Road Safety Annual Report 2015

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International Traffic Safety Data and Analysis Group

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IRTAD
An International Expert Network and Database on Road Safety Data

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, automobile associations, the automobile industry, and others from OECD and non-OECD countries.

Its main objectives are to contribute to international co-operation on safety data and its analysis. Its key outputs are the *IRTAD Database* that currently publishes safety data from 32 countries and its annual report on road safety performance. It also conducts regular research and analysis on topics related to safety data analysis (e.g. forecasting, relationship between speed and crash risks, road safety and economic developments).

Currently, more than 70 organisations from 38 countries are members or observers of IRTAD – representing a wide range of public and private bodies with a direct interest in road safety (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 with improvement of road safety data collection systems, where needed.

The most visible product of the IRTAD Group is the *International Road Traffic and Accident Database*. The database includes aggregated data on injury accidents, road fatalities, injured and hospitalised road users, as well as relevant exposure data, in relation to factors such as population, motor vehicle fleet, road network length, vehicle-kilometres and seatbelt wearing rates from 32 countries, covering every year since 1970. Key road safety indicators are compiled on a monthly basis. Data on serious injuries based on MAIS3+ definitions are being progressively included.

Foreword

It is with great pleasure that I present the 2015 edition of the IRTAD Annual Report on Road Safety, which contains the most recent road safety data and up-to-date information on road safety measures and strategies for 38 countries.

The IRTAD Group has expanded quite remarkably in the past two years. The IRTAD family now includes members and observers from 38 countries, with several other countries expressing interest in joining the Group. This is excellent news, as it shows the importance of sound road safety data to understand a country's road safety performance and remaining challenges, design adequate road safety policies, and monitor progress over time. It also illustrates the value of the IRTAD Group for exchanging information on data collection and analysis methodologies and the importance of international co-operation in this area.

In addition, this report raises a number of challenges for the IRTAD group to ensure that we publish data of the highest quality; it therefore makes a distinction between "validated" data for 32 countries, and data and information "under review". The summary tables and figures in Chapter 1 include mainly "validated data", and we are working closely with all countries to help raise their data systems to the highest quality.

The IRTAD Group is aware that its current members account for only 6% of global road fatalities, and it is our intention to pursue our geographical expansion and to assist countries interested in building up and improving their road safety data system. In 2008, IRTAD initiated a series of twinning programmes to assist countries in this endeavour. One of its greatest achievements, following the first twinning between Argentina and Spain, has been to contribute to the creation of the Ibero-American Road Safety Observatory and to support the observatory with a regional road safety database. I believe that such a model would be of great value in other regions, and IRTAD would be willing to assist in similar initiatives in the future.

Last year (2014) was another busy and intense year for the IRTAD Group, and I would like to take this occasion to extend my deep gratitude to the IRTAD members and Secretariat for their contributions. Several research reports will be released in 2015 on such timely topics as the impact of economic downturns on road safety, road infrastructure safety management, the relationship between speed and crash risks, methodologies to collect alcohol-related crashes, etc. IRTAD's forthcoming programme of work will include reflections and contributions on other important topics, such as crash costs, road safety benchmarking and safety indicators for cities.

I trust that our results will continue to provide useful input to road safety research and policies in IRTAD member countries and beyond.

Prof. Fred Wegman,

Chairman of IRTAD

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Readers' guide

The 2015 Annual Report on Road Safety has been prepared by the International Traffic Safety Data and Analysis Group (IRTAD) and is based on data included in the *IRTAD Database*.

The IRTAD Group and the *IRTAD Database*

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, automobile associations, the automobile industry, etc.

Currently, more than 70 organisations from 38 OECD and non-OECD countries are members of IRTAD (see list of members at the end of the report).

Its main objectives are to contribute to international co-operation on safety data and its analysis. Its key outputs are the *IRTAD Database* and its annual report on road safety performance. It also conducts regular research and analysis on topics related to safety data analysis (e.g. forecasting, relationship between speed and crash risks, road safety and economic developments).

The *IRTAD Database* includes aggregated data on injury accidents, road fatalities, injured and hospitalised road users, as well as relevant exposure data, in relation to factors such as population, motor vehicle fleet, road network length, vehicle-kilometres and seatbelt wearing rates covering every year since 1970.

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 with improvement of road safety data collection systems, where needed. The IRTAD Group co-operate with a number of partners such as the World Bank's Global Road Safety Facility, the Interamerican Development Bank, the FIA and the FIA Foundation for the Automobile and Society, to involve low and middle-income countries in the work of the Group.

The *IRTAD Database* currently includes "validated" data from 32 countries. Six additional countries also provide data and the validation process by the IRTAD Group is on-going.

Summary tables and figures of Chapter 1 only include "validated" data.

Data on serious injuries

Data on serious injuries are being progressively included in the *IRTAD Database* and are presented in this report when available. The section on "Data collection process" in chapters 2 to 39 pays particular attention on how countries collect and compile information on serious injuries and about the linking process between police and heath data.

Injury severity should be defined based on medical diagnosis (and not solely on police reports). The IRTAD Group recommends to assess injury severity on the basis of the Abbreviated Injury Scale (AIS) and a serious injury should be defined as one with a Maximum AIS score of 3 or more (MAIS 3+).

The International Classification of Diseases and related Health Problems (ICD)

The ICD is published by the World Health Organization. It provides codes to classify diseases as well as signs, symptoms and external causes of injury or disease. Every health condition can be assigned to a unique category and given a code, of up to six characters. In addition to enabling the storage and retrieval of diagnostic information for clinical, epidemiological and quality purposes, these records also provide the basis for the compilation of national mortality and morbidity statistics by WHO member states. The ICD is revised periodically and is currently in its tenth edition (ICD 10). The 9th edition is still widely used (ICD9).

Causes of accidents are classified. Traffic injuries have a specific code in the section "external cause", as well as codes to describe the injury.

Abbreviated Injury Scale (AIS)

The AIS – published by the Association for the Advancement of Automotive Medicine – is an internationally agreed tool to describe the severity of injury for each of nine regions of the body: 1 Minor, 2 Moderate, 3 Serious, 4 Severe, 5 Critical, 6 Unsurvivable.

It is possible to convert ICD9 or 10 codes into AIS.

Maximum Abbreviated Injury Scale (MAIS)

MAIS is the maximum of the AIS scores for each region of the body. It is used to assess the overall severity of various injuries.

Measuring risk and comparing countries

To measure road safety performance and compare safety level across countries, three indicators are commonly used:

- the number of fatalities per head of population (mortality rate)
- the number of fatalities per distance travelled by motorised vehicles (vehicle-kilometres) (fatality risk)
- the number of fatalities per registered motorised vehicles.

Each indicator has pros and cons and in all cases, country comparisons should be interpreted with greatest care, especially between countries with different level of motorisation.

Fatalities per 100 000 inhabitants

The number of inhabitants is the denominator most often used, as the figure is readily available in most countries. This rate expresses the mortality rate, or an overall risk of being killed in traffic, for the average citizen. It can be compared with other causes of death, like heart disease, HIV/Aids, etc. It is useful to compare risk in countries with comparable levels of motorisation. It is, however, not very meaningful to compare safety levels between high-motorised countries and countries where the level of motorisation is low.

Fatalities per billion vehicle–kilometres

This indicator describes the safety quality of road traffic and theoretically the best indicator to assess the level of risk of the road network. This indicator does not take into account non-motorised vehicles (such as bicycles), which can in some countries represent a large part of the vehicle fleet and of the fatality figures. Only a limited number of countries collect data on distance travelled.

Fatalities per 10 000 registered (motorised) vehicles

This rate can be seen as an alternative to the previous indicator, although it differs in that the annual distance travelled is unknown. This indicator can therefore 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 vehicles. In some countries, scrapped vehicles are not systematically removed from the registration database, thereby undermining accuracy. This indicator does not take into account non-motorised vehicles (such as bicycles), which can in some countries represent a large part of the vehicle fleet and of the fatality figures.

Content of the report

This report contains 39 chapters.

Chapter 1 presents an overview of main road safety trends in IRTAD countries in 2013 and 2014. It also lists the current national road safety strategies and legislation in place regarding drinking and driving, speed limits and the use of seat belt and helmet.

Chapters 2to 39 present detailed country reports for the 38 IRTAD member and observer countries, focusing on data collection process, most recent safety data, road safety performance by user group, age group and road type and recent trends in road safety behaviour. It also describes national road safety strategies and targets and progress towards these targets.

Executive summary

The number of road fatalities declined by 42% overall between 2000 and 2013 in the 32 countries in the *International Road Traffic and Accident Database* (IRTAD) for which data are consistently available. Greatest reductions were achieved in Spain with more than 70% and Portugal with almost 70%. Many other countries had reductions of more than 50%, notably Denmark, France, Slovenia and Lithuania. Most non-European IRTAD members achieved a lower than average reduction in the number of road fatalities.

The IRTAD countries with lowest road mortality rates are located in Europe: Sweden and the United Kingdom recorded fewer than 3 fatalities per 100 000 inhabitants in 2013. In some member countries, however, this rate is still in excess of 10.

Elements to explain this overall good performance include: the implementation of systematic road safety strategies and programmes that are tackling the main risk factors for traffic crashes (speed, alcohol, non-compliance with traffic rules), advancing technical standards for road infrastructure and vehicles, improved emergency and heath care, and economic conditions.

Interestingly, the economic downturn in 2008-10 influenced the number of road deaths during that period, possibly contributing to about two-thirds of the decrease in fatalities through a number of factors: reductions in distance travelled (especially by young men and by heavy goods vehicles), speeding and in drink-driving.

Despite the good progress in recent years however, the number of traffic causalities is still high, even in the best performing countries. Also, road crash fatalities in IRTAD countries only represent a small share (6%) of the 1.3 million global road deaths. A full 90% of casualties occur in low- and middle-income countries.

Reducing the number of serious injuries

The numbers of serious injuries from road crashes are decreasing at a slower pace than those of fatalities in many countries. This is important, because many survivors of severe crashes will never recover completely, often entailing grave consequences for people's quality of life but also negatively affecting the economy.

Police records alone are usually inadequate to carry out analysis on the nature and consequences of serious injuries. Moreover, international comparisons are currently unfeasible, as counts and definitions of a "serious injury" vary widely among member states.

IRTAD encourages its members to set up adequate mechanisms for combined analysis of police and hospital data and proposes a common definition of serious injuries on the basis of the Abbreviated Injury Scale (AIS), and recommends that a serious injury should be defined as one with a Maximum AIS score of 3 or more (MAIS 3+).

Protecting vulnerable road users

Although substantial fatality reductions have been achieved since 2000, there has been less success in saving lives among vulnerable road users – pedestrians, cyclists and motorcyclists – than among car occupants. Fatalities among car occupants were reduced by 54% between 2000 and 2013, whereas decreases were only 36% for pedestrians, 35% for cyclists and 22% for motorcyclists. Motorcycle deaths increased between 2000 and 2007.

As a consequence, road safety priorities in many countries have recently shifted from motorised rural traffic to vulnerable road users in urban areas.

Safeguarding children

Globally, road traffic injuries rank among the four main causes of death for children above five and is the number one killer for children aged 15-17, according to WHO data. Traffic mortality of children is substantially higher in low-income countries. Since 2000, the share of road deaths for children, both inside passenger cars and as pedestrians, has been decreasing in high-income countries and increasing in all other income regions.

Even though the overall IRTAD child mortality rate is at a relatively low level of less than 1 fatality per 100 000 children, the variation among member states and by road transport mode is considerable, indicating room for improvements in many countries.

