in the number of killed car drivers under the influence of alcohol 1997-2008



##### ❖ Speed

Speeding is a major problem in Sweden and the percentage of drivers exceeding speed limits was increasing in the beginning of the decade, but now there are indications that compliance with speed limits is somewhat better, mainly due to road safety cameras.

In 2008 the Swedish government made the final legislative changes needed to put a new speed limit system in force. (See also Section 6.)

##### ❖ Seat belts and helmets

Seat belt use has been compulsory in front seats since 1 January 1975, and in rear seats since 1 July 1986

In 2008, the rate of seat belt use for car occupants was about 95% in front seats, 95% for children, and 75% for adults in rear seats. Although the seat belt usage rate is high in Sweden, the non-wearing of seat belts is still a serious problem.

Table 7. **Evolution in seat belt usage rate on urban and arterial roads**

	1990	2000	2003	2008
<b>General</b>	87.6%	91.3%	90.1%	92,8
<b>Front seats</b>	91.1%	92.3%	92.7%	95,1
<b>Rear seats, adults</b>	64.6%	72.3%	73.6%	74,3
<b>Rear seats, children</b>	78.5%	89.3%	90.1%	94,8

Helmet use is compulsory for riders of all motorized two-wheelers. Helmets have been compulsory for bicyclists under the age of 15 since 1 January 2005. In 2008, the helmet usage rate for motorised two-wheelers was about 90% for mopeds and 95% for motorcycles; the rate was 28% for bicycles.

## 5. National road safety strategies and targets

### ❖ National road safety strategies

The basis of Swedish road safety work is Vision Zero, a strategic approach towards a safe system where no one is at risk of getting fatally or severely injured while using road transport.

There is no safety plan in a traditional sense. However, along with a number of other agencies and stakeholders representing municipalities, the police, the insurance industry, the car industry and others, along with the Swedish Road Administration (SRA), have adopted a management by objective approach to road safety in order to achieve the new interim target towards Vision Zero. All the stakeholders (including the SRA) have agreed upon objectives for a number of performance indicators, such as speed compliance and seat belt usage. These objectives are supposed to guide the road safety work towards the interim target of 2020 and towards Vision Zero.

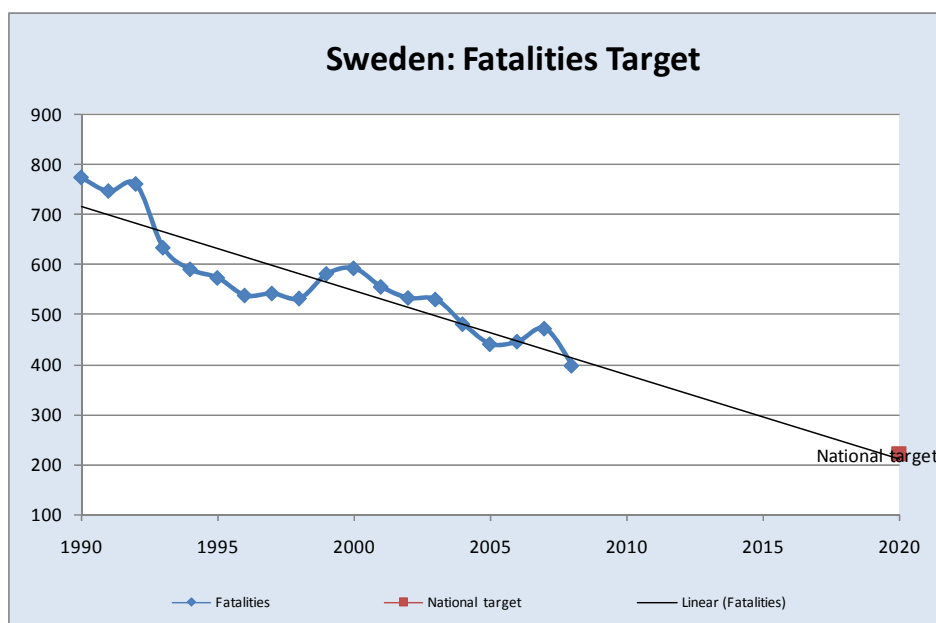
### ❖ Safety targets

In its previous safety plan, Sweden had a target of 270 fatalities for 2007, a number that was significantly exceeded. An evaluation of the failure determined that the interim target for 2007 was not agreed upon among the most important stakeholders, but was only a goal for the SRA. It also stated that the target itself was not low enough to stimulate stakeholders to take action, and it was not monitored as it should have been.

As a response to this critique, the new interim target is the result of stakeholder collaboration. A group of stakeholder representatives has been involved in drawing up the new road safety work. It contains provisions for a systematic follow-up on performance indicators and a management by objective approach.

In May 2009, the Swedish Parliament decided a new road safety target for 2020 of a 50% reduction in fatalities from the base year 2006-2008, as well as the new management by objectives approach to road safety work. The core of the new system is collaboration of different stakeholders. The Parliament also decided on a target of a 25% reduction in severely injured persons, as defined by functional capacity after the injury rather than police reports.

Figure 6. Trend in progress towards road fatality target



## 6. Recent safety measures (2007-2009)

### ❖ Infrastructure

**Roads with median barrier.** At the end of 2008, around 2 000 kilometres of roads had median barriers, mostly the wire type (2+1, 1+1). Research has shown that the risk of fatal, or severe, accidents on these roads has dropped by 75-80%, which is higher than expected.

### ❖ Speed

In 2008, the Swedish government made the final legislative changes needed to put a new speed limit system in force. The new system includes a larger number of speed limits (10 steps, ranging from 30 km/h to 120 km/h) and new instructions aimed at making speed limits correspond better to the safety requirements and capacity of the various roads.

A review of all Swedish roads began in autumn 2008 and continued in 2009, with speed limits changed as necessary.

### ❖ Road user behaviour, enforcement

Installation of road-safety cameras enforcing speed limits continued in 2009. At the end of 2008 almost 1 000 were in use, covering more than 2 700 kilometres.

### ❖ Licensing, regulation

The SRA has been preparing a new national strategy on motorcycle and moped safety for presentation during autumn 2009.

The Parliament has decided that moped class 1 will continue to be allowed for 15-year-olds (contrary to an EU directive), but they will be required to have a specific driving licence "AM" and education is compulsory. A driver's permit is compulsory for class 2 mopeds. The new rules were introduced on 1 October 2009.

## Other issues

The Swedish Transport Agency (Transportstyrelsen) was established on 1 January 2009 to gather judicial expertise from the national transport agencies for road, railway, shipping and aviation. This agency will have the overall responsibility for drawing up regulations and enforcement.

On 1 April 2010, the Swedish Road Administration will merge with the Swedish Rail Administration and some other, minor, transport agencies to form a new state authority responsible for traffic planning and road infrastructure.

## 7. Major research undertaken in 2007-2009

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- **Evaluation of the new speed limit system.** The evaluation contains three parts:
  - Evaluation of changes in travel speeds, environmental effects, accessibility etc., by measuring and analysing changes in speeds.
  - Road side interviews and focus groups with certain groups of road users to evaluate their views on the new speed limit system.
  - Interviews with decision makers to evaluate their views on the process during the introduction of the new speed limit system.
- **Traffic safety and economic factors.** The aim of the project is to study how changes in economic conditions at the national level influence traffic safety. Both changes in the number of fatal crashes and fatalities and changes in the characteristics of crashes are studied.
- **Safety of motorcyclists:** The project aims to analyse the injury data contained in the Swedish accident database, STRADA, for a better understanding of motorcyclists' road safety situation. Accident circumstances for motorcyclists are analyzed in detail, injuries are described, and the motorcyclist's accident history is studied.

## 8. References – Useful websites and references

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VTI	<a href="http://www.vti.se">www.vti.se</a>
Swedish Road Administration (SRA)	<a href="http://www.vv.se/Andra-sprak/English-engelska/">http://www.vv.se/Andra-sprak/English-engelska/</a>
Swedish Transport Agency	<a href="http://www.transportstyrelsen.se/">http://www.transportstyrelsen.se/</a>

# SWITZERLAND<sup>1</sup>

## 1. General comments on trends for 2008

The number of road fatalities fell in 2008 to 357, a 7% decrease from 2007. The decrease most strongly affected pedestrians (-25%) and the 21-24 age group (-50%). An above-average reduction of fatalities was also seen on motorways (-40%). In contrast, there were 13 more fatalities attributed to speeding in 2008 compared with 2007. Inappropriate speed or exceeding of speed limits accounted for a total of 147 fatalities.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

Between 1970 and 2008, the number of fatalities decreased by almost 80% and the number of injury crashes by 30%, while the number of vehicles more than tripled. In recent years (2000-2008), the number of fatalities continued to fall (by 40%). Moreover, since 2000 the distance travelled has increased by 12%.

Recent figures show a clear downwards trend in numbers of those seriously injured, after years of little change.

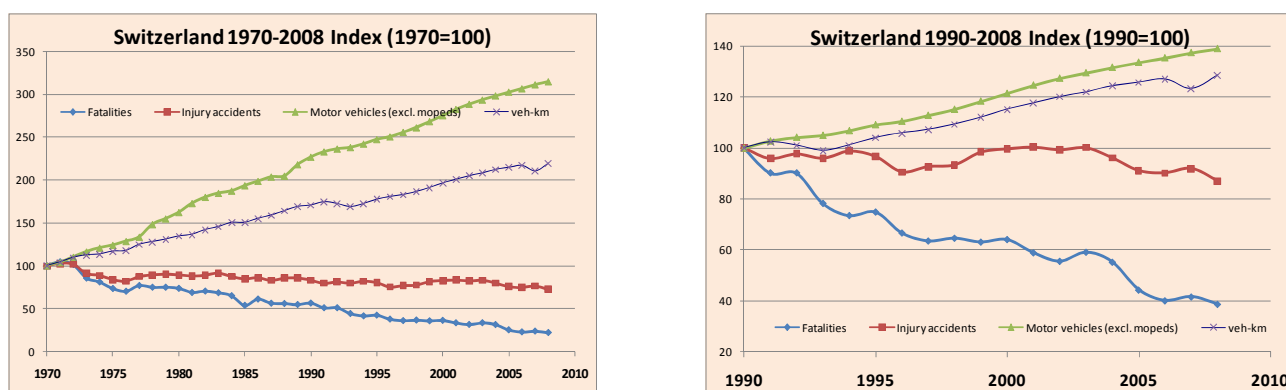
Road fatalities peaked in 1971, when 1 720 people died on the road. Between 1971 and 1996, the number of fatalities was significantly reduced. The average annual reduction was initially 7.5%, and then 3%, until 1996. Between 1997 and 2000, the number of casualties was little changed at around 600 per year. In 2004-2006, the rate of decrease significantly accelerated. In 2008, Switzerland had its lowest level of fatalities since record-keeping began.

Table 1. Number of road fatalities and injury crashes, 1970-2008

												% change over		
	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	2007-08	2000-08	1970-2008
Fatalities	1 643	925	592	544	513	546	510	409	370	384	357	-7%	-40%	-78%
Injury crashes	28 651	23 834	23 737	23 896	23 647	23 840	22 891	21 706	21 491	21 911	20 736	-5%	-13%	-28%

1. Source: IRTAD; bfu.

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008



#### ❖ Time series for key risk indicators

Between 1970 and 2008, the mortality rate, expressed in terms of deaths per 100 000 population, decreased by 82%.

Table 2. Risk indicators  
1970, 1980, 1990, 2000, 2008

Rates (reported)	1970	1980	1990	2000	2008	% change over	
						2000-2008	1970-2008
Deaths/100 000 population	26.6	19.2	13.9	8.3	4.7	-43%	-82%
Deaths/10 000 motor vehicles	9.9	4.5	2.4	1.3	0.7	-47%	-93%
Deaths/ billion veh-km	56.5	30.9	18.6	10.4	5.6	-46%	-90%
Motorisation (number of vehicles/1 000 inhabitants)	270.1	428.6	565.9	639.7	690.8	8%	156%

### 3. Recent development of accident trends

#### ❖ Road users

All user groups, but especially pedestrians (-88%), have benefited from the improvement in road safety since 1970. The number of bicyclists killed fell by 76%. Very good results were also achieved for mopeds (-94%), mainly due to an important reduction in exposure (Figure 2). The number of fatalities among motorcyclists decreased by almost 50% – far below the overall drop in fatalities.