Legislation on key safety issues

Drink driving: All IRTAD and observer countries have established maximum authorised blood alcohol content (BAC) for drivers as one of the primary measures to prevent crashes, injuries and fatalities caused by drink driving. General BAC levels in these countries vary from 0.0 g/l in Czech Republic and Hungary to 0.8 g/l in Canada, Jamaica, Malaysia, the United Kingdom and the United States. The most common maximum authorised BAC level is 0.5 g/l. Most of the countries also apply lower BAC level for novice, young and professional drivers.

Speed limits: In urban areas, in most countries, the default speed limit for passenger cars is 50 km/h; lower speed limits (typically 30 km/h) are often enforced in residential areas or around schools. Higher default speed limits (60 km/h) are found in Poland (during night time), Chile and Korea. Speed limits on roads outside built up areas typically vary between 80 and 100 km/h. The lowest speed limits among IRTAD members and observers are in Jamaica (50 km/h) and Japan (50-60 km/h). The highest speed limits – up to 120 km/h – are in Chile and Poland. Several countries differentiate speed limits according to the type of road, weather or pavement. On motorways speed limits vary between 90 to 140 km/h. In Germany, there is only a recommended limit of 130 km/h.

Seat belt use: The use of seat belts is regarded as one of the most effective measures to save lives and reduce crash injury severity for car occupants. All IRTAD countries have mandatory front seat belt regulations. The use of seat belts on rear seats is still not mandatory on the whole road network in some countries. Wearing rates vary widely in member countries, and they are usually higher in front seats. For front seats, values typically range between 80% and nearly 100%, but can also be as low as 52% (Argentina). For rear seats the range is between 15% (Chile) and 98% (Germany).

Motorcycle and helmet use: In all IRTAD member and observer countries but the United States, the use of helmets on powered two-wheelers is compulsory and the wearing rate is usually high; many countries report a near to 100% compliance. In the United States, there is no federal law on helmet use, and three states do not have any helmet law. In most countries helmet use for cyclists is not compulsory; however the compulsory use of helmet by children is becoming more frequent.

Developing national road safety strategies

The Goal of the UN Decade of Action for Road Safety 2011-2020, endorsed by more than a hundred governments, is to "stabilise and reduce" the projected level of global road fatalities by 2020, from a 2010 baseline. Meeting this goal could save up to 5 million lives, and prevent up to 50 million serious injuries.

Governments are recommended to develop national action plans for the decade 2011-20. To support these, a Global Plan for the Decade of Action was developed around the five pillars of the "Safe System" approach. In this context, several countries released national road safety strategies in 2011 or updated existing strategies. These include quantitative targets, interim targets, sub-targets and performance indicators. Some countries set targets for reducing serious injuries alongside the goals of reducing fatalities.

Progress since 2010 will be reviewed at the Second Global High Level Conference on Road Safety, hosted by the Brazilian government in Brasilia on 18-19 November 2015. It will also be an opportunity to build partnerships and arrange financing that can deliver the new road safety targets expected for approval at the UN Summit on Sustainable Development Goals on 25-27 September 2015.

Chapter 1

Road safety performance in 2013 and 2014

This chapter presents an overview of road safety data in 2013 for 32 countries, as well as provisional data for 2014. It provides a synthesis of current national road safety strategies and legislation regarding speed limits, drinking and driving, and the use of seat belts and helmets.

Overall, between 2000 and 2013, the number of road fatalities declined by 42% in the 32 member countries of the *International Road Traffic and Accident Database* (IRTAD) for which data are consistently available and verifiable. Best performing countries achieved reductions of 70%. Most non-European IRTAD members achieved a lower than average reduction in the number of road fatalities.

Most recent fatality data in 2013 and 2014

In 2013, the 32 countries noted a 4.3% decrease in road fatalities from 2012 and a 7.9% decrease from 2010 (Table 1.1). At the same time, based on data from 20 countries, mobility in terms of vehicle kilometres slightly increased by 0.8% from 2012 and 1.2% from 2010. Provisional fatality data for 2014 show a dispersed picture: Eight countries saw an increase in fatalities, 15 countries managed to reduce their road death toll. For the remaining countries there was no significant change (Table 1.2).

However, the 32 countries covered in the IRTAD figures represent just 6% of the estimated 1.3 million annual road fatalities globally.

Between 2000 and 2013, the number of road fatalities in IRTAD countries decreased by 42% – which is an impressive achievement for a relatively short period (Figure 1.5). Greatest reductions were achieved in Spain with more than 70% and Portugal at almost 70%. Many other countries had reductions of more than 50%.

Elements to explain this overall good performance include the implementation of systematic road safety strategies and programmes that are tackling the main risk factors for traffic crashes (speed, alcohol, non-compliance with traffic rules), advancing technical standards for road infrastructure and vehicles, improved emergency and heath care, and economic conditions.

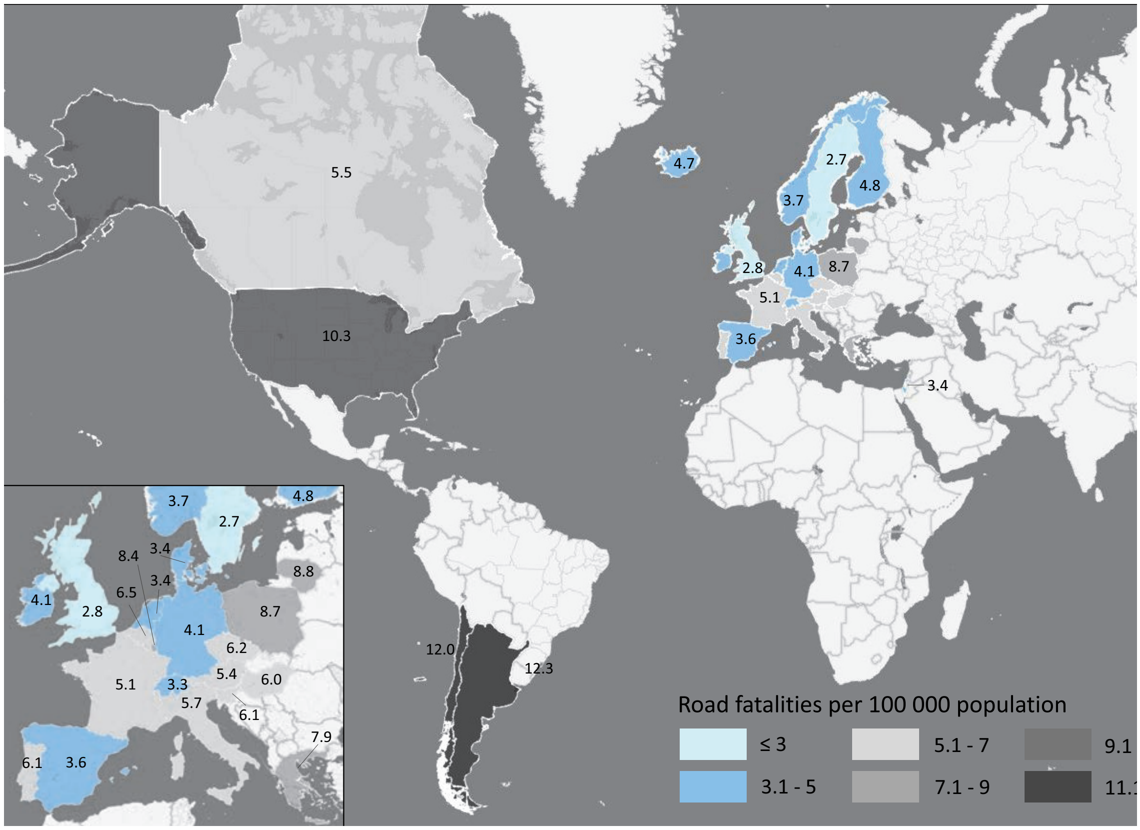
The reduction has been more marked since 2008, when the economic downturn started impacting many IRTAD countries. As explained in a recently published IRTAD report (ITF, 2015), the economic downturn from 2008-10 had repercussions on the unemployment rate and influenced the number of road deaths through several factors: a reduction in distance travelled, especially by young men and by heavy goods vehicles, a reduction in speeding and in drink-driving, and a reduction in driving licence acquisition rate. Overall the economic downturn may well have contributed to about two-thirds of the decrease in fatalities between 2008 and 2010.

Death rates in 2013

Fatalities per capita

Road mortality in terms of fatalities per 100 000 inhabitants differs substantially between the regions. The IRTAD countries with the lowest road mortality rates are located in Europe: In 2013, two countries, Sweden and the United Kingdom, recorded less than 3 fatalities per 100 000 inhabitants, but in other regions some are still at levels in excess of 10 (Figure 1.1.).

Figure 1.1. **Road fatalities per 100 000 inhabitants in 2013 in IRTAD member countries**



Thirteen countries constitute the league of relatively well-performing countries with mortality rates per 100 000 inhabitants of five or less (Figure 1.2).

Since 2000, the rate has been reduced by about 50% in nearly half the countries. The greatest improvements were in Spain (-75%) and Portugal (-70%), while Denmark, France, Ireland, Slovenia, Sweden and Switzerland all had reductions of 60-63% (Table 1.3.).

While the mortality rate per capita is useful for comparing the performance of countries with similar levels of development and motorisation, it should not be used as a universal tool to rank all countries.

Fatalities per vehicle-kilometres

Analysis in terms of fatalities over distance travelled is a very useful indicator for assessing the risk of travelling on the road network. However, only 22 IRTAD countries regularly collect data on vehicle–kilometres driven. Data on risks expressed in terms of deaths per billion vehicle-kilometres are summarised in Figure 1.3. In 2013, Sweden, the United Kingdom, and Denmark recorded less than four deaths per billion vehicle-kilometres.

Fatalities per registered vehicles

In the absence of data on vehicle kilometres, the fatality rate per registered motor vehicles may be used as an approximation of exposure to risk. Figure 1.4. illustrates risk exposure expressed as the number of deaths per 10 000 registered vehicles.

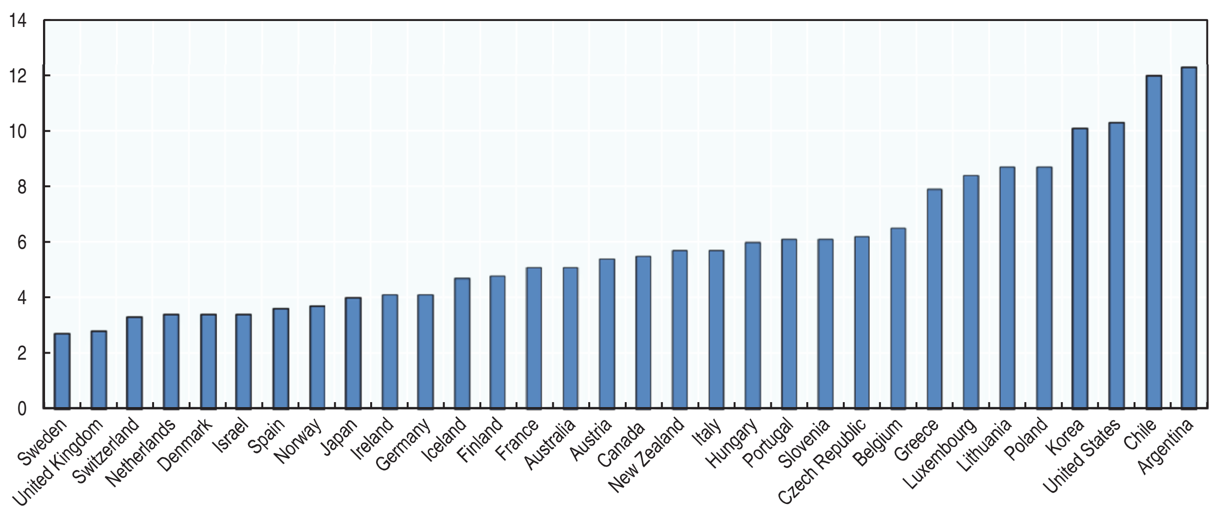
Based on this indicator, the situation has improved substantially for all countries for which data are available. In 2013, the best-performing countries were Sweden, Switzerland, the United Kingdom, Norway and Spain with a fatality rate of 0.5 deaths per 10 000 registered vehicles.

Reducing the number of serious injuries

Several IRTAD countries have shown remarkable reductions in road fatalities over the last decades. However, the numbers of serious injuries are usually decreasing at a slower pace and many survivors of severe crashes will never recover completely. Severe injury not only entails grave consequences for people's quality of life but also negatively affects the economy.

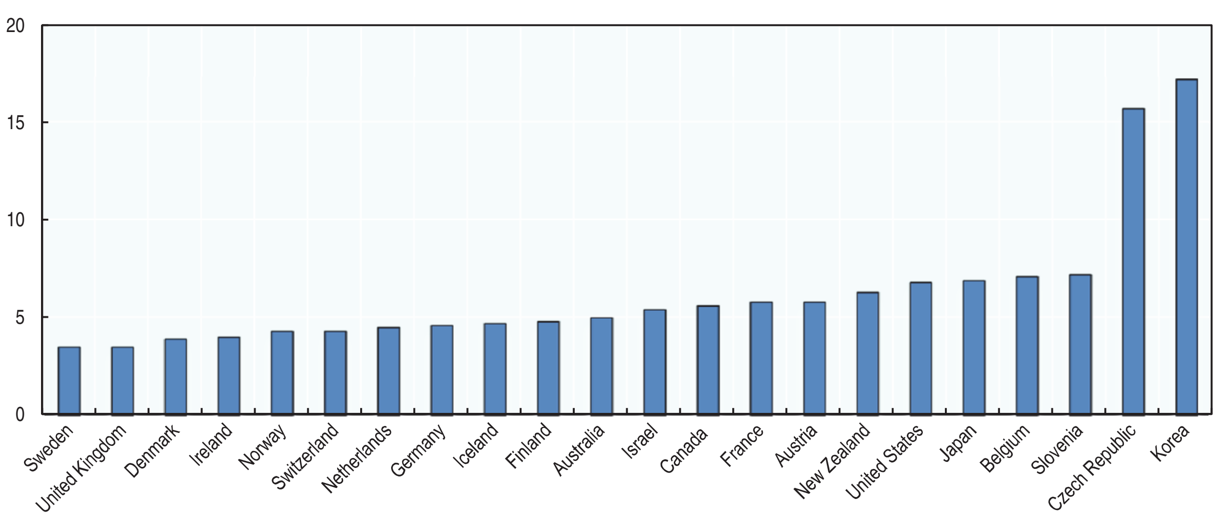
Police records alone are usually inadequate to carry out analysis on the nature and consequences of serious injuries. Moreover, international comparisons are currently

Figure 1.2. **Road fatalities per 100 000 inhabitants in 2013**



Note: Provisional data for Australia, Canada, Ireland, Lithuania and the United States.

Figure 1.3. **Road fatalities per billion vehicle-kilometres in 2013**

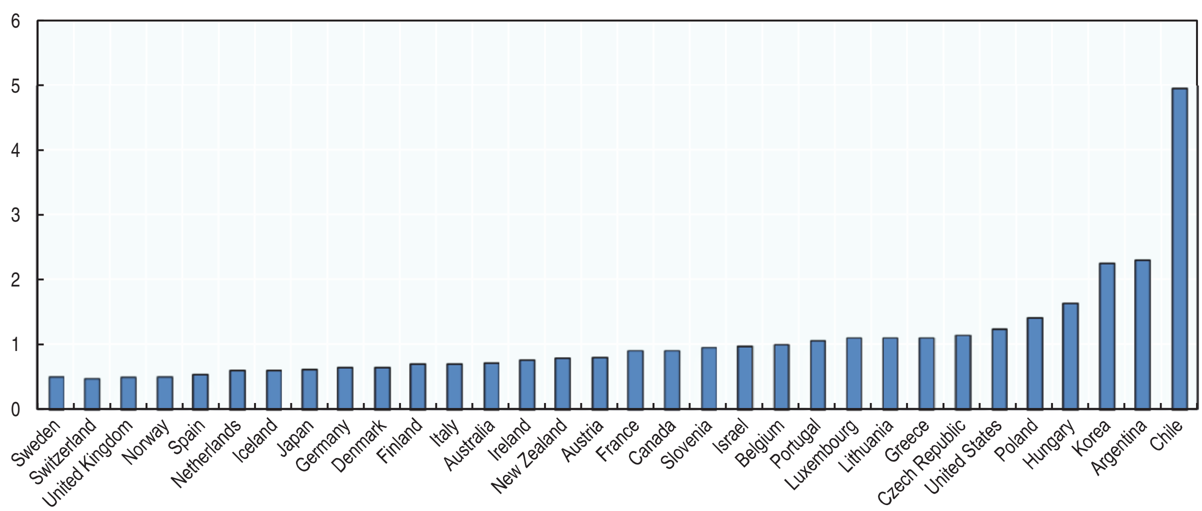


Note: Provisional data for Australia, Canada, Ireland, Lithuania and the United States. 2012 data for the Czech Republic.

unfeasible, as counts and definitions of a "serious injury" vary widely among member states. The IRTAD report, "*Reporting on Serious Road Traffic Casualties*" (ITF, 2011), outlines options for combined analysis of police and hospital data and proposes a common definition of serious injuries on the basis of the Abbreviated Injury Scale (AIS), and recommends that a serious injury should be defined as one with a Maximum AIS score of 3 or more (MAIS 3+).

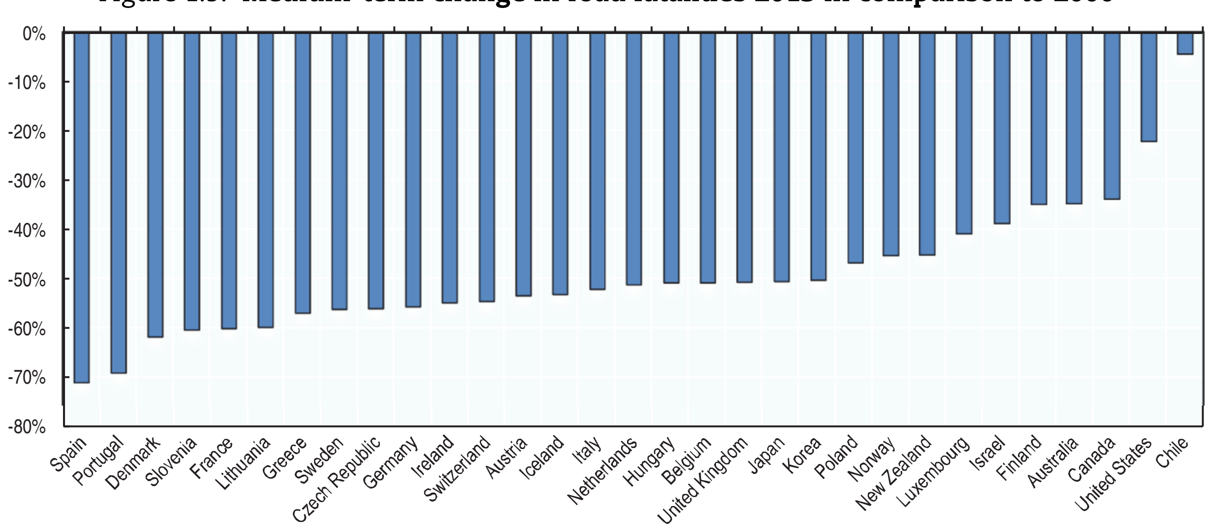
IRTAD encourages its members to set up adequate mechanisms for such combined and comparative analysis and will gradually enlarge the database to include data on serious injuries based on the MAIS3+ definition. Likewise, the European Commission agreed with the EU member states to collect MAIS3+ data by 2015 and will enlarge the *Community Database on Accidents on the Roads in Europe* (CARE) accordingly.

Figure 1.4. **Road fatalities per 10 000 registered vehicles in 2013**



Note: Total vehicles include mopeds for Argentina, Australia, Canada, Chile, Iceland, Ireland, Lithuania and the United States. Canada: 2012 data. Provisional data for Australia, Ireland, Lithuania and the United States.

Figure 1.5. **Medium-term change in road fatalities 2013 in comparison to 2000**



Note: Provisional data for Australia, Canada, Ireland, Lithuania and the United States.

Table 1.1. **Road safety trends**

Road fatalities									
	Recent data				Average annual change[1]				
Country	2013	2012	2010	Change 2013-12 %	2013-10 %	2010-01 %	2000-91 %	1990-81 %	1980-71 %
Argentina	5 209	5 074	5 094	**2.7**	**0.7**	-	-	-	-
Australia	1 187p	1 300p	1 353	-8.7	-4.3	-2.7	-1.7	-3.9	-1.0
Austria	455	531	552	-14.3	-6.2	-5.9	-5.0	-2.5	-3.9
Belgium	724	770	840	-6.0	-4.8	-6.1	-2.7	-1.3	-2.8
Canada	1 923p	2 076	2 238	-7.4	-4.9	-2.3	-2.6	-3.3	-0.2
Chile	2 110	1 980	2 074	**6.6**	**0.6**	**0.2**	-	-	-
Czech Republic	654	742	802	-11.9	-6.6	-5.5	**1.2**	**0.8**	-4.9
Denmark	191	167	255	**14.4**	-9.2	-5.7	-2.2	-0.5	-6.1
Finland	258	255	272	**1.2**	-1.7	-5.0	-5.1	**1.8**	-7.8
France	3 268	3 653	3 992	-10.5	-6.5	-7.6	-2.7	-2.3	-2.9
Germany	3 339	3 600	3 648	-7.3	-2.9	-7.0	-4.4	-	-
Greece	879	988	1 258	-11.0	-11.3	-4.4	-0.4	**2.8**	**3.0**
Hungary	591	605	740	-2.3	-7.2	-5.6	-6.1	**4.7**	-1.3
Iceland	15	9	8	**6 more fatalities**	**23.3**	-11.5	1.9	0.0	**2.0**
Ireland	188p	162	212	**16.0**	-3.9	-7.1	-0.8	-2.0	-0.2
Israel	277	263	352	**5.3**	-7.7	-4.5	**0.4**	-0.2	-4.0
Italy	3 385	3 753	4 114	-9.8	-6.4	-5.9	-1.5	-2.2	-1.9
Japan	5 152	5 237	5 806	-1.6	-3.9	-5.9	-3.6	**2.8**	-6.7
Korea	5 092	5 392	5 505	-5.6	-2.6	-4.2	-4.5	**8.7**	**5.6**
Lithuania	258p	301	299	-14.3	-4.8	-9.1	-6.5	**3.4**	-
Luxembourg	45	34	32	**32.4**	**12.0**	-8.3	-1.0	-3.7	**1.5**
Netherlands	570	650	640	-12.3	-3.8	-5.7	-1.0	-3.0	-5.0
New Zealand	254	308	375	-17.5	-12.2	-2.1	-3.7	**1.0**	-1.4
Norway	187	145	208	**29.0**	-3.5	-3.1	**0.6**	-0.2	-4.2
Poland	3 357	3 571	3 908	-6.0	-4.9	-3.8	-2.5	**2.1**	-
Portugal	637	718	937	-11.3	-12.1	-7.3	-4.5	**0.3**	**3.5**
Slovenia	125	130	138	-3.8	-3.2	-7.5	-4.2	-1.0	-1.6
Spain	1 680	1 903	2 478	-11.7	-12.2	-8.5	-4.6	**3.9**	**1.9**
Sweden	260	285	266	-8.8	-0.8	-7.8	-2.5	-0.2	-3.9
Switzerland	269	339	327	-20.6	-6.3	-5.5	-3.7	-2.2	-3.8
United Kingdom	1 770	1 802	1 905	-1.8	-2.4	-6.8	-3.1	-1.3	-2.8
United States	32 719p	33 782	32 999	-3.1	-0.3	-2.7	**0.1**	-1.1	-0.3

p = provisional data for 2013.
1. Geometric mean: 1-$(\text{Fatalities}_{\text{EndYear}}/\text{Fatalities}_{\text{StartYear}})^{1/n}$ n…Number of years (n = 9 for period 2001 to 2010).
Note: Police-recorded fatalities (except for the Netherlands for 2000 onwards, see country report). Death within 30 days.
Source: IRTAD.