In 2000-2008, all user groups benefited from the decrease in the number of fatalities, although the decrease was less marked for motorcyclists.

The 7% decrease from 2007 to 2008 was most markedly felt by pedestrians (-25%).



Table 3. Reported fatalities by road user group  
1970, 2000, 2007 and 2008

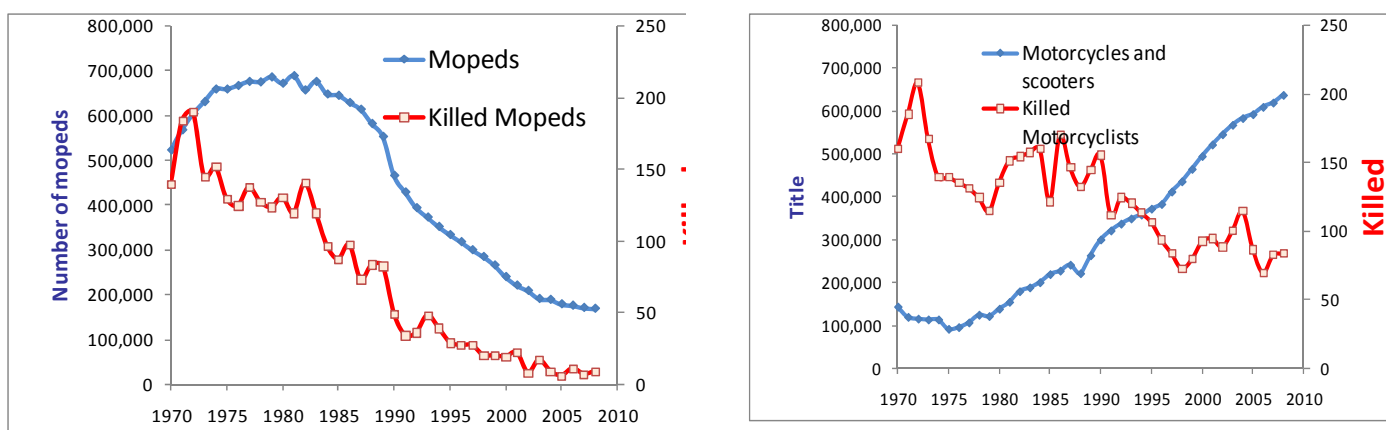
									% change over		
	1970		2000		2007		2008		2007-2008	2000-2008	1970-2008
Passenger car occupants	649	40%	273	46%	162	42%	156	44%	-4%	-43%	-76%
Bicyclists	111	7%	48	8%	30	8%	27	8%	-10%	-44%	-76%
Mopeds	139	8%	19	3%	7	2%	9	3%	29%	-53%	-94%
Motorcycles and scooters	160	10%	92	16%	82	21%	83	23%	1%	-10%	-48%
Pedestrians	504	31%	130	22%	79	21%	59	17%	-25%	-55%	-88%
Other	81	5%	30	5%	24	6%	23	6%	-4%	-23%	-72%
Total	1 643	100%	592	100%	384	100%	357	100%	-7%	-40%	-78%

Table 4 illustrates the relative fatality risk for the different road user groups. For a motorcyclist, the risk of dying in a traffic crash is 13 times higher than that for a car occupant.

Table 4. Relative fatality risk by road user group, 2008

	Reported fatalities	Deaths (inside or on the vehicle) per million vehicles	Average kilometrage per vehicle	Deaths (inside or on the vehicle) per billion veh-km
Pedestrians	59	N/A	N/A	N/A
Bicycles	27	N/A	N/A	N/A
Mopeds	9	53.6	810	66.2
Motorcycles	83	130.3	3490	37.3
Car and van occupants	156	39.1	13871	2.8
Heavy goods vehicles	7	21.5	17518	1.2

Figure 2. Relative evolution of the number of motorised two-wheelers in traffic and the reported number of moped riders and motorcyclists killed in traffic



## ❖ Age groups

Since 1970, the reduction in fatalities has been seen in all age groups, with the strongest decrease for children aged 0-9.

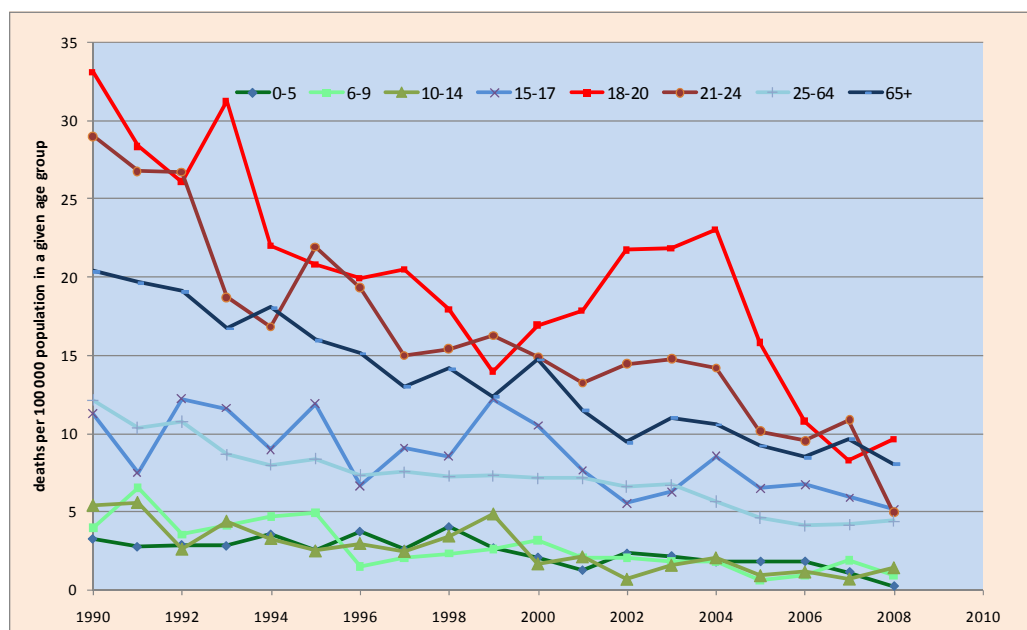
Relative to the number of inhabitants, young people aged 18-24 represent the largest group of casualties (Figure 3), mainly as car occupants and motorcyclists. This age group continues to be over-represented in traffic accidents. Measures have been introduced to reduce the risk, including a two-phase driving licence and a provisional license.

In 2008, a remarkable decrease in fatalities was observed among 21- to 24-year-olds, who now have a mortality rate comparable to that of the general population (Figure 3).

Table 5. Reported fatalities by age group  
1970-2008

							% change over		
	1970	1980	1990	2000	2007	2008	2007-2008	2000-2008	1970-2008
0-5	66	22	15	10	5	1	-80%	-90%	-98%
6-9	72	25	12	11	6	3	-50%	-73%	-96%
10-14	47	28	20	7	3	6	100%	-14%	-87%
15-17	48	46	28	26	16	14	-13%	-46%	-71%
18-20	127	133	93	42	22	26	18%	-38%	-80%
21-24	157	148	121	49	39	18	-54%	-63%	-89%
25-64	724	513	438	285	176	189	7%	-34%	-74%
>65	404	293	198	161	117	100	-15%	-38%	-75%
<b>Total</b>	<b>1 643</b>	<b>1 209</b>	<b>925</b>	<b>592</b>	<b>384</b>	<b>357</b>	<b>-7%</b>	<b>-40%</b>	<b>-78%</b>

Figure 3. Evolution of fatality risks by age group  
(deaths per 100 000 population in a given group)  
1990-2008



#### ❖ Accident locations

In 2008, 55% of fatal crashes occurred on country roads, 38% on urban roads and 8% on motorways. The decrease in fatalities over the last 20 years encompassed all road types.

Figure 4. **Reported fatalities by type of road 1980, 1990 and 2008**

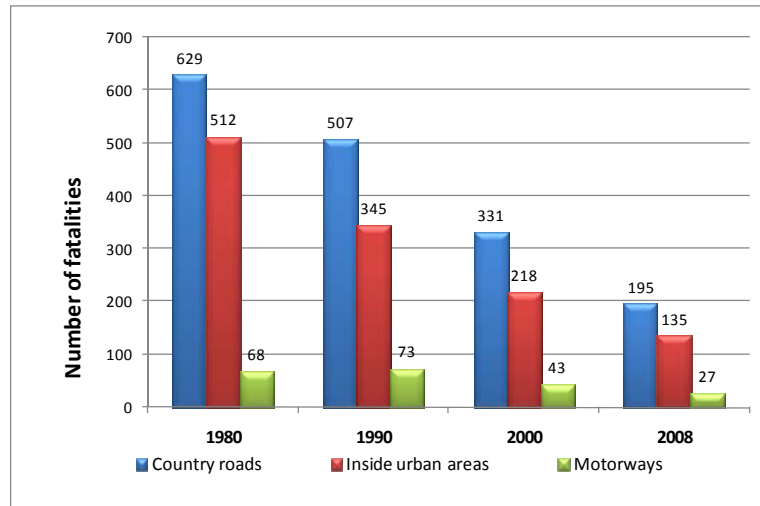


Table 6. **Reported fatalities by type of road**

	1980	1990	2000	2007	2008	% change over:		
						2007-2008	2000-2008	1980-2008
Inside urban areas	512	345	218	141	135	-4%	-38%	-74%
Country roads	629	507	331	196	195	-1%	-41%	-69%
Motorways	68	73	43	47	27	-43%	-37%	-60%

#### 4. Recent development of driving behaviour

##### ❖ Drink driving

In 2005, the maximum legal BAC was reduced from 0.8 g/l to 0.5 g/l and random breath testing was introduced.

In 2008, 16% of fatal crashes involved a driver under the influence of alcohol (including those with BAC below the legal maximum).

##### ❖ Speed

Speeding is a contributing factor in around 40% of fatal accidents. In most cases, inappropriate speed is to blame rather excessive speed. Measures against speed problems included:

- Introduction of a 100 km/h speed limit on rural roads and 130 km/h on motorways (1977).
- Introduction of a 50 km/h speed limit in built-up areas (1984).
- Introduction of an 80 km/h speed limit on rural roads and 120 km/h on motorways (1990).

In 2008, the proportion of drivers above the limit was 16% on urban roads, 30 % on rural roads and 22% on motorways.

### ❖ Seat belts and helmets

Seat belt use has been compulsory in front seats since 1981 and in rear seats since 1994. In addition, since 2002, dedicated child restraint systems have been mandatory for all children below age 7. In 2008, the rate of seat belt use was around 95% in front seats and 87% in rear seats.

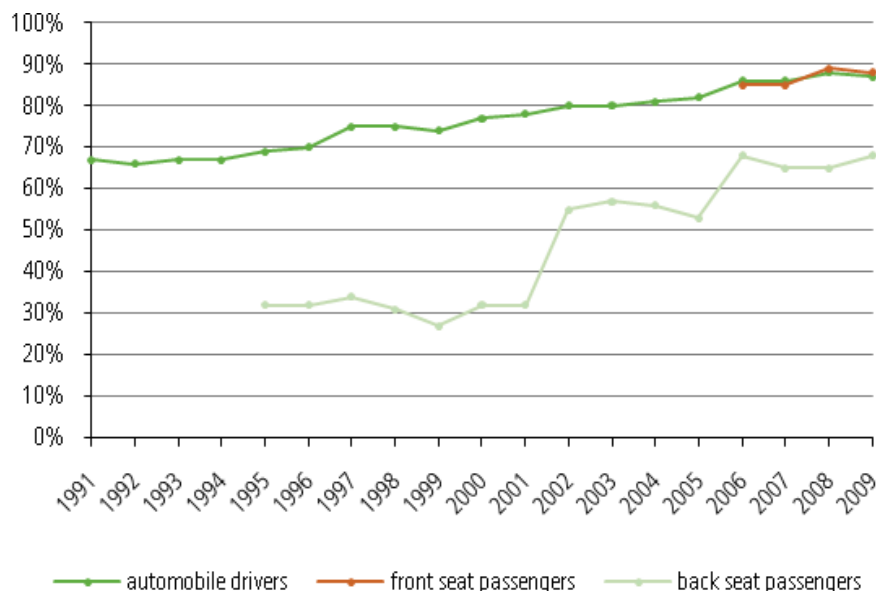
Table 7. Evolution in seat belt use for by occupants

	1980	1990	2000	2005	2008
<b>General</b>	-				
<b>Front seat</b>	-				95%
<b>Rear seat</b>	-				87%
<b>Motorways – driver</b>	51%	80%	89%	90%	93%
<b>Rural roads – driver</b>	34%	71%	74%	82%	89%
<b>Urban areas – driver</b>	23%	53%	66%	74%	81%

Helmet wearing has compulsory on motorcycles since 1981 and on mopeds (up to 50cc, maximum speed 45 km/h) since 1990. Observation indicates the compliance rate is almost 100%.