Moderate improvements for vulnerable road users

Although substantial fatality reductions have been achieved since the year 2000, there has been less success in saving lives among vulnerable road users than among car occupants. Reductions in deaths among pedestrians, cyclists and motorcyclists have levelled off, and some increases have been recorded since 2010. Fatalities among car occupants were reduced by 54% between 2000 and 2013, whereas decreases were only 36% for pedestrians, 35% for cyclists and 22% for motorcyclists. Motorcycle deaths increased between 2000 and 2007.

As a consequence, in many countries, road safety priorities have recently shifted from motorised rural traffic to vulnerable road users in urban areas.

Table 1.2. **Preliminary trends for 2014 compared to the same period in 2013**

Country	2014 data – status	2013	% change (provisional)	Trend
Argentina	Estimation		-2.8	-
Australia	1 156 – provisional	1 187	-2.6	-
Austria	430 – final	455	-5.5	--
Belgium	715 – estimation	724	-1.2	-
Canada	Not available			
Chile	2 119- final	2 110	+0.4	=
Czech Republic	688 – final	654	+5.2	++
Denmark	183 – provisional	191	-4.2	-
Finland	226 – provisional	258	-12.4	---
France	3 388 – provisional	3 268	+3.7	+
Germany	3 368 - provisional	3 339	+0.9	=
Greece	793 – provisional	879	-10	--
Hungary	626 – final	591	+5.9	++
Iceland	4	15	11 fewer fatalities	--
Ireland	195 – provisional	188	+3.7	+
Israel	279 – final	277	+0.7	=
Italy	Provisional data from main road network		Approx. -5	
Japan	Provisional	5 152	-6	--
Korea	4 762 - provisional	5 092	-6.5	--
Lithuania	265 – provisional	258	+2.7	+
Luxembourg	35 – final	45	10 fewer fatalities	---
Netherlands	570 – final	570	No change	=
New Zealand	295 provisional	254	+16.1	+++
Norway	148 – provisional	187	-21	---
Poland	3 202 – final	3 357	-4.6	-
Portugal	Not available			
Slovenia	108 – final	125	-13.6	---
Spain	Not available			
Sweden	270 – final	260	+3.8	+
Switzerland	243 – final	269	-9.6	--
United Kingdom	1 807 – provisional sept 2013- sept. 2014	1 769 sept. 2012- sept. 2013	+2.1	+
United States	Estimate based on projections	32 719	-0.1	=

Notes: -1% < change < 1%: =
Decrease 1 to 5%:- Increase 1 to 5%: +
Decrease 5 to 10%: -- Increase 5 to 10% ++
Decrease > 10%:--- Increase > 10%: +++
Police-recorded fatalities (except for the Netherlands).

Powered two-wheelers (PTW) have had the least success in terms of road mortality reduction since 2000. In 2012, PTW riders in IRTAD countries represented about 8% of the motorised fleet but 16% of road fatalities, resulting in 12 000 killed. The proportion of road fatalities from motorcycles and mopeds has increased steadily since 2000 when it was at 12%. There are, however, large differences among countries; the highest shares of PTW rider fatalities were recorded in Greece (38%), Italy (29%) and France (26%) (Figure 1.7).

To respond to the growing concern regarding motorcyclists' safety, the International Transport Forum will publish in 2015 an expert group report on the safety of powered two-wheelers. The report provides a comprehensive review of PTWs' roles and risks, and describes typical crash scenarios and a set of measures to be implemented within a safe system approach (ITF/OECD, *in press*).

Table 1.3. **Road fatalities per 100 000 inhabitants and per billion vehicle-km**

Country	Killed per 100 000 inhabitants						Killed per billion v-km					
	1970	1980	1990	2000	2010	2013	1970	1980	1990	2000	2010	2013
Argentina	-	-	-	-	12.6	12.3	-	-	-	-	-	-
Australia	30.4	22.3	13.7	9.5	6.1	5.1p	49.3	28.2	14.4	9.1	5.9	5.0p
Austria	34.5	26.5	20.4	12.2	6.6	5.4	109.3	56.3	32.0	15.0	7.3	5.8
Belgium	31.8	24.3	19.9	14.4	7.7	6.5	104.6	50.0	28.1	16.3	8.5	7.1
Canada	23.8	22.3	14.3	9.5	6.6	5.5p	-	-	-	9.3	6.6	5.6p
Chile	-	-	15.7	14.3	12.2	12.0	-	-	-	-	-	-
Czech Republic	20.0	12.2	12.5	14.5	7.7	6.2	-	53.9	48.3	36.7	16.2	15.7[b]
Denmark	24.6	13.5	12.3	9.3	4.6	3.4	50.5	25.0	17.3	10.7	5.6	3.9
Finland	22.9	11.5	13.0	7.7	5.1	4.8	-	20.6	16.3	8.5	5.1	4.8
France	32.5	25.4	19.8	13.7	6.4	5.1	90.4	43.9	25.2	15.8	7.1	5.8
Germany	-	-	14.2[c]	9.1	4.5	4.1	-	-	19.7[f]	11.3	5.2	4.6
Greece	12.5	15.1	20.3	18.7	11.2	7.9	-	-	-	-	-	-
Hungary	15.8	15.2	23.4	11.7	7.4	6.0	-	-	-	-	-	-
Iceland	9.8	11.0	9.5	11.5	2.5	4.7	-	26.5	14.9	13.8	2.5	4.7
Ireland	18.3	16.6	13.6	11.0	4.7	4.1p	44.3	28.4	19.2	11.5	4.5	4.0p
Israel	17.1	10.8	8.7	7.1	4.6	3.4	87.9	38.8	22.4	12.4	7.1	5.4
Italy	20.5	16.4	12.6	12.4	7.0	5.7	-	-	-	-	-	-
Japan	21.0	9.7	11.8	8.2	4.5	4.0	96.4	29.3	23.2	13.4	8.0	6.9
Korea	10.9	16.9	33.1	21.8	11.3	10.1	-	-	-	49.5	18.7	17.2
Lithuania	-	-	26.9	17.3	9.2	8.7p	-	-	-	-	-	-
Luxembourg	39.0	27.0	18.7	17.5	6.4	8.4	-	-	-	-	-	-
Netherlands	24.5	14.2	9.2	7.3	3.9	3.4	-	26.7	14.2	10.0	5.0	4.5
New Zealand	23.0	18.8	21.4	12.0	8.6	5.7	-	-	-	13.6	9.4	6.3
Norway	14.5	8.9	7.8	7.6	4.3	3.7	41.7	19.3	12.0	10.5	4.9	4.3
Poland	10.5	16.9	19.3	16.4	10.2	8.7	-	-	-	-	-	-
Portugal	20.5	29.3	29.3	20.0	8.9	6.1	-	-	-	-	-	-
Slovenia	36.1	29.5	25.9	15.8	6.7	6.1	166.7	96.1	65.1	26.7	7.7	7.2
Spain	16.2	17.5	23.3	14.4	5.3	3.6	-	-	-	-	-	-
Sweden	16.3	10.2	9.1	6.7	2.8	2.7	35.3	16.4	12.0	8.6	3.5	3.4
Switzerland	26.6	19.2	13.9	8.3	4.2	3.3	56.5	30.9	18.6	10.6	5.2	4.3
United Kingdom	14.0	11.0	9.4	6.1	3.0	2.8	37.4[a]	21.9[a]	12.8	7.4	3.8	3.5
United States	25.8	22.5	17.9	14.9	10.7	10.3p	29.6	20.8	12.9	9.5	6.9	6.8p

Death within 30 days. Police recorded data (except for the Netherlands for 2000 onwards, see country report).
a = Great Britain.
b = 2012.
c = 1991.
p = provisional.

Child safety

The third United National Global Road Safety Week was celebrated on 4-10 May 2015. It aimed at highlighting the plight of children on the world's roads and encouraging actions to better ensure their safety.

To echo this important event, this report gives particular attention to child safety, and the detailed 38 country reports contain specific sections on the evolution of children safety. The section below summarises the main trends in IRTAD countries, and puts them in perspective with the situation of child safety in the world.

Globally, road traffic injuries rank among the four main causes of death for children above five and is the number one killer for children aged 15-17 (WHO, 2014). The likelihood of a person dying from a road injury is highly dependent on the country they live in and its

Figure 1.6. **Development of fatalities in IRTAD countries by road user type (2000 = 1)**

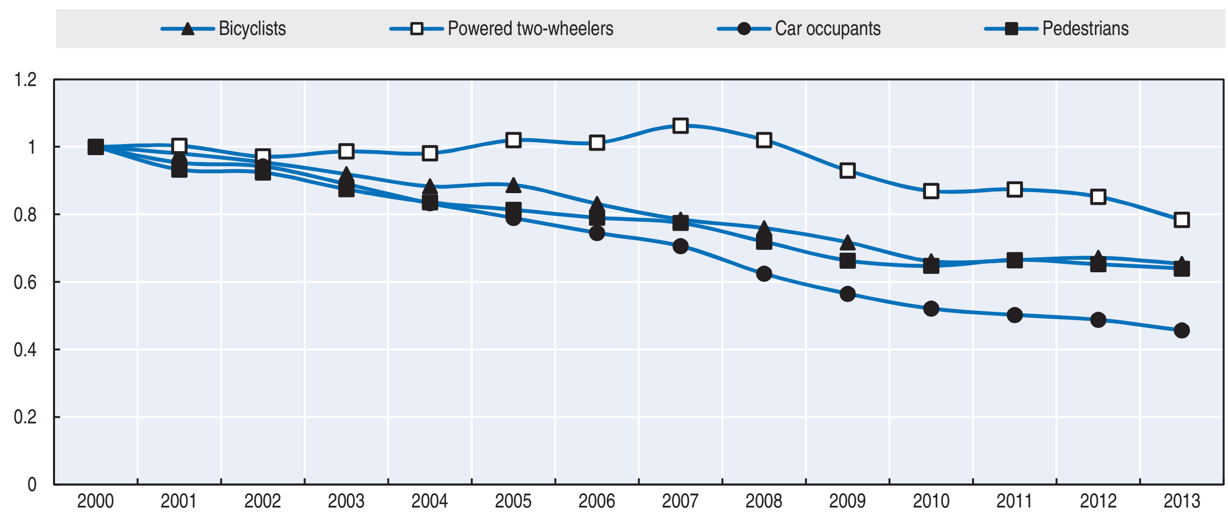
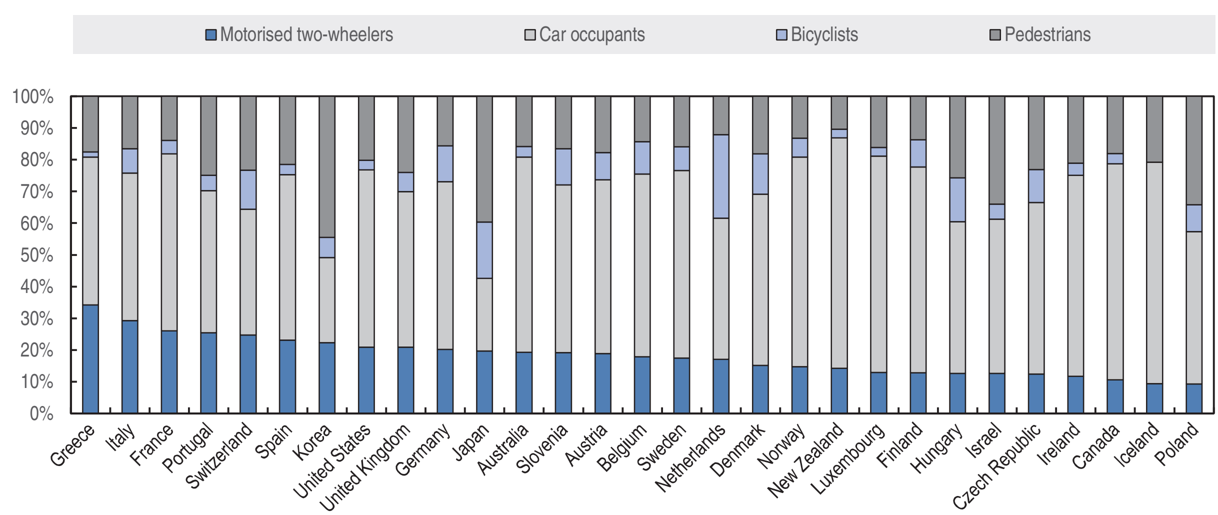


Figure 1.7. **Proportion of different road user categories in fatalities average 2009-13**

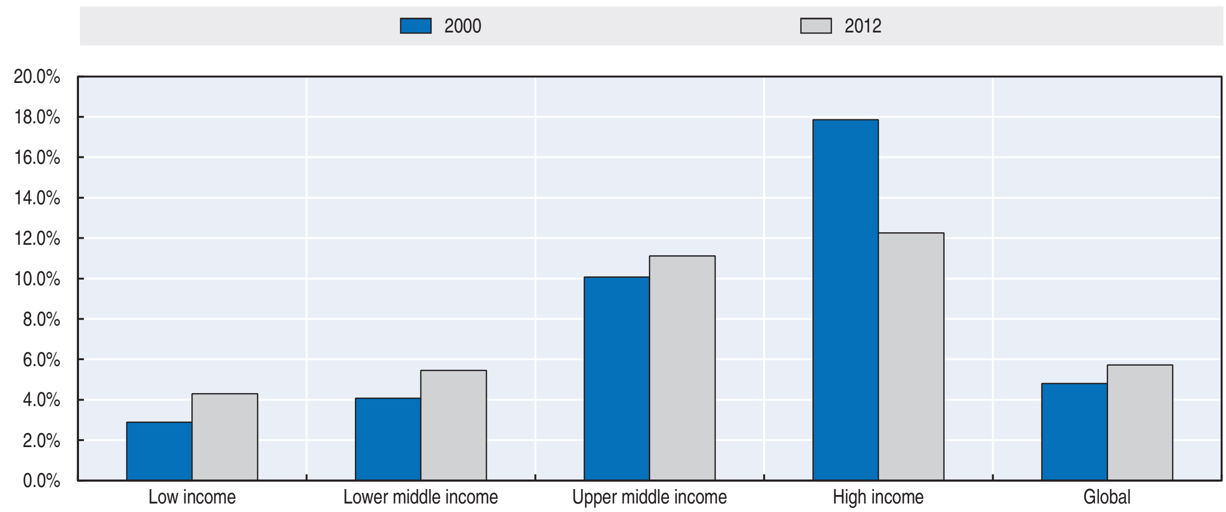


economic status and motorisation rate. This is especially true for children: traffic mortality of children is substantially lower in high income countries than in low income countries (2.0 vs. 11.4 fatalities per 100 000 children aged 5-14 in 2012).

However, according to the World Health Organization, while the share of road deaths in 2012 for all age groups was lowest in high income countries, for children it was highest (see Figure 1.8.). Since 2000, the share of road deaths for children has been decreasing in high income countries and increasing in all other income regions.

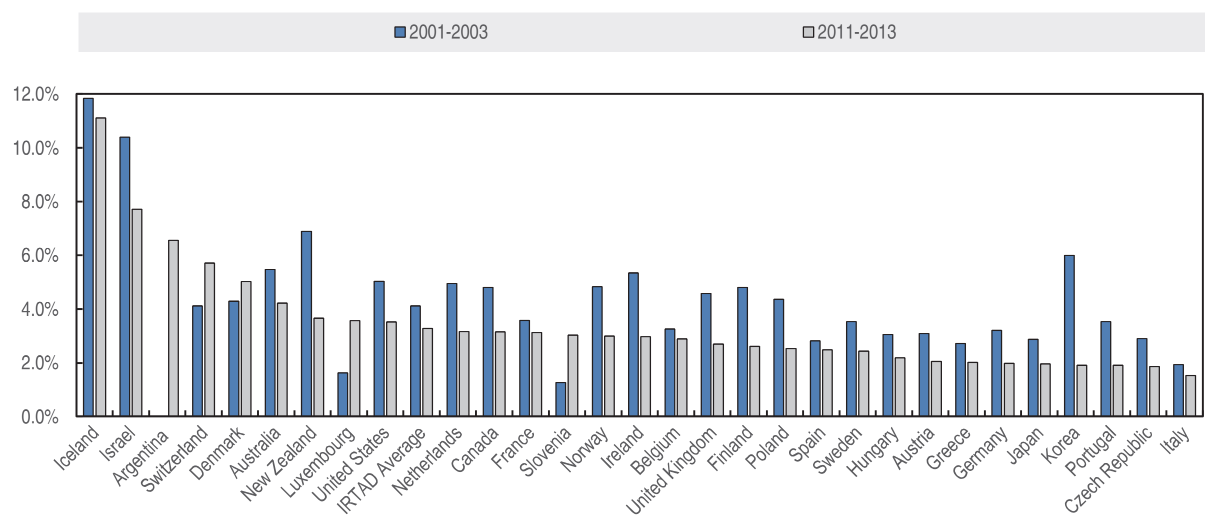
In most IRTAD countries the share of child fatalities has been declining over the last decade (Figure 1.9.). Children (0-14), in the countries listed in Figure 1.9, represent 17% of the population in IRTAD countries, 3.3% of road fatalities and 7% of injured road users (average 2011 to 2013), equalling 2 600 children killed and an estimate of 355 000 injured annually.

Figure 1.8. **Proportion of road fatalities for children aged 5-14 years by different income regions**



Source: WHO, *www.who.int/healthinfo/global_burden_disease/estimates/en/index1.html*.

Figure 1.9. **Proportion of children 0-14 years in all road fatalities in IRTAD countries (average rates)**



Around the start of this millennium, the highest road traffic mortality rate for children was recorded inside passenger cars, whereas in 2013 the rates for children in cars and children as pedestrians were practically identical. Both rates have improved significantly within the last decade (Figure 1.10.).

Even though the overall IRTAD child mortality rate is at a relatively low level of less than one fatality per 100 000 children, the variation among member states and by road transport mode is considerable, indicating room for improvements in many countries (Figures 1.11 and 1.12).

Figure 1.10. **Road traffic mortality rates of children 0-14 years in IRTAD countries by road user group (average rates for available countries)**

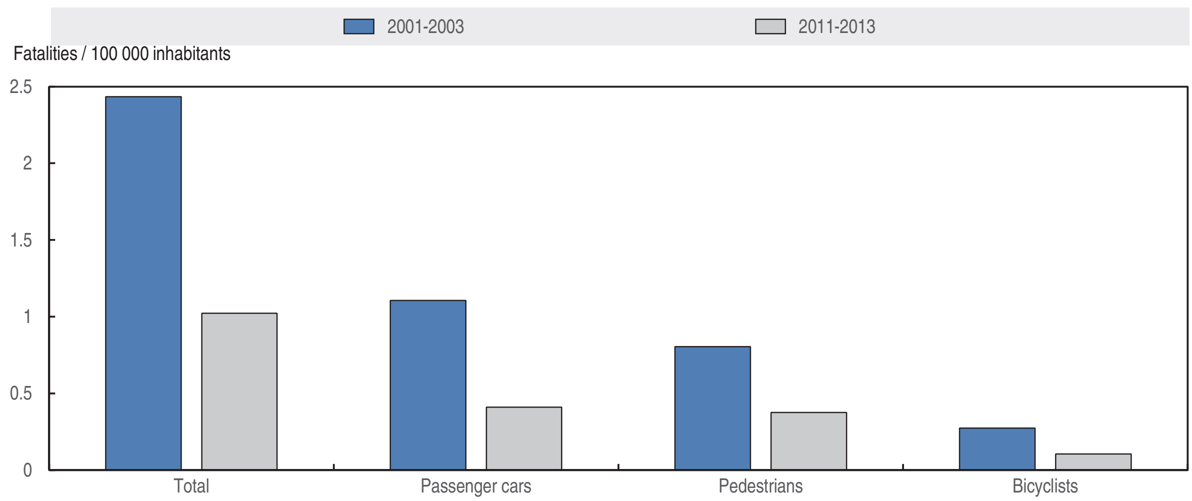


Figure 1.11. **Mortality rate of children 0-14 years as car occupants (average rates)**

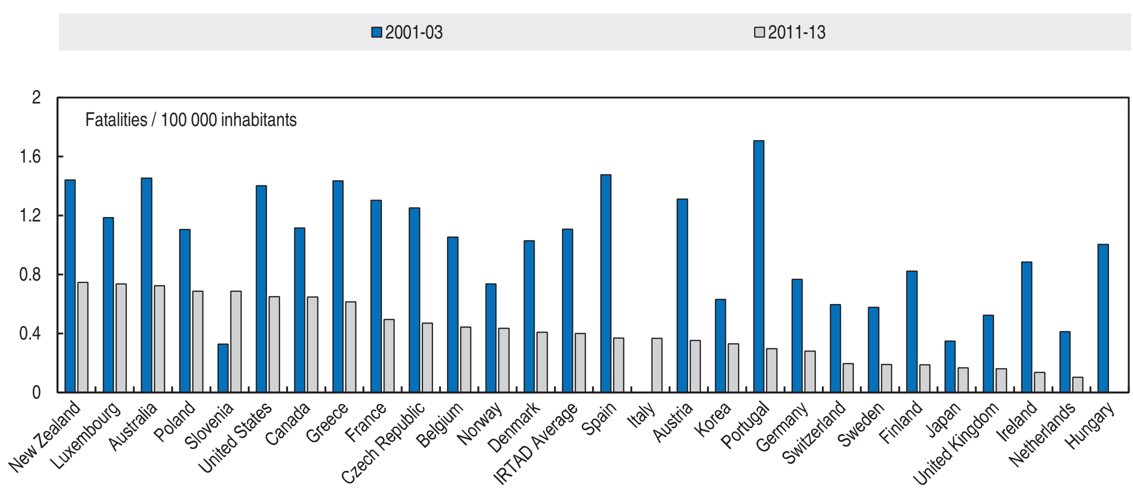
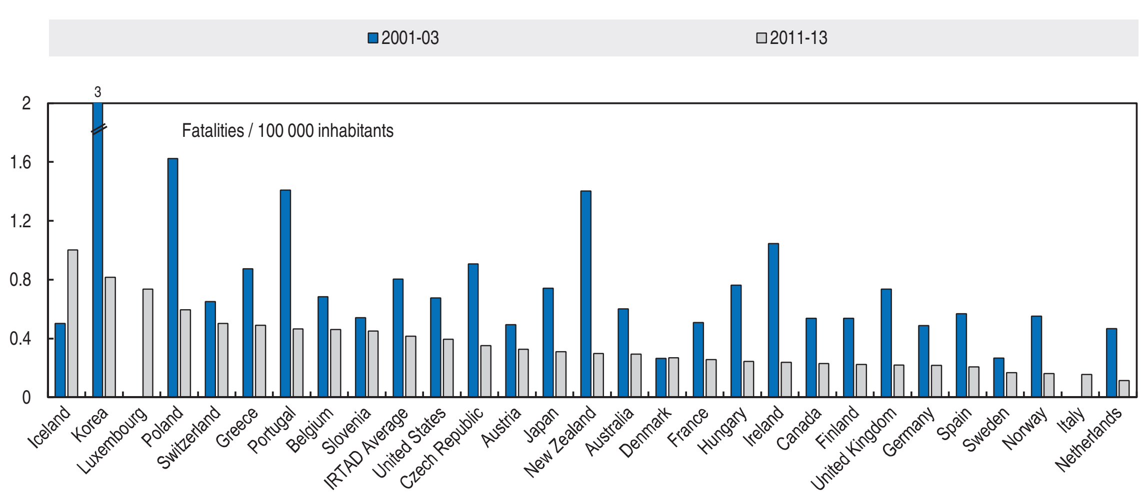


Figure 1.12. **Mortality rate of children 0-14 years as pedestrians (average rates)**



The UN Decade of Action for Road Safety 2011-2020

While many IRTAD countries have made good progress in recent years, the number of traffic casualties even in the best performing countries is still high and the encouraging results achieved in IRTAD countries only represent a small share (6%) of global road deaths. Every year 1.3 million people are killed and tens of millions injured, and 90% of casualties occur in low and middle income countries.