A helmet is not compulsory on bicycles.

Figure 5. Percentage of car drivers, front seat passengers and back seat passengers wearing seat belts 1991–2009



## 5. National road safety strategies and targets

### ❖ National road safety strategies

An action plan, “Via Sicura”, has been drawn up and is being discussed by the Swiss Government. Among its 56 measures, all of which have undergone cost-benefit analysis, are:

- 0.0 BAC for young drivers and professional drivers.
- Treatment of black spots.

- Road safety audits.
- Mandatory complementary training for motorcyclists and car drivers.
- Education on mobility and safety at all levels at school.
- Limitation of the validity period of the driving licence (regularly checks of ability to drive).

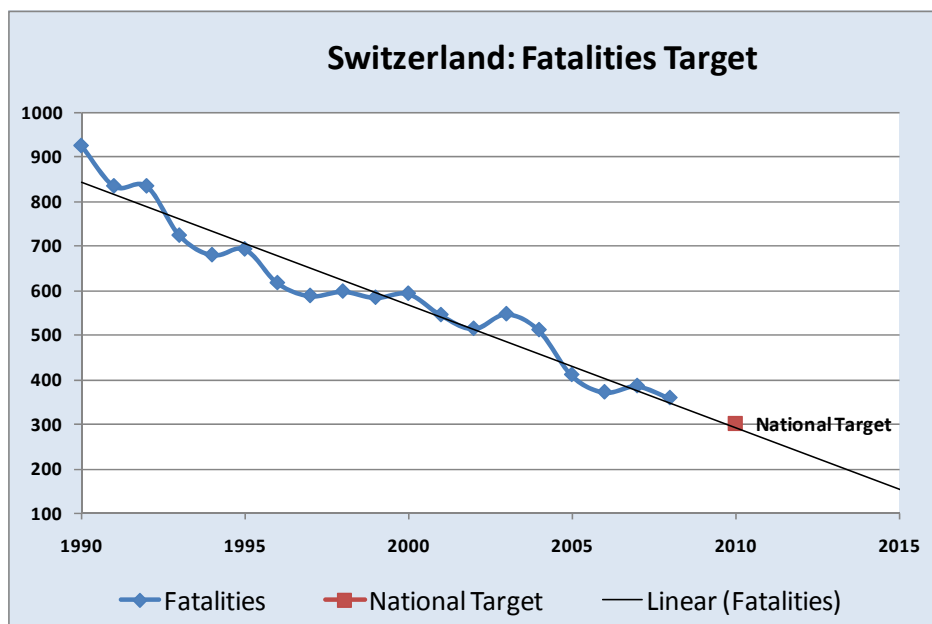
#### ❖ Safety targets and subtargets

The current target in Switzerland is to halve the number of fatalities and seriously injured by 2010 in comparison to 2000. The good results in the latest year point to a likelihood that the target will be reached.

Table 8. General road safety targets

Type	Targets (% and absolute figures)	Base year	Target year	Base year figure	Current results (figure in 2008)
Fatalities	-50% (300)	2000	2010	592	-41% (357)
Seriously injured	-50% (3 000)	2000	2010	6 191	

Figure 6. Trend in progress towards road fatality target



## 6. Recent safety measures (2007-2009)

#### ❖ Education and communication

- The bfu undertook the country's third seat belt campaign. See <http://www.sicherheitsgurt.ch/indexflash.html>
- A new campaign by bfu and insurance companies on driver assistance systems was launched. <http://www.auto-ig.ch/>
- A new campaign on speeding was launched by bfu, insurers and the Fonds für Verkehrssicherheit (Road Safety Fund). See <http://www.slow-n-easy.ch/>

## 7. References – Useful websites and references

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<b>Road Safety Agency</b>	<a href="http://www.astra.admin.ch">www.astra.admin.ch</a>
<b>Swiss Council for Accident Prevention (bfu)</b>	<a href="http://www.bfu.ch">www.bfu.ch</a>

# UNITED KINGDOM<sup>1</sup>

## 1. General comments on trends for 2008 (Great Britain)

Between 2007 and 2008, the number of deaths fell by 14%. Over the same period traffic fell by 1%. This is likely to be one factor in the reduction, but further analysis of accident, traffic, and speed data are required to develop our understanding. Historically, trends in fatalities and serious casualties had moved together, but after the mid 1990s, the steady fall in serious casualties continued, although fatalities levelled off and then remained relatively flat. However, since 2003 deaths have fallen more quickly than serious injuries (28% and 23% respectively).

Fatalities fell in 2008 for all the main road user groups. Motorcyclist deaths in 2008 showed the least decrease compared to 1998; however, motorcycle traffic increased by nearly 25% over this period. Between 2007 and 2008 deaths fell for all age groups except children (aged 0-14). The total number of deaths in accidents involving young car drivers (17-24) fell by 22% between 2007 and 2008; this accounted for almost half the drop in overall road deaths.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities, seriously injured and injury crashes

#### *United Kingdom*

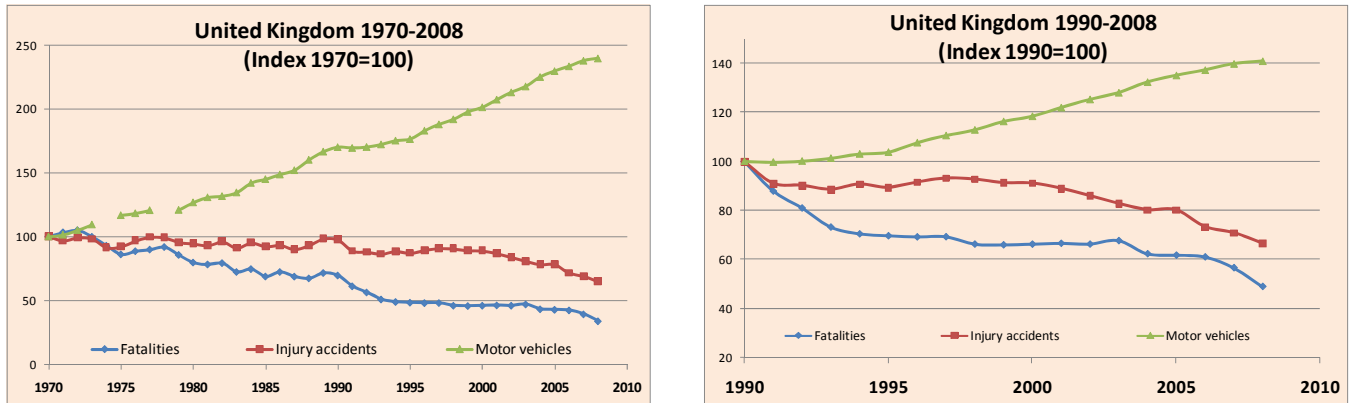
Between 1970 and 2008, the number of fatalities decreased by 66% and the number of injury crashes reported to the police by 35%, while the number of vehicles increased by 128%. In recent years (2000-2008), the number of fatalities continued to fall, by 26%. Since 2000 the distance travelled increased by around 10%.

Table 1. **Number of road fatalities, seriously injured and injury crashes 1970-2008**

	UK											% change over		
	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	2007-08	2000-08	1970-2008
Fatalities	7 771	5 402	3 580	3 598	3 581	3 658	3 368	3 336	3 298	3 059	2 645	-14%	-26%	-66%
Injury crashes	272 765	265 600	242 117	236 461	228 535	22 0079	213 043	213 043	194 789	188 105	176 723	-6%	-27%	-35%

<sup>1</sup> Source : IRTAD, Department for Transport.

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles  
1970-2008



#### ❖ Time series for key risk indicators

Between 1970 and 2008 the mortality rate, expressed in terms of deaths per 100 000 population, decreased by 69%.

Table 2. Risk indicators  
1970, 1980, 1990, 2000, 2008

Rates (reported)	UK					% change over	
	1970	1980	1990	2000	2008	2000-2008	1970-2008
Deaths/100 000 population	14.0	11.0	9.4	6.1	4.3	-29%	-69%
Deaths/10 000 motor vehicles	5.3	3.3	2.2	1.2	0.8	-38%	-86%
Deaths/billion veh-km	-	-	-	7.4	5.7 (2007)	-22%	-
Motorisation (number of vehicles/1 000 inhabitants)	263.6	329.9	435.8	501.4	572.5	14%	117%

### 3. Recent development of accident trends

#### ❖ Road users

Between 1980 and 2008, the number of pedestrians killed annually decreased by 71%, the number of bicyclists by 63%, and the number of moped riders by more than 70%. The decrease was less marked for passenger car occupants.



Table 3. Reported fatalities by road user group  
1980, 2000, 2007 and 2008

	UK								% change over		
	1980		2000		2007		2008		2007-2008	2000-2008	1980-2008
Passenger car occupants	2360	38%	1784	50%	1496	49%	1323	50%	-12%	-26%	-44%
Bicyclists	316	5%	131	4%	138	5%	117	4%	-15%	-11%	-63%
Mopeds	74	1%	15	0%	18	1%	21	1%	17%	40%	-72%
Motorcycles and scooters	1113	18%	597	17%	596	19%	488	18%	-18%	-18%	-56%
Pedestrians	2035	33%	889	25%	663	22%	591	22%	-11%	-34%	-71%
Other	284	5%	164	5%	148	5%	105	5%	-29%	-36%	-63%

Table 4 illustrates the relative fatality risk for the different road user groups. For a motorcyclist, the risk of dying in a traffic crash is 46 times higher than that for a car occupant.

Table 4. Relative fatality risk by road user group (2008)  
GB data

GB	Reported fatalities (2008)	Deaths (inside or on the vehicle) per million vehicles	kilometrage per vehicle type 100 million vkms	Deaths (inside or on the vehicle) per billion vehicle/km
Pedestrians	572	..	..	
Bicycles	115	2.7	47	2.4
Mopeds	..	..		
Motorcycles(all)	473	10	51	9.2
Car and taxi occupants	1 257	0.07	4 017	0.2
Heavy goods vehicles	23	1.3	287	0.1

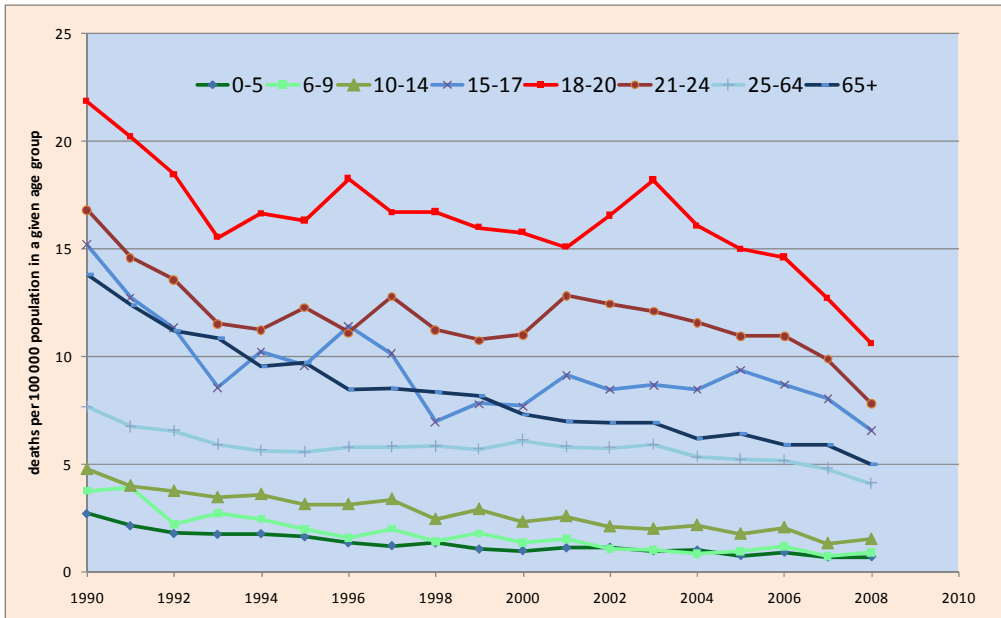
#### ❖ Age groups (United Kingdom)

Since 1970, the reduction in fatalities has benefited all age groups, but the highest reduction concerned the youngest group (0-14), for which fatalities decreased by 88%: from 934 in 1970, to 110 in 2008.