In 2011 the UN General Assembly proclaimed the UN Decade of Action for Road Safety 2011-2020 in a landmark resolution agreed by 100 countries. The goal of the Decade of Action, mandated by the United Nations and endorsed by more than a hundred governments, is to "stabilise and reduce", from a 2010 baseline, the forecasted level of global road fatalities by 2020. Meeting this goal could save up to five million lives, and prevent up to 50 million serious injuries.

On 10 April 2014 the UN General Assembly adopted a resolution encouraging the inclusion of road safety in the post-2015 development agenda, which supports the initial objective of the Decade and then builds on it to deliver a further fatality reduction. The UN Open Working Group on Sustainable Development Goals has included road safety targets in a proposed Health and Cities Goal.

In this context, the Second Global High Level Conference on Road Safety, hosted by the Brazilian government, will take place in Brasilia on 18-19 November 2015. This event will be very important in reviewing the progress since the launch of the Decade and identifying areas where further efforts should be made. It will also be an opportunity to begin building partnerships and arranging financing that can deliver the new road safety targets that are expected to be approved at the UN Summit on Sustainable Development Goals on 25-27 September 2015.

National Road Safety Strategies

The year 2011 was marked by the launch of the UN Decade of Action for Road Safety and the United Nations called on member states, international agencies, civil society, businesses and community leaders to ensure that the Decade leads to real improvement. It recommended that governments develop national action plans for the decade 2011-20. To assist them in doing so, a Global Plan for the Decade of Action was developed and organised around the five pillars of the "Safe System" approach. Several countries released or updated their national road safety strategies in 2011.

This section summarises the strategies and targets followed by IRTAD member and observer countries. More information can be found in the individual country reports that follow.

Road safety strategies pursued by the countries are various and include quantitative targets, interim targets, sub-targets and performance indicators. Many European countries align their strategies to the road safety policy orientations of the European Union. Some countries set targets for reducing serious injuries alongside the goals of reducing fatalities.

Legislation on key safety issues

Drink driving, speeding, non-wearing of seat belts and motorcycle helmets represent common safety challenges in all countries. The sections below summarise existing regulations regarding maximum authorised blood alcohol content, speed limits, seat belt and helmet use.

Table 1.4. **National road safety strategies and targets**

International strategies	Vision	Targets
United Nations Decade of Action for Road Safety 2011-2020 Global Plan for the Decade of Action		Stabilise and then reduce the forecasted level of road traffic fatalities around the world by increasing activities conducted at the national, regional and global levels
United Nations Sustainable Development Goal Under preparation		
European Union Policy orientations on road safety 2011-2020	Towards Zero	-50% fatalities by 2020 (base year: 2010)
Country/Strategy/timeframe	**Vision**	**Targets**
Argentina National road safety strategy	Based on the UN Road Safety Plan for the Decade of Action for Road Safety	-50% fatalities by 2014 Base year 2009 Specific targets for 2020 are being developed
Australia National road safety strategy 2011-2020	Safe System No-one should be killed or seriously injured on Australia's roads	-30% (at least) fatalities by 2020 -30% (at least) severely injured by 2020 Base year 2008-2010
Austria Austrian road safety programme 2011-2020	Safe system "Become one of the five safest countries in Europe"	-50% fatalities by 2020, based on the average for the years 2008-10 (Interim target: -25% by 2015) -40% serious injuries by 2020, based on the average for the years 2008-10 (Interim target: -20% by 2015) -20% injury accidents by 2020, based on the average for the years 2008-10 (Interim targets: -10% by 2015)
Belgium Recommendations for 20 priority measures for a period of 2011-2015	EU Road Safety Target adopted	-50% fatalities in 2020 in comparison to 2010 (420 road deaths in 2020)
Cambodia National Plan for Road Safety 2011-2020 (approved by the Council of Ministers in 2014)	Based on the UN Road Safety Plan for the Decade of Action for Road Safety	Reduce by 50% the forecasted number of fatalities by 2020 Several sub-targets on helmet wearing rates, speed, drink-driving
Canada Road Safety Strategy (RSS) 2015 2011-2015 A successor strategy underdevelopment	"Rethink Road Safety" to make Canada's roads the safest in the world	No hard numerical targets To achieve downward trends in fatalities and serious injuries.
Chile Road safety plan 2011-2014 A new National Road Safety Strategy in preparation		-20% road deaths by 2014 in comparison with 2011 level
Czech Republic The National Strategic Road Safety Plan 2011-2020	Vision Zero	Reduce fatality rate to EU 27 average No more than 360 fatalities in 2020 (-60%) No more than 2 100 seriously injured in 2020 (-40%) Base year 2009
Denmark Danish Road Safety Commission National Action Plan, 2013-2020	Based on Vision Zero	-53 % fatalities by 2020 (fewer than 120 killed) (based on EU Road Safety target) compared to 2010 -52% serious and slightly injured road users compared to 2010
Finland National Road Safety Strategy 2012-2014 ended. A new programme is under preparation	Based on EU Road Safety Target	Fewer than 219 fatalities (or 40 fatalities per million inhabitants) by 2014 Fewer than 137 fatalities (or 24 fatalities per million inhabitants) by 2020 Fewer than 5 750 injuries by 2020 (based on EU Road Safety target) Long term target: fewer than 100 fatalities by 2025
France New Action Plan for Road Safety, including 26 measures announced by Minister of Interior on 26 January 2015	Based on EU Road Safety target	-50% fatalities by 2020 (fewer than 2 000 fatalities)
Germany Road safety programme 2011-2020		-40% fatalities by 2020 (base year: 2010)

Table 1.4. **National road safety strategies and targets** *(cont.)*

International strategies	Vision	Targets
Greece National strategic road safety plan 2011-2020	Developing a road safety culture	-50 % fatalities by 2020 (based on EU Road Safety target); base year: 2010 Interim targets: Reduction by 80 road fatalities per year between 2010-2015 and 50 road fatalities per year between 2016-2020
Hungary Road safety programme 2014-2016		-50% fatalities by 2015 compared to 2001 -50% injury crashes by 2015 compared to 2001 -50 % fatalities by 2020 compared to 2010 (based on EU Road Safety target)
Iceland Traffic Safety Plan 2011-2022		Rate per 100 000 inhabitants should not be higher than in the best countries by 2022 Average annual reduction in killed and seriously injured of 5%. 11 sub targets defined
Ireland Road safety strategy 2013-2020		Reduction of road collision fatalities on Irish roads to 25 per million inhabitants or less by 2020 Provisional target for the reduction of serious injuries by 30% from 472 (2011), or fewer, to 330 by 2020 or 61 per million population. Specific targets for reducing speed and to increase restraint use
Israel National Road Safety Plan 2020		Fewer than 240 fatalities per year by 2020
Italy National Road Safety Plan Horizon 2020 (in preparation)	"No child should die on the road"	-50% fatalities by 2020 (under consideration) (based on EU Road Safety target) Mid-term target (under consideration) an average annual reduction rate of fatalities of 7%, corresponding to a reduction of 38% in 2017 (with reference to 2010 fatalities)
Jamaica National Road Safety Policy 2012-15		Fewer than 240 deaths by 2016
Japan 9th Traffic Safety Programme 2011-2015	Make Japan the safest country for road traffic	Fewer than 3 000 deaths (within 24 hours) by 2015 Fewer than 700 000 casualties by 2015
Korea 7th National transport safety plan 2013-2017 (new target for 2020 under discussion)	Reach the average safety level of OECD countries	Less than 1.64 fatalities/10 000 vehicles by 2017 This represents a 40% reduction in fatalities compared to 2012 level Fewer than 4 000 fatalities by 2017
Lithuania Road safety strategy 2011-2017	No one should be killed or seriously injured on Lithuania's roads	Less than 6 killed per 100 000 inhabitants in order to be ranked among the 10 best performing countries in the EU
Luxembourg Road Safety Action Plan 2014-2018 adopted on 8 December 2014	Vision Zero	-50 % fatalities by 2020 compared to 2010 (based on EU Road Safety target)
Malaysia Road Safety Plan 2014-2020	Based on the UN Road Safety Plan for the Decade of Action for Road Safety	Reduce by 50% the forecasted number of fatalities by 2020 Fewer than 5 368 deaths by 2020 (this corresponds to a 22% reduction compared to 2010)
Morocco National Road Safety Strategy 2004-2013; Strategic orientations for 2014-2015 Road safety strategy 2016-2025 in preparation		
Netherlands Road safety strategic plan 2008–2020	Sustainable safety	No more than 500 fatalities by 2020 No more than 10 600 serious road injuries (MAIS2+) by 2020
New Zealand Safer Journeys: Road safety strategy 2010-2020	Safe System A safe road system increasingly free of death and serious injury	No overall targets Several sub targets