Table 5. Reported fatalities by age group (UK)

	UK						% change over		
	1970	1980	1990	2000	2007	2008	2007-2008	2000-2008	1970-2008
0-5	388	142	123	41	28	30	7%	-27%	-92%
6-9	285	139	108	41	20	23	15%	-44%	-92%
10-14	261	218	163	89	48	57	19%	-36%	-78%
15-17	513	559	335	169	192	160	-17%	-5%	-69%
18-20	706	864	558	342	311	272	-13%	-20%	-61%
21-24	673	578	616	304	328	270	-18%	-11%	-60%
25-64	3 119	2 270	2 223	1 908	1 549	1 333	-14%	-30%	-57%
>65	1 824	1 407	1 241	679	575	499	-13%	-27%	-73%

Figure 2. Evolution of fatality risks by age group  
(deaths per 100 000 population in a given group)  
1990-2008



❖ Accident locations

In 2007, 62% of fatal crashes occurred on rural roads, 32% on urban roads and 6% on motorways. A large majority of fatal crashes now occur on country roads.

Since 1980, the largest improvement has been made on urban roads.

Figure 3. Reported fatalities by type of road  
1980, 1990, 2000 and 2007

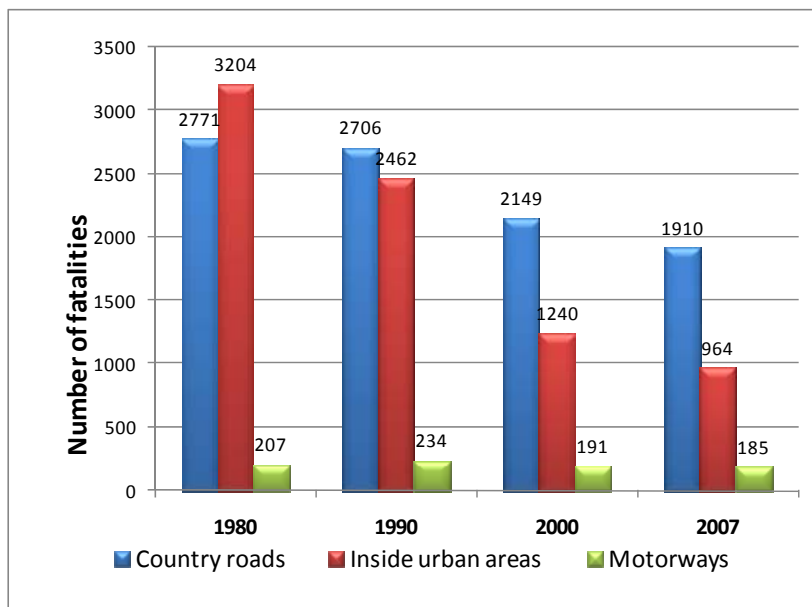


Table 6. **Reported fatalities by type of road**

	1980	1990	2000	2007	% change over	
					2007-2000	2007-1980
<b>Country roads</b>	2 771	2 706	2 149	1 910	-11%	-31%
<b>Inside urban areas</b>	3 204	2 462	1 240	964	-22%	-70%
<b>Motorways</b>	207	234	191	185	-3%	-11%

#### 4. Recent development of driving behaviour

##### ❖ Drink driving

In Great Britain, the maximum authorised blood alcohol content is 0.8 g/l. In 2008, it was estimated that in 17% of fatal crashes one of the drivers had a BAC above 0.8 g/l.

Fatalities resulting from drink drive accidents are estimated to have risen from 410 in 2007 to 430 in 2008.

##### ❖ Speed

It is estimated that around one third of fatal crashes are due to inappropriate speed.

##### ❖ Seat belts and helmets

Seat belt use is compulsory (front seat 1983, rear seat 1989 for children, 1991 for adults):

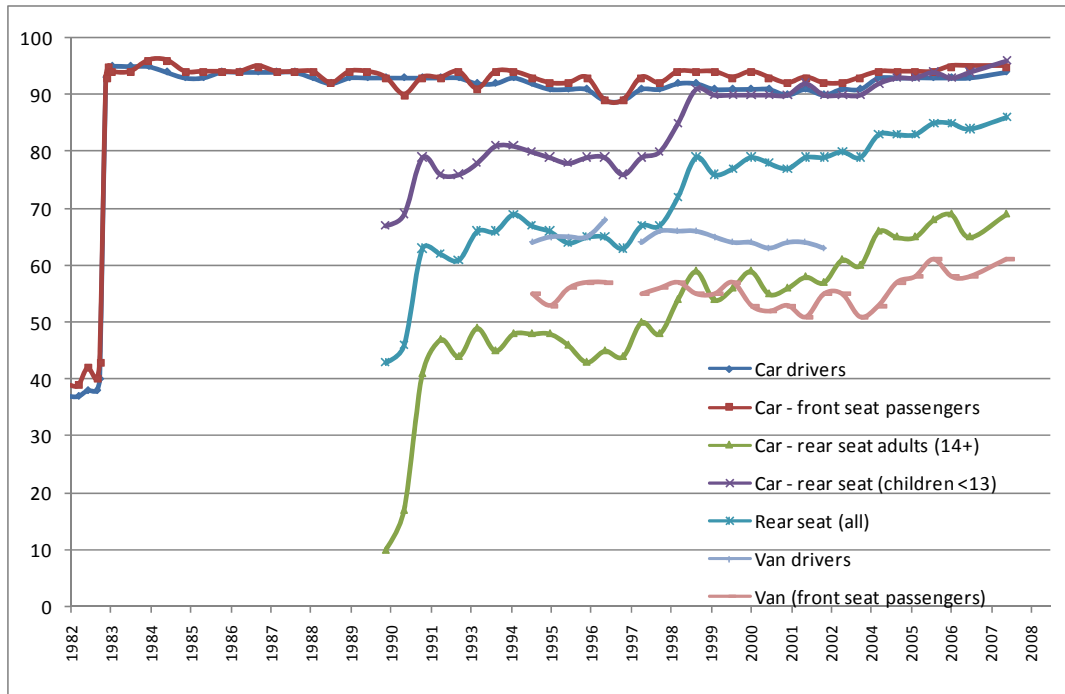
- Front seat belt wearing regulations for drivers and passengers – both adult and children – came into force on 31 January 1983.
- Seat belt wearing regulations for children in rear seats came into force on 1 September 1989.
- Seat belt wearing regulations for adults in rear seats came into force on 1 July 1991.
- Van drivers and passengers were included for the first time in the October 1994 survey.
- \* From 2007 there will be annual surveys only

Table 7 illustrates the wearing rate as of October 2007, and figure 5 illustrates the evolution in wearing rate since 1982.

Table 7. **Car and van seat belt wearing rates in Great Britain  
October 2007**

Car drivers	Car Front Seat Passengers	Car Rear Seat Adults (14+)	Car Rear Seat Children (13-)	Car Rear Seat All	Van Drivers	Van Front Seat Passengers
94%	95%	69%	96%	86%	72%	61%

Figure 4. Evolution in seat belt use



Helmet wearing has been compulsory on motorcycles since 1973/74, and on mopeds (up to 50cc, maximum speed 45 km/h) since 1977. A helmet is not compulsory on bicycles.

## 5. National road safety strategies and targets

### ❖ National road safety strategies

In 2000, the government published a safety strategy, *“Tomorrow’s roads - safer for everyone”*, which covers the period up to 2010. The strategy includes a number of ambitious targets (see below).

The Department for Transport has been working with the Scottish Government, the Welsh Assembly Government, and on a new road safety strategy for Great Britain starting in 2010. This will establish the approach, targets, and measures for reducing casualties in the next decade and beyond. Consultation on the new strategy was carried out from April to July 2009, and it is expected that the final strategy will be published by the end of 2009. Further information from <http://www.dft.gov.uk/pgr/roadsafety>.

## ❖ Safety targets and sub targets

Table 8. Targets set by the UK government for the year 2010.

Type	Targets (in % or absolute figures)	Base year	Target year	Base year figure (Great Britain)	Current results (Great Britain)
Fatalities and serious injuries - all	40% reduction	1994-98 average	2010	47 656	28 572
Fatalities and serious injuries – children	50% reduction	1994-98 average	2010	6 860	2 807
Slightly injured persons	10% reduction in casualty rate per veh-km	1994-98 average	2010	61 (casualties per 100m veh-km)	39 (casualties per 100m veh-km)
Disadvantaged areas	Greater reduction in number of casualties in 88 Neighbourhood Renewal areas in England than for England as a whole	1999-2001 average	2010	Average for the period 1999-2001: 118 345	Target met in 2005

## 6. Recent safety measures (2007-2009)

### ❖ Road user behaviour, enforcement

Two new THINK! road safety campaigns have been launched:

- The dangers of texting while driving are highlighted in a new campaign after research showed that 30% of young drivers admitted to texting at the wheel (May 2009).
- The first national TV advertising campaign to tackle drug driving after new research showed that one in 10 young male drivers admit to driving after taking illegal drugs. The campaign highlights the fact that the police can and will detect drug drivers (August 2009).

#### Great Britain:

- An additional 25 motorcycle helmets have been rated by SHARP – the Department for Transport's Safety Helmet Assessment and Ratings Programme – taking the number of ratings published to 150.

## 7. Major research undertaken in 2007-2009

### Vulnerable road users

- Cycle helmet wearing in 2008
- Building on success: improving the delivery of road safety education, training and publicity (2008)
- Child–parent interaction in relation to road safety education (2008)
- Evaluation of the national network of child pedestrian training pilot projects (2008)

### Driver and rider behaviour

- Passion, performance, practicality: motorcyclists' motivations and attitudes to safety
- The conditions for inappropriate high speed: road safety research report No. 92 (2009)
- Understanding inappropriate high speed: a quantitative analysis – research (2008)
- Scoping study of driver distraction: road safety research report No. 95 (2008)
- Learning to drive: the evidence (2008)
- Car drivers' skills and attitudes to motorcycle safety: a review (2008)

- Cohort II: a study of learners and new drivers (2008)
- Motorcycle rider fatigue: a review (No. 78) (2008)
- Pre-driver education: survey of pre-driver education provision (2007)
- Intervention modalities to address psychosocial predictors of driving behaviour among adolescents (2007)
- Pre-driver education (2007)
- Road policing activity and accident reduction
- Post-court road safety interventions for convicted traffic offenders

### Impairment

- Investigation of the usefulness, the acceptability and impact on lifestyle of alcohol (No. 88) (2008)
- Review of international evidence – use of alcohol ignition interlocks in drink drive offences (2008)
- A review of methodologies employed in roadside surveys of drinking and driving (No. 90) (2008)

### Road engineering and speed management

- 20 MPH zone research report, local road user safety evaluation and action learning (2009)
- Interaction between speed choice and road environment: road safety research report No. 100 (2009)
- The effects of speed cameras: how drivers respond (No. 11) (2009)

### Statistical analysis, accident causation and policy monitoring

- Road safety strategy beyond 2010: a scoping study (road safety research report No. 105) (2009)
- A poor way to die: social deprivation and road traffic fatalities (2009)
- Contribution of local safety schemes to casualty reduction – findings (report No. 108) (2009)
- Post-2010 casualty forecasting (road safety web publication No. 8) (2009)
- The relationship between speed and car driver injury severity (road safety web publication No. 9) (2009)
- Strapping yarns: why people do not wear seatbelts (road safety report No. 98) (2008)
- Analysis of the On the Spot (OTS) road accident database (No. 80) (2008)
- The UK On The Spot accident data collection study – Phase II report (No. 73) (2008)
- Fatal injuries to car occupants: analysis of health and population data (No. 77) (2007)
- Trends in fatal car-occupant accidents (No. 76) (2007)
- Fatal vehicle-occupant collisions: an in-depth study (No. 75) (2007)

### Medical aspects of fitness to drive

- Central scotomata and driving (No. 79) (2008)

## 8. References – Useful websites and references

<b>UK Department of Transport – Road Safety Unit</b>	<a href="http://www.dft.gov.uk/pgr/roadsafety/">http://www.dft.gov.uk/pgr/roadsafety/</a>
<b>Reported road casualties Great Britain 2008: Annual report</b>	<a href="http://www.dft.gov.uk/pgr/statistics/datatablespublications/accidents/casualtiesgbar/rcgb2008">http://www.dft.gov.uk/pgr/statistics/datatablespublications/accidents/casualtiesgbar/rcgb2008</a>
<b>Fact sheets on specific topics</b>	<a href="http://www.dft.gov.uk/pgr/statistics/datatablespublications/accidents/casualtiesgbar/suppletblesfactsheets">http://www.dft.gov.uk/pgr/statistics/datatablespublications/accidents/casualtiesgbar/suppletblesfactsheets</a>
<b>Recently published reports</b>	<a href="http://www.dft.gov.uk/pgr/roadsafety/research">http://www.dft.gov.uk/pgr/roadsafety/research</a>
<b>Quarterly estimates</b>	<a href="http://www.dft.gov.uk/adobepdf/162469/221412/221549/398822/rcgbq209.pdf">http://www.dft.gov.uk/adobepdf/162469/221412/221549/398822/rcgbq209.pdf</a>
<b>Department for Regional Development</b>	<a href="http://www.drdni.gov.uk/">http://www.drdni.gov.uk/</a>

# UNITED STATES<sup>1</sup>

## 1. General comments on trends for 2008

The number of traffic fatalities in 2008 reached its lowest level since 1961. The number of people killed in motor vehicle crashes in the United States declined by 9.7%, from 41 259 in 2007 to 37 261, according to the Fatality Analysis Reporting System (FARS) of the National Highway Traffic Safety Administration (NHTSA). This decline of 3 998 fatalities is the largest annual reduction in terms of both number and percentage since 1982. More than 90% of the reduction was in passenger vehicles, which make up over 90% of the fleet of registered vehicles. Passenger car occupant fatalities fell for the sixth consecutive year to their lowest level since the NHTSA began collecting fatality crash data in 1975. Light truck occupant fatalities dropped for the third consecutive year, and were at their lowest level since 1998. However, motorcyclist fatalities continued their increase for the eleventh consecutive year, reaching 5 290 and accounting for 14% of total fatalities. Data from previous years has shown that, while motorcycle registrations have increased, the increase in motorcyclist fatalities has increased more steeply.

A statistical projection of traffic fatalities for the first half of 2009 shows an estimated 7% decline in fatalities.

It is important to note that while there has been a consistent decrease in vehicle-miles travelled since December 2007, partly explained by the economic crisis, the decline in the number of fatalities has been even steeper, as the continued drop in the fatality rate shows. The reduction in total fatalities may be due in part to a decrease in miles travelled, yet many additional factors affect the outcome of motor vehicle crashes.

## 2. Long term trends

### ❖ Evolution in numbers of fatalities and injury crashes

Between 1970 and 2008, the number of fatalities decreased by 29.2% and the number of injury crashes by only 6.2%. In the same period, the number of vehicles was multiplied by 2.3 and the distance driven by 2.7. During the 1990s, there was little progress in terms of reduction in the number of casualties. A decreasing trend started in 2007.

Table 1. Number of road fatalities and injury crashes, 1970-2008

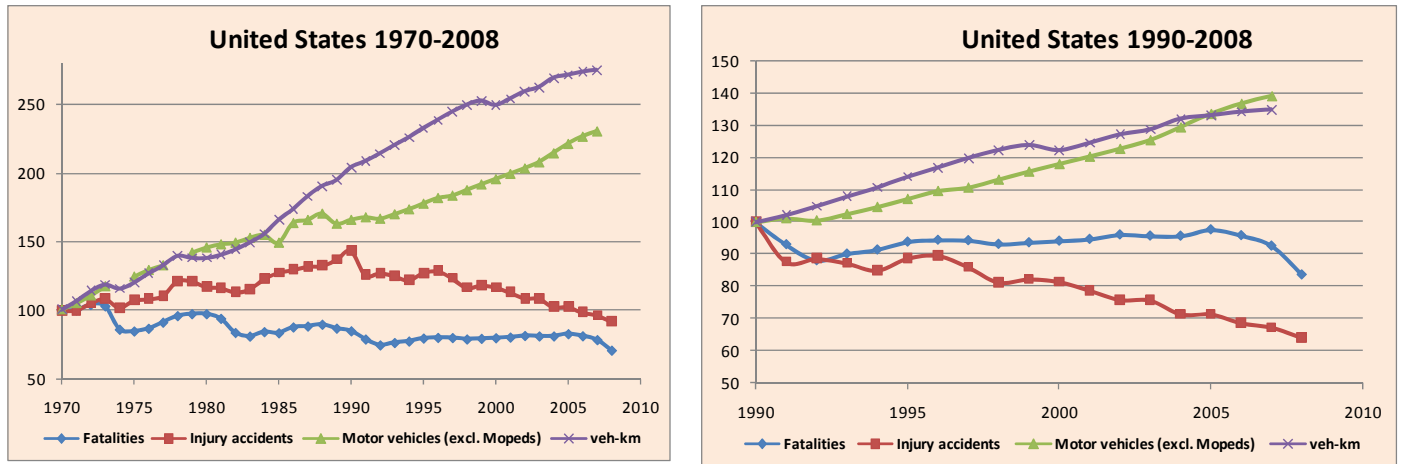
	1970	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	% change over		
												2007-08	2000-08	1970-2008
Fatalities	52 627	44 599	41 945	42 196	42 815	42 643	42 636	43 510	42 708	41 259	37 261	-9.7%	-11.2%	-29.2%
Injury crashes	1 774 612	2 122 000	2 070 000	2 003 000	1 929 000	1 925 000	1 816 000	1 816 000	1 746 000	1 711 000	1 630 000	-4.7%	-21.3%	-8.1%

Note: Data cannot be verified prior to 1975 for fatalities and 1988 for injury crashes.

Source: Fatalities – FARS 1990 to 2008; injury crashes – General Estimates System 1990 to 2008.

1. Source: IRTAD; National Highway Traffic Safety Administration.

Figure 1. Evolution in numbers of road fatalities, injury crashes and vehicles 1970-2008 and 1990-2008



#### ❖ Time series for key risk indicators

Between 1970 and 2008, the mortality rate expressed in terms of the number killed per 100 000 population was reduced by 53%, and the risk expressed by the number killed per billion vehicle-kilometres decreased by 73%. The fatality rate per 100 million vehicle-miles travelled (VMT) fell to a historic low of 1.27 in 2008.

Table 2. Risk indicators 1970, 1990, 2000, 2008

	1970	1990	2000	2008	% change over	
					2008-2000	2008-1970
Deaths/100 000 population	25.80	17.88	14.87	12.25	-18%	-53%
Deaths/billion veh-km			1.93	1.44	-25%	-73%
Deaths/10 000 vehicles	29.64	12.92	9.49	7.91	-17%	-73%

Source: Fatalities – FARS 1990 to 2008; population – US Census Bureau 1990 to 2008.

### 3. Recent development of accident trends

#### ❖ Road users

Since 1970, all road users except motorcycle riders have benefited from the improvement of road safety. Motorcycle rider fatalities increased by 132% between 1970 and 2008. Table 3 shows the breakdown of road fatalities by user group.



Table 3. Fatalities by road user group  
1970, 2000, 2007 and 2008

									% change over		
	1970		2000		2007		2008		2007-2008	2000-2008	1970-2008
<b>Bicyclists</b>	760	1%	693	2%	701	2%	716	2%	2%	3%	-6%
<b>Motorized 2-wheelers</b>	2 280	4%	2 897	7%	5 174	13%	5 290	14%	2%	83%	132%
<b>Passenger car occupants</b>	34 480	66%	20 699	49%	16 614	40%	14 587	39%	-12%	-30%	-58%
<b>Pedestrians</b>	8 950	17%	4 763	11%	4 699	11%	4 378	12%	-7%	-8%	-51%

Source: FARS 2000-2008; IRTAD.

Between 1970 and 2008, the United States experienced a marked reduction in *passenger car fatalities* – from 34 480 to 14 587. A further reduction in passenger car fatalities is expected with increased availability of front and side airbags, electronic stability control, safety belt use, use of age-appropriate child safety seats and a continued reduction in alcohol- and drug-impaired driving.

Over the same period, the number of pedestrians killed in motor vehicle crashes decreased by 58%. There was nearly no progress in the reduction in the number of cyclists killed.

Motorcycle fatalities reached their lowest level in 1997, and have since been increasing continuously and substantially. In 2008, motorcyclist fatalities made up 14% of all motor vehicle traffic crash fatalities and accounted for 5 290 lives, an increase of 131% since 1998. Per mile travelled in 2007, a motorcyclist was approximately 37 times more likely to die in a crash than someone riding in a passenger car.

Figure 2. Relative evolution in the number of motorised two-wheelers in traffic and the number of motorcyclists killed in traffic

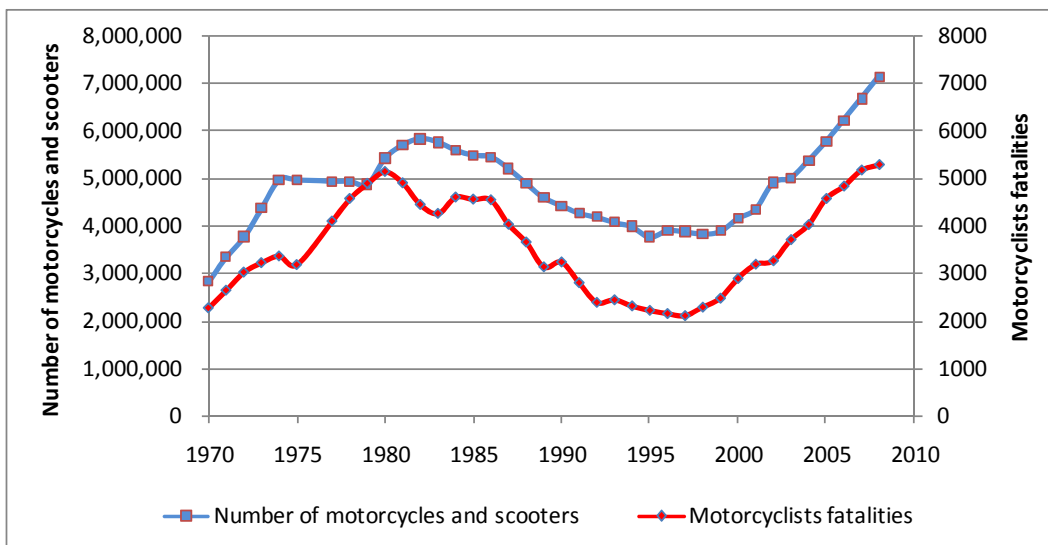


Table 4 shows the relative risk of being killed in a traffic crash for different road users and indicates that risk for motorcyclists (in relation to distance travelled) is 40 times higher than for other motorised road users.