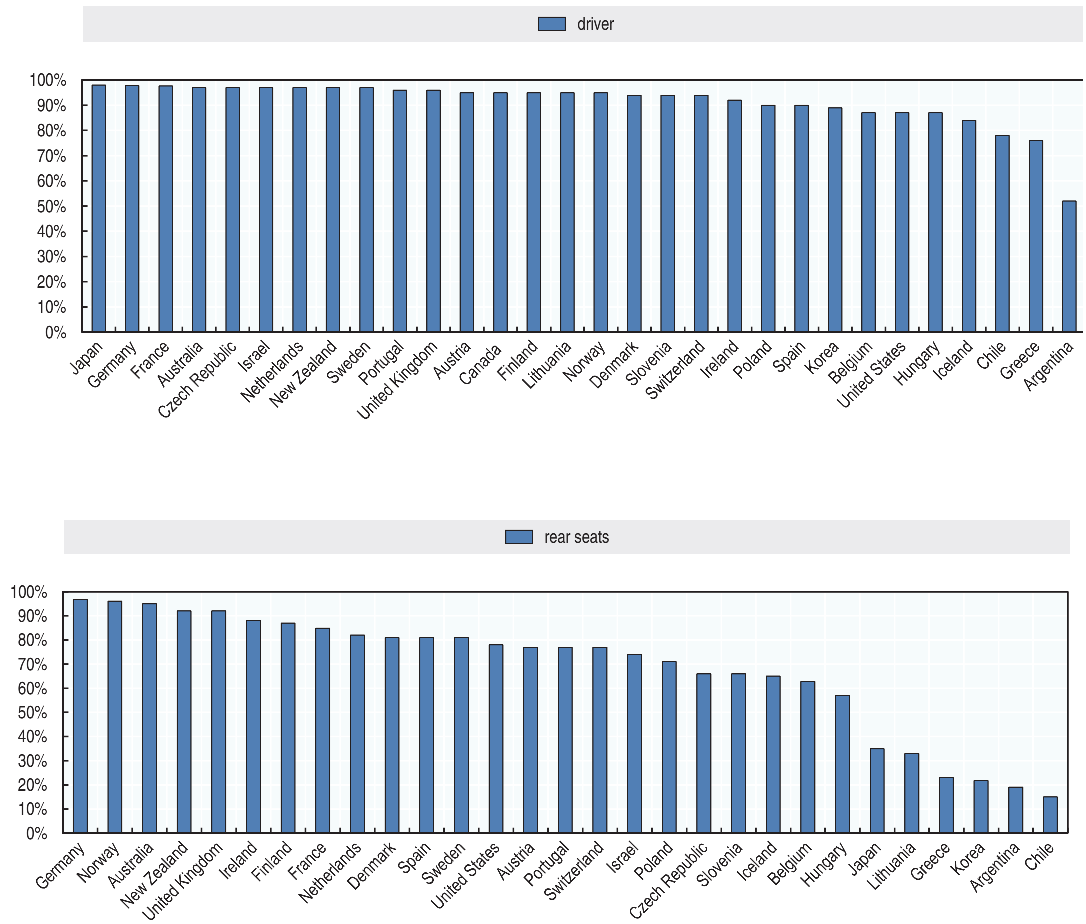
Table 1.4. **National road safety strategies and targets** *(cont.)*

International strategies	Vision	Targets
Nigeria Road Safety Strategy 2014-2018 is under development	Having one of the 20 safest road networks in the world by 2020 Based on the UN Road Safety Plan for the Decade of Action for Road Safety. Becoming a country where road traffic crashes result in no death	Reduction of fatal road traffic crashes by 50% in 2015 in comparison with 2007 level Reduction by 50% of the number of fatalities by 2020 in comparison with 2010 level (based on UN Decade of Action Plan)
Norway Road Safety Strategy 2014-2024 National Plan of Action for Road Traffic Safety 2014–2017	Vision Zero	No more than 500 fatalities and serious injuries by 2024
Poland National Road Safety Programme 2013-2020	Vision Zero	-50% fatalities by 2020 (based on EU Road Safety target) -40% severely injured by 2020 Base year 2010
Portugal National Road Safety Strategy 2008-2015 2013-15 Plan approved		62 fatalities per million inhabitants in 2015
Serbia National Strategy 2015-2020 (expected to be approved in 2015)		The Strategy will include the following quantitative targets: No child killed in traffic by 2020 Reduction by 50% the number of people killed, the number of people seriously injured and the number of children seriously injured by 2020 compared to 2011 Halving by 2020 the total annual social-economic costs of traffic crashes compared to 2011 level.
Slovenia National road safety programme 2013-2022	Vision Zero No fatalities and no one seriously injured on Slovenian roads	-50 % fatalities by 2022 or less than 35 fatalities per million inhabitants -50 % seriously injured by 2022 or less than 230 seriously injured per million inhabitants
Spain Road Safety Strategy 2011-2020	Safe system/Vision Zero. Citizens have the right to a Safe Mobility System in which everyone involved has a responsibility	Less than 3.7 killed per 100 000 population aligned with the European 2020 target -35% seriously injured compared to 2009 Several targets for various performance indicators (restraint systems, speed, drink-driving, etc.)
Sweden No safety plan in a traditional sense Management by Objectives for Road Safety Work, Towards the 2020 Interim targets	Vision Zero	-50% fatalities between 2007 and 2020 (the average for 2006-2008 is used as the base figure), i.e. max. 220 deaths by 2020 -25% severely injured between 2007 and 2020
Switzerland Via Sicura Adopted in June 2012 by Swiss Federal Council		No hard numerical targets Range of targeted measures
United Kingdom (Great Britain) Strategic framework for road safety A 5 year road safety strategy for 2011-2015	To ensure that Britain remains a world leader on road safety	Action plan has not set quantitative targets as such, but a modelling exercise has been conducted to assess the expected casualty reduction Outcomes framework to monitor progress on road safety, including six key indicators and a range of others
United States	Dedicated to achieving the highest standards of excellence in motor vehicle safety and reducing deaths, injuries and economic losses resulting from motor vehicle crashes	Performance targets set through 2016 Less than 1.02 fatalities per 100 million vehicle miles travelled in 2016 Performance targets for four sub measures: large trucks, passenger vehicles, non-occupants, and motorcycles

Drink driving

All IRTAD and observer countries have established maximum authorised blood alcohol content (BAC) for drivers as one of the primary measures to prevent crashes, injuries and fatalities caused by drink driving. General BAC levels in these countries vary from 0.0 g/l in Czech Republic and Hungary to 0.8 g/l in Canada, Jamaica, Malaysia, the United Kingdom and the United States. The most common maximum authorised BAC level is 0.5 g/l. Most of the countries also apply lower BAC level for novice, young and professional drivers (see Table 1.5.).

Figure 1.13. **Seatbelt use in IRTAD member countries 2014 or latest available**



Speed limits

In urban areas, in most countries, the default speed limit for passenger cars is 50 km/h; lower speed limits (typically 30 km/h) are often enforced in residential areas or around schools. Higher default speed limits (60 km/h) are found in Poland (during night time), Chile and Korea.

Speed limits on roads outside built up areas typically vary between 80 and 100 km/h. The lowest speed limits among IRTAD members and observers are in Jamaica (50 km/h) and Japan (50-60 km/h). The highest speed limits – up to 120 km/h – are in Chile and Poland. Several countries differentiate speed limits according to the type of road, weather or pavement.

On motorways speed limits vary between 90 to 140 km/h. In Germany, there is only a *recommended* limit of 130 km/h.

Seat belt use

The use of seat belts is regarded as one of the most effective measures to save lives and reduce crash injury severity for car occupants. All IRTAD countries have mandatory front seat belt regulations. The use of seat belts on rear seats is still not mandatory on the whole road network in some countries.

Wearing rates vary widely in member countries, and they are usually higher in front seats. For front seats, values typically range between 80% and 100%, but can also be as low

Table 1.5. **Maximum blood alcohol content in 2015**

Country	General BAC level	Differentiated BAC for novice drivers, professional drivers
Argentina	0.5g/l	0.0 g/l for professional drivers
Australia	0.5 g/l	0.0 g/l for novice drivers 0.2 g/l for professional drivers
Austria	0.5 g/l	0.1 g/l for moped drivers younger than 20 years; novice drivers (less than 2 years),truck and bus drivers
Belgium	0.5 g/l	0.2 g/l for professional drivers from 1 January 2015
Cambodia	0.5 g/l	No
Canada	0.8 g/l Administrative maximum level of 0.4 g/l/0.5 g/l. in most provinces	0.0 g/l administrative maximum level for novice and young drivers in most provinces
Chile	0.3 g/l	-
Czech Republic	0.0 g/l	-
Denmark	0.5 g/l	-
Finland	0.5 g/l	-
France	0.5 g/l	0.2 g/l for bus/coach drivers
Germany	0.5 g/l Drivers with a BAC between 0.3-0.5 g/l can have their licenses suspended if their driving ability is impaired	0.0 g/l for drivers under 21 and novice drivers
Greece	0.5 g/l	0.2 g/l for professional drivers, motorcycles and moped riders
Hungary	0.0 g/l (sanctions when BAC > 0.2 g/l)	
Iceland	0.5 g/l	
Ireland	0.5 g/l	0.2g/l for learner, novice and professional drivers
Israel	0.5 g/l	0.1 g/l for young, novice and professional drivers
Italy	0.5 g/l	0.0 g/l for young, novice and professional drivers.
Jamaica	0.8 g/l	-
Japan	0.3 g/l	-
Korea	0.5 g/l	-
Lithuania	0.4 g/l	0.2 g/l for novice, professional, moped and motorcycle drivers
Luxembourg	0.5 g/l	0.2 g/l for novice and professional drivers
Malaysia	0.8 g/l	-
Morocco	0.2 g/l	-
Netherlands	0.5 g/l	0.2 g/l for novice drivers
New Zealand	0.5 g/l (since 1 Dec. 2014)	0.0 g/l for drivers under 20 years and for repeating offenders
Nigeria	0.5 g/l	Law amendments on 0.2 g/l for novice and 0.0 g/l professional drivers is under approval
Norway	0.2 g/l	-
Poland	0.2 g/l	-
Portugal	0.5g/l	0.2 g/l for novice (first three years) and professional drivers (since 1 January 2014)
Serbia	0.3 g/l	0.0 g/l for novice and professional drivers and for PTW operators
Slovenia	0.5 g/l	0.0 g/l for novice (first three years) and professional drivers
Spain	0.5 g/l	0.3 g/l novice and professional drivers
Sweden	0.2 g/l	-
Switzerland	0.5 g/l	0.0 g/l for novice and professional drivers (since 1/1/14)
United Kingdom	0.8 g/l; 0.5 g/l in Scotland	-
United States	0.8 g/l	0.4 g/l for professional drivers 0.0 to 0.2 g/l for drivers < 21

as 52% (Argentina). For rear seats the range is between 15% (Chile) and 98% (Germany) (Figure 1.13.).

Motorcycle and helmet use

In all IRTAD member and observer countries but the United States, the use of helmets on powered two-wheelers is compulsory and the wearing rate is usually high; many

Table 1.6. **General speed limits for passenger cars in 2015**

Country	Urban areas	Rural roads	Motorways
Argentina	30-60 km/k	110 km/h	130 km/h
Australia	50 km/h 60 to 80 km/h (arterial roads)	100 or 110 km/h	110 km/h
Austria	50 km/h	100 km/h	130 km/h
Belgium	30-50 km/h	70-90 km/h	120 km/h
Cambodia	30-40 km/h	60-90 km/h	–
Canada	40-70 km/h	80-90 km/h	100-110 km/h
Chile	60 km/h	100-120 km/h	120 km/h
Czech Republic	50 km/h	90 km/h	130 km/h
Denmark	50 km/h	80 km/h	130 km/h (110 km/h for certain sections)
Finland	50 km/h	100 km/h (summer) 80 km/h (winter)	120 km/h 100 km/h(near cities)
France	50 km/h	90 km/h (90 km/h in wet weather)	130 km/h(110 km/h in wet weather/or novice drivers)
Germany	50 km/h	100 km/h	No limit, but 130 km/h is recommended
Greece	50 km/h	90 km/h (110 km/h on highways)	130 km/h (variable speed limits for sections)
Hungary	50 km/h	90 km/h	130 km/h (110 km/h on semi-motorways)
Iceland	50 km/h	90 km/h paved roads 80 km/h gravel roads	n.a.
Ireland	50 km/h	80 km/h or 100 km/h	120 km/h
Israel	50, 70 km/h	80, 90, 100 km/h	110 km/h
Italy	50 km/h	90 km/h	130 km/h.; 110 km/h in case of rain or snow; 100 km/h for novice drivers; the motorway operator may increase the limit up to 150 km/h if stringent requirements are met.
Jamaica	50 km/h	50 km/h	70 km/h or 110 km/h
Japan	40, 50, 60 km/h	50, 60 km/h	100 km/h
Korea	60 km/h	60-80 km/h	110 km/h (100 km/h in urban areas),
Lithuania	50 km/h	90 km/h (70 km/h on gravel roads)	120 or 130 km/h (110 km/h in winter)
Luxembourg	50 km/h	90 km/h	130 km/h (110 km/h in rain)
Malaysia	50 km/h	90 km/h	110 km/h
Morocco	60 km/h	100 km/h	120 km/h
Netherlands	50 km/h	80 km/h	130 km/h
New Zealand	50 km/h	100 km/h	100 km/h
Nigeria	50 km/h	80 km/h	100 km/h
Norway	50 km/h (30 km/h residential streets)	80 km/h	90,100,110 km/h
Poland	50 km/h (60 km/h night-time)	90-100-120 km/h	140 km/h
Portugal	50 km/h	90 km/h	120 km/h
Serbia	50 km/h	80 km/h	120 km/h
Slovenia	50 km/h	90 km/h(110 km/h for Expressways)	130 km/h
Spain	50 km/h	90 or 100 km/h	120 km/h
Sweden	30-40-50 km/h	60-70-80-90-100 km/h	110 km/h or 120 km/h
Switzerland	50 km/h	80 km/h	120 km/h
United Kingdom	30 mph (48 km/h)	60 or 70 mph (96 or 113km/h)	70 mph (113 km/h)
United States	*Set by each state*	*Set by each state*	55-80 mph (88-129 km/h) *Set by each state*

countries report a near to 100% compliance. In the United States, there is no federal law on helmet use, and three states do not have any helmet law.