Table 4. **Relative fatality risk for different road users**  
2007

Vehicle type	Deaths per million vehicles	Average kilometrage	Deaths per billion veh-km
<b>Motorcycles</b>	724.80	21 902	236.23
<b>*Light vehicles</b>	120.59	2 583 343	6.43
<b>**Heavy vehicles</b>	120.57	2 258 515	5.87

Source: Fatalities – 2007 FARS; VMT – 2007 Federal Highway Administration.

\*Passenger Cars \*\*Light trucks (SUVs, pickups, vans, etc.) + large trucks

This worrying trend in motorcycle safety is partly due to increased use, as motorcycles have become more popular (see Figure 2), especially among older riders, but unfortunately it is also due to the weakening of state helmet laws. Almost two-thirds of fatally injured motorcycle riders were not wearing a helmet in states without universal helmet laws, compared to 14% in states with such laws. Currently only 20 states have universal helmet laws, and every year there are challenges to those laws: universal helmet laws in one or two states may have been overturned in 2009. Alcohol-impaired driving is also a growing concern, as almost 1,500 motorcycle riders were found to be alcohol-impaired (BAC of 0.08 or higher) in motor vehicle traffic crashes in 2008.

#### ❖ Age groups

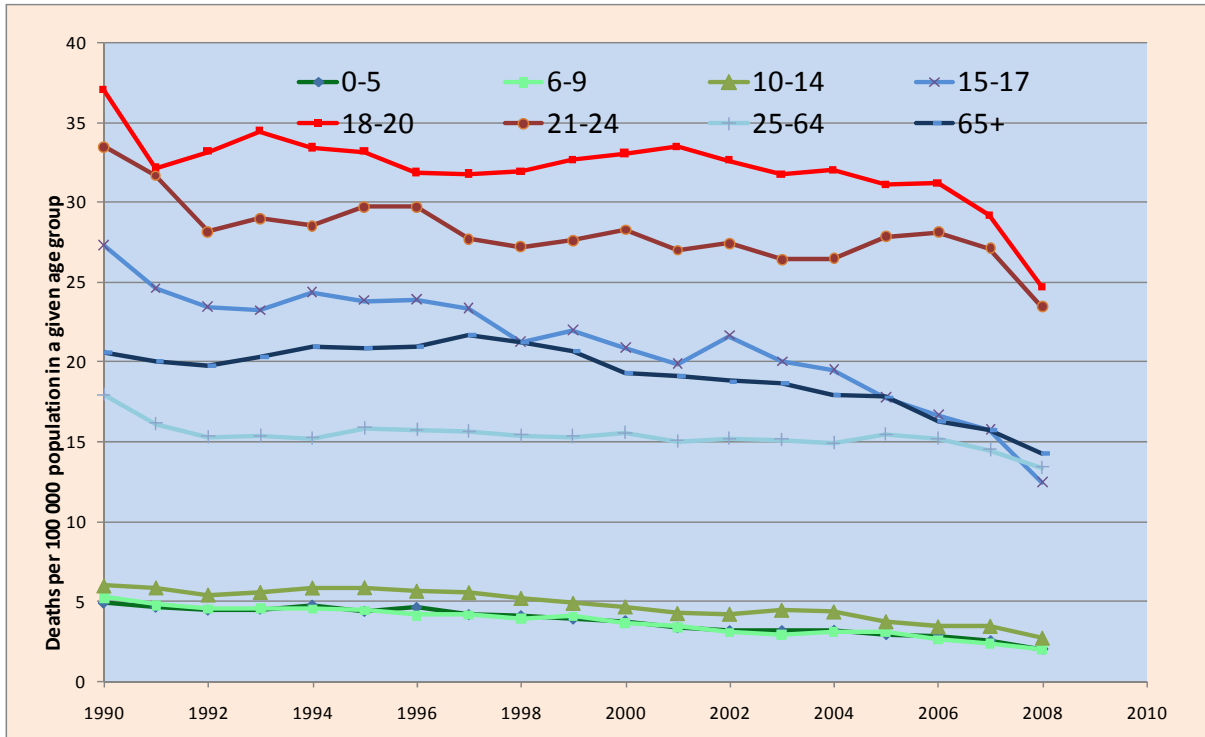
From 1980 to 2008, the United States experienced fatality reductions in all age groups, with the most impressive reduction for the youngest age group (0-14). Young people (15-24) are still a high risk group in road safety, with a fatality risk two times higher than the general population. Fatalities in the 25-64 group have remained high (the group spans 40 years) and relatively stable over the last 20 years (Table 5).

Table 5. **Fatalities by age group**

						% change over		
	1980	1990	2000	2007	2008	2007-2008	2000-2008	1980-2008
<b>0-5</b>	1 394	1 101	858	618	497	-20%	-42%	-64%
<b>6-9</b>	965	752	579	366	310	-15%	-46%	-68%
<b>10-14</b>	1 388	1 025	926	696	540	-22%	-42%	-61%
<b>15-17</b>	4 011	2 744	2 467	2 047	1 596	-22%	-35%	-60%
<b>18-20</b>	6 927	4 564	3 967	3 675	3 187	-13%	-20%	-54%
<b>21-24</b>	7 521	5 049	4 061	4 549	3 940	-13%	-3%	-48%
<b>25-64</b>	23 215	22 812	22 267	23 219	21 579	-7%	-3%	-7%
<b>&gt;65</b>	5 341	6 427	6 701	5 967	5 533	-7%	-17%	4%

Source: FARS 1980-2008.

Figure 3. Evolution of fatality risks by age group (deaths per 100 000 population in a given group) 1990-2008



❖ Accident locations

Since 1980, the reduction in fatal crashes has been spread equally between urban and rural networks. From the beginning of the 2000s, less progress was made on urban roads. *Motorways* experienced an increase in the number of fatalities between 1970 and 2008, which certainly must be analyzed in conjunction with the increase of the motorway.

Figure 4. Fatalities by type of road

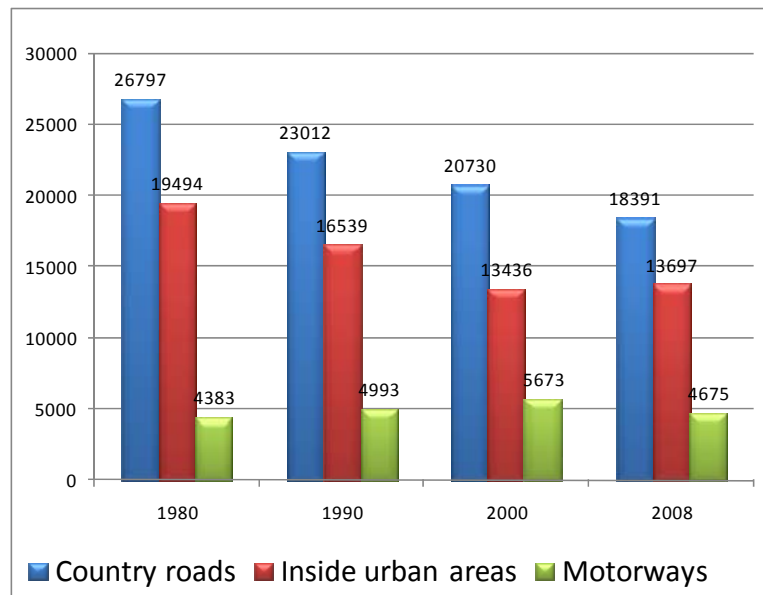


Table 6. Fatalities by type of road

	1980	1990	2000	2007	2008	% change over		
						2007-2008	2000-2008	1980-2008
Country roads	26 797	23 012	20 730	20 423	18 391	-9.9%	-11%	-31%
Inside urban areas	19 494	16 539	13 436	15 193	13 697	-9.8%	2%	-30%
Motorways	4 383	4 993	5 673	5 362	4 675	-12.8%	-18%	7%

Source: FARS 1980 to 2008.

#### 4. Recent development of driving behaviour

##### ❖ Drink driving

In 2008, 32% of fatal crashes involved drivers with a BAC of 0.08 or above (Table 7).

Each state makes its own laws governing BAC levels for law enforcement action. In general, state BAC laws fall into three categories: zero tolerance; 0.08 BAC per se; and high BAC (0.08+). All 50 states have enacted zero tolerance laws (primarily, per se laws at 0.02% BAC or lower) that make it illegal for drivers under age 21 to have any detectable amount of alcohol in their bodies. As of August 2005, all 50 states, the District of Columbia and Puerto Rico had enacted 0.08 BAC per se laws. Additionally, as of January 2005, 32 states had enacted high BAC laws.

In fatal crashes in 2008, a higher percentage of motorcycle riders had a BAC of 0.08 or higher than any other type of motor vehicle driver in fatal crashes.

Another area of concern is that more women are drinking and driving. The number of women arrested while driving under the influence increased by nearly 30% over the 10 years from 1998 to 2007. Over that same period, impaired-driving arrests for men decreased by 7.5%, although the total number of men arrested outstripped women by about four to one. Overall, about 2,000 fatalities a year involve an impaired female driver.

Table 7. Evolution in alcohol-impaired fatalities

Year	Alcohol-Impaired driving fatalities (driver BAC 0.08+)		Total fatalities in crashes
	Number	Percent of Total Fatalities	
1998	12 546	30%	41 501
1999	12 555	30%	41 717
2000	13 324	32%	41 945
2001	13 290	31%	42 196
2002	13 472	31%	43 005
2003	13 096	31%	42 884
2004	13 099	31%	42 836
2005	13 582	31%	43 510
2006	13 491	32%	42 708
2007	13 041	32%	41 259
2008	11 773	32%	37 261

Source: FARS 1998-2008.

## ❖ Speed

Speeding is a causation factor in around 30% of fatal crashes (31.8% in 2007, 31.3% in 2008).

Speeding-related fatalities, as a percentage of total fatalities, showed a downward trend from a high of 36.8% in 1986 to a low of 29.9% in 2000. Since 2000, total fatalities have increased and so has the proportion related to speeding, indicating that the rate of increase in speeding-related fatalities is more than the rate of increase in total fatalities.

Table 8. **Numbers killed in motor vehicle traffic crashes, by speeding involvement and year**

Speeding involvement	2007	2008	% change
No speeding involved	28 119	25 587	-9.0%
Speeding involved	13 140	11 674	-11%
<b>Total</b>	<b>41 259</b>	<b>37 261</b>	<b>-9.7%</b>

Source: FARS 2007 and 2008.

## ❖ Seat belts and helmets

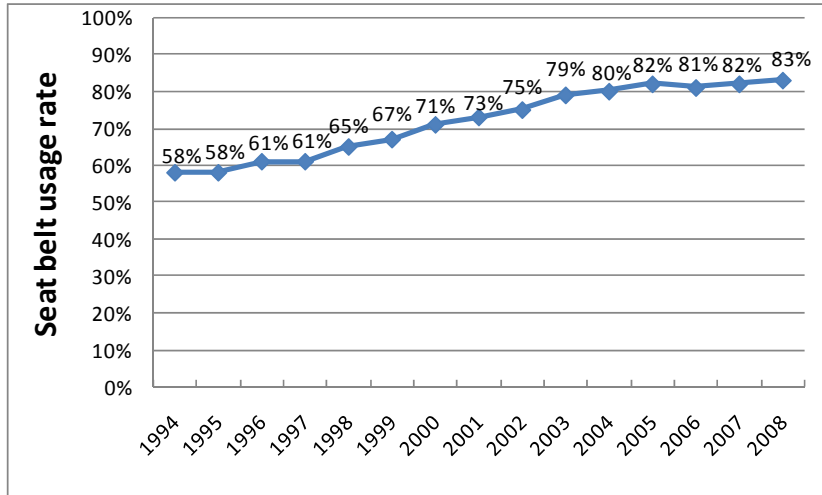
### *Seat belts*

Primary belt laws (PBLs) allow law enforcement to stop a driver solely for not wearing a seat belt. In 2009, four states passed PBLs – more than in any previous year. These additions bring the total to 30 out of 50 states. In the other 20 states, drivers must commit another driving offence before they can be stopped. One state has no belt use law – primary or secondary.

In 2008, 33% of passenger car occupants and 36% of light-truck occupants involved in fatal crashes were not restrained.

The NHTSA conducts a national seat belt campaign every May involving more than 10 000 state and local law enforcement agencies. As a result of stronger laws and high visibility enforcement, the overall seat belt rate continues to climb. In 2008, the latest year for which figures are available, the national rate was 83%, and 16 states had rates higher than 90%. Some states, including Hawaii and California, had over 95% usage rates while that of New Hampshire was 69%.

Figure 5. **Observed seat belt usage rates in front seats  
1994-2008**



Source: National Occupant Protection Usage Survey.

Table 9. **Seat belt usage rate in front and rear seats  
2008**

Rear seat	74%
Front seat	83%

Source: National Occupant Protection Usage Survey.

### ***Helmet<sup>1</sup>***

Motorcycle helmet laws are issued and enforced by the individual states; there is no national law requiring motorcycle helmet use. Twenty states, the District of Columbia and Puerto Rico require helmet use by all operators and passengers. In 27 states, only a specific population segment is required to wear helmets. Three states have no motorcycle helmet use laws. As of 20 October 2009, 21 states and the District of Columbia have enacted age-specific bicycle helmet laws, and more than 192 localities have enacted some form of bicycle helmet legislation. Table 8 shows the evolution in motorcycle helmet usage since 1998.

Table 10. **Evolution in motorcycle helmet usage  
1998-2008**

	1998	2000	2002	2004	2006	2008
Usage rate	67%	71%	58%	58%	51%	63%

1 For more information, see :

Motorcycle Helmet Use in 2004 – Overall Results <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/RNotes/2005/809867.pdf>

Calculating Lives Saved By Motorcycle Helmets <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/RNotes/2005/809861.pdf>

## 5. National road safety strategies and targets

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### ❖ National road safety strategies

The number one priority of the Department of Transportation (USDOT) remains safety. Despite encouraging recent trends in the decrease of number of fatalities, there is still considerable work to be accomplished. Even in the country's best year to date, over 37 000 lives were lost. USDOT is identifying new strategies and initiatives to more aggressively pursue highway safety. It is continuing to focus on trends that have had detrimental consequences and other external factors that are impeding progress, most notably:

- Alcohol-related fatalities, an area of relatively little progress in the past decade.
- Motorcycle fatalities, which have risen for 11 straight years to reach 5 290 in 2008, the highest number since data collection began, accounting for 14% of total fatalities.

USDOT is also preparing for highway reauthorization and planning an agenda for the future.

### ❖ Targets

USDOT's fatality goal began as a 1998 goal by NHTSA and the Federal Highway Administration (FHWA) to reduce the number of transport deaths by 20%. By 2008, a 20% decrease amounted in absolute terms to 33 500 annual motor vehicle fatalities. The performance measures for reaching that figure included:

- reducing alcohol fatalities to 11 000, from 16 673 in 1998;
- reducing both motorcycle fatalities and speeding-related fatalities by 5%;
- reducing child fatalities by 25%;
- reducing pedestrian and bicycle fatalities by 10%.

In addition, achieving the goal assumed a seat belt usage rate of 90%, up from 69% in 1998.

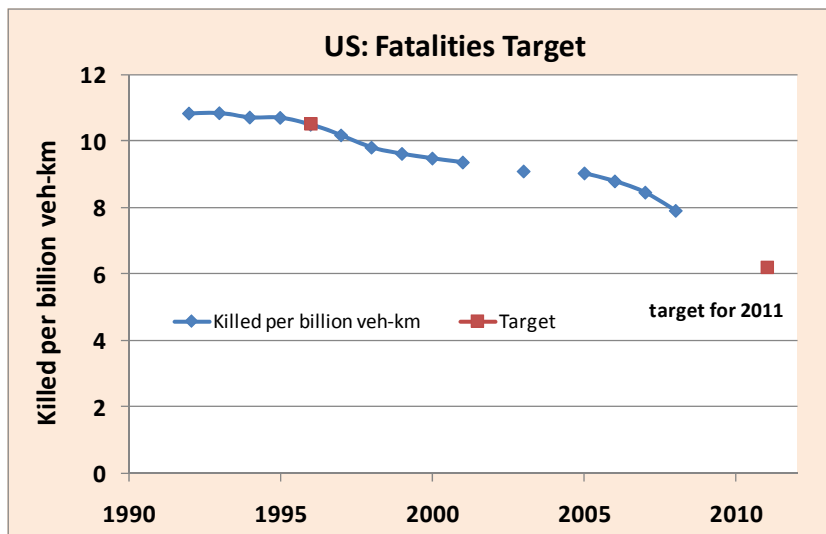
In 2002 the goal was revised to a 2008 target of one fatality per 100 million VMT. The change from an absolute number to a rate was made to account for effects of increasing exposure risk through inclusion of VMT in the measure. Regardless of whether the goal is based on an absolute number or a fatality rate, the original assumptions that formed the basis of the goal were based on previous data trends indicating significant increases in seat belt usage and a continued decline in alcohol-related and motorcyclist fatalities. In many cases these assumptions proved too optimistic or failed to foresee a change in trend, as with motorcycles.

USDOT remains committed to reducing highway fatalities and fully supports the goal of reducing fatalities to a rate of 1.0 per 100 million VMT. The target date for achieving that goal has been revised from 2008 to 2011, to account for the dramatically changing nature of the challenges in highway safety. To most effectively align the programme and policy actions needed to meet key challenges, USDOT has established four fatality submeasures – on passenger vehicles, non-occupants, motorcycle riders, and large-truck- and large-bus-related fatalities – which represent the breadth of all highway users. The purposes of this approach are to more closely examine the fatality rates of the different segments of highway users, increase the energy and resources involved and develop new strategies to combat submeasure trends that are impeding progress to the overall 1.0 goal. The new approach raises the four fatality submeasures from agency-specific goals to departmental metrics to highlight the overall commitment by USDOT and the three surface transport agencies that directly support the respective submeasures and the overall 1.0 fatality rate goal – the NHTSA, the FHWA and the Federal Motor Carrier Safety Administration (FMCSA).

Table 11. Trend towards safety target

Type	Targets	Base year	Target year	Base year figure	Results (2008)
Fatalities	1.0 fatalities per 100 million VMT (6.2 fatalities per billion veh-km)	1996	2011	1.7	1.27

Figure 6. Trend toward safety target



## 6. Recent safety measures (2007-2009)

### ❖ Road user behaviour

#### *Seat belts*

- Four more states enacted primary seat belt laws in 2009, bringing the total to 30 out of 50 states.

#### *Impaired driving*

- The most recent national enforcement campaign, “Drunk Driving. Over the Limit. Under Arrest,” took place from 21 August to 7 September 2009, with a focus on reducing impaired driving. This effort was supported by USD 13 million in paid national advertising. A special emphasis was put on motorcyclists.
- A major initiative focuses on alcohol detection devices, called ignition interlock, that prevent an offender from starting a vehicle. Currently 47 states allow the use of these devices and about 10 states require them to be used for first-time offenders. The NHTSA provides training to state prosecutors and judges on implementation of ignition interlock laws. Another successful countermeasure is the use of drink driving courts overseen by local judges. They hold offenders to a high level of accountability while offering long-term intensive treatment and compliance monitoring. There are more than 500 such courts.



## **Mobile phones**

- The number of states with laws on use of cell phones or texting while driving continued to increase in 2009. Now, seven states ban the use of hand-held phones and 21 states ban novice drivers from all cell phone use. Text-messaging is banned for all drivers in 18 states. USDOT convened a national summit on distracted driving from 30 September to 1 October 2009, in Washington, DC, to address the issue. Following the summit, President Obama issued an executive order prohibiting federal employees from text-messaging while driving government-owned vehicles; when using government-supplied electronic equipment while driving; or while driving privately owned vehicles when on official government business. In addition USDOT is initiating rulemaking procedures to:
  - codify restrictions on the use of cell phones and other electronic devices in rail operations;
  - consider banning text-messaging and restricting the use of cell phones by truck and interstate bus operators while operating vehicles;
  - disqualify school bus drivers convicted of texting while driving from maintaining their commercial driver's licenses.

## **❖ Vehicle safety regulation**

- In 2009, the United States published final rules and notices of proposed rulemaking (NPRMs) for several key federal motor vehicle safety standards. These include a final rule requiring new school buses with a gross vehicle weight rating of 4 536 kg or less to have lap/shoulder belts in lieu of the lap belts currently required; a proposed upgrade to the US motorcycle helmet standard to reduce misleading labelling of non-compliant helmets and aid state and local law enforcement officials in enforcing state helmet laws; and a final rule upgrading roof crush resistance requirements to include a two-sided test procedure as part of a comprehensive plan to reduce the risk of rollover crashes and the attendant risk of death and serious injury. For light passenger vehicles, this final rule doubled the amount of force the roof structure must withstand, and it extended the applicability of the standard to heavier vehicles.
- In the area of crash avoidance, a final rule improving the stopping distance requirements for heavy trucks will require trucks to enhance their braking systems. It is expected to save 227 lives annually, prevent 300 serious injuries and reduce property damage costs by over \$169 million. Also proposed is an upgrade to the motorcycle braking standard by applying a global technical regulation to replace some existing tests with more effective ones, eliminate outdated tests and requirements, and add clear and objective requirements that reflect best practices around the world. The upgrade would also address new technologies such as anti-lock brake systems and combined brake systems. Other rulemaking procedures related to power windows and to technology intended to reduce the possibility of a driver accidentally backing over a child. These were among measures required by the Cameron Gulbransen Kids Transportation Safety Act.
- In relation to fuel economy, the United States released a final rule on the Corporate Average Fuel Economy (CAFE) Standards for Passenger Cars and Light Trucks for the 2011 model year (MY). It also published a joint NPRM with the Environmental Protection Agency proposing CAFE standards for MY 2012-2016. It is estimated that the proposed standards would raise the industry-wide combined average to 34.1 miles per gallon, save 62 billion gallons of fuel over the lifetime of the MY 2011-2016 cars and light trucks, and reduce CO<sub>2</sub> emissions by 656 million tonnes during that period.
- In 2009, NHTSA continued to provide consumers with comparative vehicle safety information through the New Car Assessment Program and announced its intention to launch a programme in MY 2011 to

help consumers select the child seats that best fit their vehicles. Other key vehicle-related safety accomplishments over the past year include a new rule clarifying designated seating positions in light passenger vehicles, and the alteration or expansion of several federal motor vehicle safety standards to better protect the public. The upgraded standards include those regulating protection of occupants and protection against theft, as well as one updating child restraints to comply with advanced air bag requirements.

#### ❖ **Vehicle safety research**

- Research efforts in 2009 included the development of safety benefit estimates and objective test procedures for newly emerging technologies, including back-over prevention/rear visibility, tire fuel efficiency and advanced technology such as lane departure/keeping systems and pre-crash braking systems. Research related to drink driving included development of several types of non-intrusive, vehicle-based alcohol detection technology, with selection to be based on technical risk and potential effectiveness. Research in biomechanics focused on injury mechanics related to children; the development and release of a rotational brain injury estimator; and dummy development, including the ISO World Side Impact Dummy (WorldSID) and advanced frontal dummy enhancements. The Crash Injury Research Engineering Network (CIREN) programme completed work on combining CIREN and National Automotive Sampling System data, making the BioTAB tool operational, and exploring injuries associated with narrow impacts. Research related to crashworthiness focused on frontal and side impact protection and launched a programme investigating roll-over crashes. Research was also conducted to explore the safety of hydrogen as a motor vehicle fuel.

#### ❖ **Vehicle safety enforcement**

- The United States continued to conduct tests to assure manufacturer compliance with federal motor vehicle safety standards as well as defect investigations to make sure that unsafe vehicles were removed from the nation's highways. It completed critical vehicle crashworthiness and crash avoidance compliance testing in 2009, including testing for compliance with, and/or developing test procedures for, several new or substantially revised standards. Among these were those for light vehicle tires, tire pressure monitoring systems, electronic stability control (ESC), roof crush and side impact. The test subjects included a commercial bus. Safety defect recalls also continued.

#### ❖ **International policy and harmonization**

- Under the 1998 Agreement of the World Forum for Harmonization of Vehicle Regulations (WP.29), the United States is among countries having completed several critical global technical regulations. The harmonized regulations address vehicle glazing, pedestrian safety, vehicle head restraints and ESC for light vehicles. The ones on pedestrian safety and ESC are of particular note, as these are new areas of regulation for the United States.

#### ❖ **Infrastructure**

- The FHWA Safety Program has identified four focus areas that constitute major safety problems based on their levels of involvement in fatalities and serious injuries: roadway departure crashes, involved in 53% of traffic fatalities; intersection-related crashes, accounting for 21% of traffic fatalities; pedestrian crashes, which account for 12% of fatalities; and speed-related crashes, a contributing factor in 31% of fatalities. The FHWA has identified nine countermeasures or strategies that have been determined to be

effective in reducing incidences of these crashes. It promotes them to state and local agencies for implementation on roadways under their jurisdiction.

- The strategies include installing rumble strips and stripes, median barriers, safety edge paving, roundabouts, left and right turn lanes and yellow change intervals for signalized intersections; and medians, refuge areas and walkways for pedestrians. The FHWA also promotes roadway safety audits as part of these strategies. The countermeasures are summarised at <http://safety.fhwa.dot.gov/newsletter/safetycompass/2009/fall09/fall09.pdf>

To implement the strategies, each state has developed a Strategic Highway Safety Plan. No specific national goals have been established thus far for reductions in the focus areas. However, several potential targets are under consideration.

Other FHWA programmes include:

- **Highway Safety Improvement Program.** This program has apportioned funds to the states since FY 2006 with the intention of achieving significant reductions in traffic fatalities and serious injuries on all public roads. It emphasizes a data-driven, strategic approach that focuses on results.
- **Model Minimum Inventory of Roadway Elements.** The FHWA is developing MMIRE as a standardized listing of roadway data elements that can be used to describe the roadway and traffic characteristics of public roads. The roadway elements are considered essential information for safety and asset managers and in other traffic engineering disciplines. Data collection for MMIRE allows state and local jurisdictions to use analytic tools such as the forthcoming Highway Safety Manual and the FHWA's Interactive Highway Safety Design Mode and SafetyAnalyst (see below). The FHWA plans to begin piloting efforts to ascertain the ease or difficulty of collecting MMIRE data from a group of lead agencies. The findings from the pilot will provide direction on the type of resources and assistance the FHWA needs to provide to state and local agencies.
- **SafetyAnalyst.** The SafetyAnalyst project provides a set of software tools for use by state and local highway agencies for highway safety management. The tools can be used to improve the programming of site-specific highway safety measures following the process and procedures that will be in the soon-to-be-released Highway Safety Manual. Because SafetyAnalyst has a strong basis in cost-effective analysis, it can play an important role in assisting state and local jurisdictions in prioritizing improvements to achieve the maximum safety benefit for the resources allocated.

#### ❖ Commercial motor vehicles

- **Intervention and compliance activities:** The FMCSA and its state partners (through various grants) carried out various intervention and compliance activities whose expected results, in terms of reductions in crashes, injuries and fatalities involving commercial vehicles, could make 2009 the lowest year in history for such incidents.

In additionally, the FMCSA is in the final phases of its Comprehensive Safety Analysis 2010, a new business model using a safety measurement system that calculates safety performance in seven Behavior Analysis & Safety Improvement Categories (BASICs): unsafe driving, fatigued driving, driver fitness, controlled substances/alcohol, vehicle maintenance, improper loading/cargo, and crash indicator. The agency is on schedule for full implementation by December 2010.

- **Outreach and education:** Two major FMCSA initiatives encourage a high safety culture. The Safety Is Good Business Tool Kit, posted to the FMCSA public website, includes brochures, advertisements, posters, fingertip cards and newsletters explaining how operating safely is good business. And the “Safety Belts-A Way of Life!” campaign is designed to encourage CMV drivers to wear their seat belts. Historically, CMV drivers have lagged behind the general driving public, with a seat belt usage rate of around 80%. In 2008, however, 72% of CMV drivers were observed wearing seat belts, a significant improvement.
- **Hazardous materials:** The FMCSA and its state partners carried out various enforcement interventions regarding hazardous materials, such as hazmat shipper and tank facility reviews, package and vehicle inspections, educational activities, stronger regulatory standards and strong compliance initiatives, which contributed in 2008 to a reduction in the number of serious hazmat incidents by 9% over 2007.

#### ❖ Education and training

- **Safe Routes to School Program.** The objective is to enable and encourage children, including those with disabilities, to walk and bicycle to school; to make walking and bicycling to school safe and more appealing; and to facilitate projects that will improve safety and reduce traffic, fuel consumption and air pollution near schools.
- **Young drivers.** Teen driving fatalities have been declining, but teens are still over-represented in crashes. The NHTSA has a three-pronged strategy to address this age group: 1) strengthen and expand the use of state graduated licence laws (GDLs); 2) increase enforcement of laws that limit teenage access to alcohol; 3) improve enforcement of seat belt laws aimed at teen drivers. Education programmes, aimed at parents and teens, complement the enforcement efforts. Of the three prongs, GDLs have proved the most effective so far at reducing teen crashes and fatalities. Among restrictions for states to consider for their GDLs, the NHTSA now recommends prohibiting use of portable electronic communication and entertainment devices during the first two licence stages.

#### ❖ Data

- **Data Driven Approaches to Crime and Traffic Safety.** DDACTS is a new national initiative that relies on integration of location-based crime and traffic data as a basis for effective and efficient methods of deploying law enforcement and other resources. Using geo-mapping to identify areas that have high incidences of crime and crashes, DDACTS emphasises the use of traffic enforcement strategies that both fight crime and reduce crashes and traffic violations. DDACTS draws on the deterrent value of highly visible traffic enforcement and the knowledge that crimes often involve the use of motor vehicles. Its goal is to reduce the incidence of crime, crashes and traffic violations across the country.

## 7. Major recent or ongoing research

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- The NHTSA recently completed a nationally representative roadside survey of drivers to assess the **incidence of alcohol- and other drug-positive drivers in the night-time driving population**. The survey provides data on alcohol use from breath samples and of alcohol and other drug use from saliva samples. Blood samples were also taken from a subset of drivers. The data are essential to more precise estimates of the percentage of night-time drivers who have consumed alcohol and/or other drugs, and for measuring progress in reducing the prevalence of alcohol- and drug-impaired driving.

- In addition to the roadside survey, the NHTSA is preparing to study the crash **risk associated with drugged driving**; data on alcohol crash risk will also be obtained. A “case-control” methodology will be employed: the researchers will obtain breath, saliva and blood samples from drivers involved in crashes, then return to the site a week later at the same time of day/night and randomly select drivers from whom to obtain control samples. Site selection has begun, and data collection will last 12 months.
- The NHTSA Office of Behavioral Safety Research is completing a project to capture **on-road travel speed data** from motor vehicles as a basis for national estimates of speeds on various roadway classes and, if possible, to provide data on the relationship of travel speeds to crashes on various types of road. Speed data have been acquired for 24-hour periods at some 700 sites across the country. A final report is expected in early 2010.
- The NHTSA recently completed a successful programme to get **older model vehicles off the road** and replace them with safer, cleaner, more fuel-efficient new cars. The Car Allowance Rebate System, better known as “Cash for Clunkers”, resulted in 700 000 old cars being traded in for new ones in less than 10 weeks over the summer of 2009. The USD 3 billion programme raised the average fuel economy of the fleet while getting the most polluting vehicles off the road. Another aim was to boost economic growth and the production of new vehicles.

## 8. References and useful websites

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<b>NHTSA</b>	<a href="http://www.nhtsa.gov">http://www.nhtsa.gov</a>
<b>Traffic Safety – Overview of 2008</b>	<a href="http://www-nrd.nhtsa.dot.gov/Pubs/811162.PDF">http://www-nrd.nhtsa.dot.gov/Pubs/811162.PDF</a>
<b>NHTSA database on behavioural safety research reports going back to 1969</b>	<a href="http://www.nhtsa.gov/portal/site/nhtsa/menuitem.935ae205e29ac00baff82410dba046a0/">www.nhtsa.gov/portal/site/nhtsa/menuitem.935ae205e29ac00baff82410dba046a0/</a>
<b>Vehicle Safety Research Portal</b>	<a href="http://www.nhtsa.gov/portal/site/nhtsa/menuitem.272a2ad16c06afd24ec86e10dba046a0/">www.nhtsa.gov/portal/site/nhtsa/menuitem.272a2ad16c06afd24ec86e10dba046a0/</a>

# LIST OF IRTAD MEMBERS

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<b>Australia</b>	Department of Infrastructure, Transport, Regional Development & Local Government	Mr John GOLDSWORTHY
	University of Queensland	Mr Luke CONNELLY
<b>Austria</b>	Kuratorium für Verkehrssicherheit (KfV)	Mr Christian STEFAN
<b>Belgium</b>	Institut Belge pour la Sécurité Routière (IBSR)	Mr Yvan CASTEELS Ms Nina NUYTENS
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<b>Finland</b>	Finnish Road Administration	Ms Auli FORSBERG
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<b>Ireland</b>	Irish Road Safety Authority	Mr Yaw BIMPEH
<b>Israel</b>	National Road Safety Authority OR YAROK	Ms Sarit LEVI Ms Tsippy LOTAN
<b>Japan</b>	National Research Institute of Police Science (NRIPS)	Mr Goro FUJITA Mr Kenji HAGITA Ms Kazuko OKAMURA
	Institute for Traffic Accident Research and Data Analysis (ITARDA) <sup>o</sup>	Ms Satoko ITO Mr Tatsuro MITSUI Mr Yasushi NISHIDA
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	Road Traffic Authority	Ms Hyoung Eun CHO

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	SWOV Institute for Road Safety Research	Mr Niels BOS Mr Fred WEGMAN
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<b>Norway</b>	Public Roads Administration	Ms Marianne ROSTOFT
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	VTI	Ms Anna VADEBY
<b>Switzerland</b>	Swiss Council for Accident Prevention	Mr Steffen NIEMANN
<b>United Kingdom</b>	Department for Transport	Mr Anil BHAGAT Ms Pat KILBEY Ms Barbara NOBLE
<b>United States</b>	National Highway Traffic Safety Administration (NHTSA)	Ms Marilena AMONI
	University of Michigan	Mr Charles COMPTON
	Harvard University	Ms Alison SCOTT
<b>European Commission</b>		Ms Maria Teresa SANZ VILLEGAS
<b>The World Bank</b>	Global Road Safety Facility	Mr Bjorn STAFBOM

#### Industry – Non governmental organisations

<b>ACEA - European Automobile Manufacturers Association</b>	Ms. Quynh-Nhu HUYNH
<b>ACEM – European Motorcycle Manufacturers Association</b>	Ms Veneta VASSILEVA
<b>Daimler AG</b>	Mr Jorg BAKKER
<b>DEKRA Automobile</b>	Mr Walter NIEWOHNER
<b>FIA Foundation for the automobile and society</b>	Mr David WARD Ms Rita CUYPERS
<b>Ford</b>	Mr Paul FAY
<b>Nissan Motor Manufacturing</b>	Ms Leoni BARTH
<b>Renault</b>	Mr Yves PAGE
<b>Robert Bosch GmbH</b>	Mr Walter GROTE
<b>Volkswagen AG</b>	Mr Robert ZOBEL

#### JTRC / IRTAD Secretariat

Mr Stephen PERKINS  
Ms Véronique FEYPELL-DE LA BEAUMELLE  
Ms Susanne REICHWEIN

The following countries also provide information and data to IRTAD:

<b>Italy</b>	ISTAT	Ms Raffaella AMATO
<b>Luxembourg</b>	STATEC	Nico WEYDERT, Fernand WALCH
<b>Portugal</b>	ANSV – Road Safety Agency	Mr Paulo MARQUES