In most countries helmet use for cyclists is not compulsory; however the compulsory use of helmets by children is becoming more frequent (see Table 1.6.).

Table 1.7. **Seatbelt wearing rates in front and rear seats, 2013 or 2014 or the latest available data**

Country	Front seats		Rear seats	
	Date of application	**Wearing rate**	**Date of application**	**Wearing rate**
Argentina	1995	45% (average), 52% (driver)	1995	19%, 45% for children
Australia	1970s	97%		96%
Austria	1984	95%	1990	77%
Belgium	1975	86% (2012 data)	1991	63%, 79% for children (2012 data)
Cambodia	2007	17%	Not mandatory	No data
Canada	1976-1988	Estimated 95%	1976-1988	Estimated 95%
Chile	1985	78% (driver), 62% (passengers)	2006	15%
Czech Republic	1966	97% (2012 data)	1975	66% (2012 data)
Denmark	1970s	94% (2012 data)	1980s	81% (2012 data)
Finland	1975	95%	1987	87%
France	1973	98% (2010 data)	1990	84% (90% for children)
Germany	1976	96% - 98%	1984	97% (98% for children)
Greece (	1987	77% (driver), 74% (passengers) (2009 data)	2003	23% (2009 data)
Hungary	1976	87%	1993 (outside built up areas), 2001 (inside built up areas)	57% (90% for children)
Iceland		84% (2013 data)		65% (2013 data)
Ireland	1979	92%	1979	88%, 91% for children
Israel	1975	97%	1995	74%
Italy	1988	64% (urban areas); 76% (outside urban areas) (2011 data)	1994	10% (2009-11)
Jamaica	1999	estimated 44% in 2008	1999	Estimated very low
Japan	1985	98% (driver), 94% (passengers)	2008	35% 62% for children
Korea	1990	89% (driver) on motorways 75% (passengers) on motorways	On motorways only, since 2008	22 % on motorways
Lithuania		95%		33%
Luxembourg	1975	80% (2003 data)	1992	No data
Malaysia	1978	82% (driver), 68% (passengers)	2009	9%
Morocco	1977 – rural areas 2005 – urban areas	49% drivers 46% passengers (2011 data)	2005 – rural areas	No data
Netherlands	1975	97% (2010 data)	1992	82% (2010 data)
New Zealand	1972	97%	1979	92% for adults, 93% for children
Nigeria	1997	80%	1997	*< 1%*
Norway	1975	95%	1985	*No monitoring, estimated 87-88%*
Poland	1991	90%	1991	71 % – adults; 89 % for children
Portugal	1978	96 %	1994	77% 89-100% for children restraints
Serbia	1982	70%	2009	4%
Slovenia	1977	94%	1998	66% for adults 87-94% for children
Spain	1974 outside urban areas, 1992 inside urban areas	90% (2012 data)	1992	81% (2012 data)
Sweden	1975	97%	1986 Child restraint systems since 1988	81% for adults, 95% for children
Switzerland	1981	94% (driver) 93% (passengers)	1994	77 % for adults, 93% for children (in 2012)
United Kingdom)	1983	96% (passengers)	1989 (children); 1991 (adults)	92%
United States	Primary law in 33 states, secondary law in 16 states, not mandatory in one state	87%	Varies by State	74% (2011 data)

Table 1.8. **Helmet laws and wearing rates, 2014 or the latest available data**

Country	Powered two-wheelers		Cyclists	
	Helmet law	**Wearing rate**	**Helmet law**	**Wearing rate**
Argentina	Yes	68% drivers 46% passengers	No	
Australia	Yes		Yes	
Austria	Yes	Nearly 100%	Yes for children up to 12	
Belgium	Yes	Unknown	No	
Cambodia	Yes		No	
Canada	Yes	n.a.	In some jurisdictions	
Chile	Yes	Estimated 99%	No	
Czech Republic	Yes	Nearly 100%	Yes (2006), for children up to 18	
Denmark	Yes	Estimated 97%	No	
Finland	Yes	n.a	Yes (2003)	44% to 50%
France	Yes, since 1973	90 -100%	No	
Germany	Yes	99%	No	Estimated 13%
Greece	Yes	75% riders 46% passengers (2009 data)	No	
Hungary	Yes since 1965 for motorcyclists, 1997 for moped riders outside built up areas 1998 for moped riders in urban areas.	Nearly 100%	No	
Iceland	Yes		Yes, for children up to 14	
Ireland	Yes	Nearly 100%	No	46%
Israel	Yes	Nearly 100%	Yes for children up to 18	90% on non-urban roads
Italy	Yes since 2000 for all	more than 90%	No	
Jamaica	Yes	Very low	No	
Japan	Yes	Estimated 99%	No	
Korea	Yes	78%	No	
Lithuania	Yes	n.a.	Yes, for children below 18	
Luxembourg	Yes, since 1976	n.a.		
Malaysia	Yes, since 1973	About 74%	No	
Morocco	Yes, since 1976	43 % drivers, 8 % passengers (2011 data)	No	
Netherlands	Yes, motorcycles since 1972; mopeds since 1975 Not compulsory on mofas (max. speed 25 km/h)	Moped riders: 96% Motorcycle riders: nearly 100%	No	
New Zealand	Yes	Nearly 100%	Yes, since 1994	92% (2012 data)
Nigeria	Yes	60%	No	
Norway	Yes	Nearly 100%	No	52% for all cyclists (77% for children up to 12 49% for all above 12)
Poland	Yes since 1997	Nearly 100%	No	12%
Portugal	Yes	n.a.	No	
Serbia	Yes	92% for motorcyclists 72% for moped riders	No	
Slovenia	Yes	n.a.	Yes for children up to 14	
Spain	Yes	Nearly 100%	Yes, except in built up areas Mandatory for children below 16	
Sweden	Yes	96-99%	Yes for children below 15	60-70% children 30% adults
Switzerland	Yes, motorcycles since 1981; mopeds since 1990	Nearly 100%	No for “regular” bicycles Yes for e-bikes > 25 km/h	41% adults 60% for children 89%
United Kingdom	Yes, motorcycles since 1973; mopeds since 1977		No	

Table 1.8. **Helmet laws and wearing rates, 2014 or the latest available data** *(cont.)*

Country	Powered two-wheelers		Cyclists
United States	No national law 19 states require helmet use by all PTW operators and passengers. 28 states requires helmet use by some segment of population 3 states have no helmet law	64% in 2014 (use of DOT-compliant helmets)	21 states and the District of Columbia have enacted age-specific bicycle helmet laws

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Chapter 2

Argentina

*This chapter presents the most recent crash data for argentina, as well as an update on its road safety strategy and recently implemented safety measures.**

* All data stem from Agencia Nacional de Seguridad Vial (ANSV) unless otherwise noted. For more information please contact Corina Puppo: cpuppo@seguridadvial.gov.ar.

While Argentina traffic fatalities have been relatively stable since 2008, the car fleet grew by more than 4.5 million units, a 35% increase, and the motorcycle fleet grew by 3.5 million units, a 138% increase. The safety of powered two-wheelers is a major concern in Argentina, in particular in urban areas. Between 2008 and 2013, the number of crashes involving a motorcycle more than doubled. Since 2012 the safe interaction between motorcycles, pedestrian and cyclists in urban areas has become a priority.

Road safety data collection

Definitions applied in Argentina

- Road fatality: Person killed in a traffic crash within 30 days after the crash.
- Serious injury: Non-fatal casualty who stayed more than 24 hours in hospital.
- Slight injury: Non-fatal casualty admitted in hospital for less than 24 hours.

Data collection

The National Road Safety Agency of Argentina (ANSV, *Agencia Nacional de Seguridad Vial*) joined the International Road Traffic and Accident Database (IRTAD) group in 2010. It benefited in 2010-2012 from a twinning programme with the General Traffic Directorate of Spain to review and audit its crash data collection and analysis system. This programme has been instrumental in guiding ANSV in the improvement of data collection process, conforming to international standards and indicators. In 2013, data from Argentina were validated for inclusion in the *IRTAD Database*.

The Argentinean road safety statistical form (Orange Form) was implemented in 2010 together with specifically designed software. This form is being used by 17 of the 24 Argentinean provinces to report on road crashes; another four provinces have adapted their tools to report data through a digital process; the rest are still using aggregated tools. The forms are sent to the ANSV, where the statistical data is consolidated and processed.

The ANSV audits one province chosen at random to verify that the collection data process has been undertaken in the correct way.

Data on fatalities are available from 2005 onwards. Data on injuries are only available from 2008. In some cases, data prior to 2008 were reconstructed with the collaboration of the Ministry of Health.

Since 2010, the ANSV is working with the Ministry of Health to link hospital records and the Orange Form data. This linking project was started as a pilot in the most populated province of Argentina, in order to collect serious injury data based on the Maximum Abbreviated Injury Scale of three or more (MAIS3+).

Underreporting is being assessed, comparing police reports with hospital records in provinces where hospital records are available. Underreporting is quite high for crashes without injuries and with only slight injuries.

Most recent safety data

Road crashes in 2014 – provisional data

Based on provisional data, road fatalities decreased by 2.8% in 2014 when compared with 2013. However the number of seriously injured increased by 7.5%.

Crashes involving motorcycles grew by 16% between 2013 and 2104, while the motorcycle fleet increased by 9%. Since 2008, the motorcycle fleet has grown 138%.

Over 80% of road crashes occurred in conditions of good weather and visibility.

Road crashes in 2013

In 2013, there were 5 209 road fatalities, representing a 2.7% increase compared to 2012. Injury crashes decreased by 2.8%.

The situation deteriorated particularly for the vulnerable road users group (pedestrians, cyclists and motorcyclists), and future efforts will be taken in co-operation with local governments to prioritize this user group.

Trends in traffic and road safety (2008-14)

Traffic

Motorisation is growing quickly in Argentina. The car fleet grew by more than 4.5 million units from 2008 to 2014, a 35% increase. The motorcycle fleet grew by 3.5 million units, a 138% increase.

This extremely rapid motorisation raises important challenges in terms of traffic and infrastructure management, congestion and safety.

Road safety

Crashes and casualties

Since 2008, the number of road fatalities has fluctuated between 5 000 and 5 200. This relative stagnation is to be analysed in relation with the explosion in the number of vehicles.

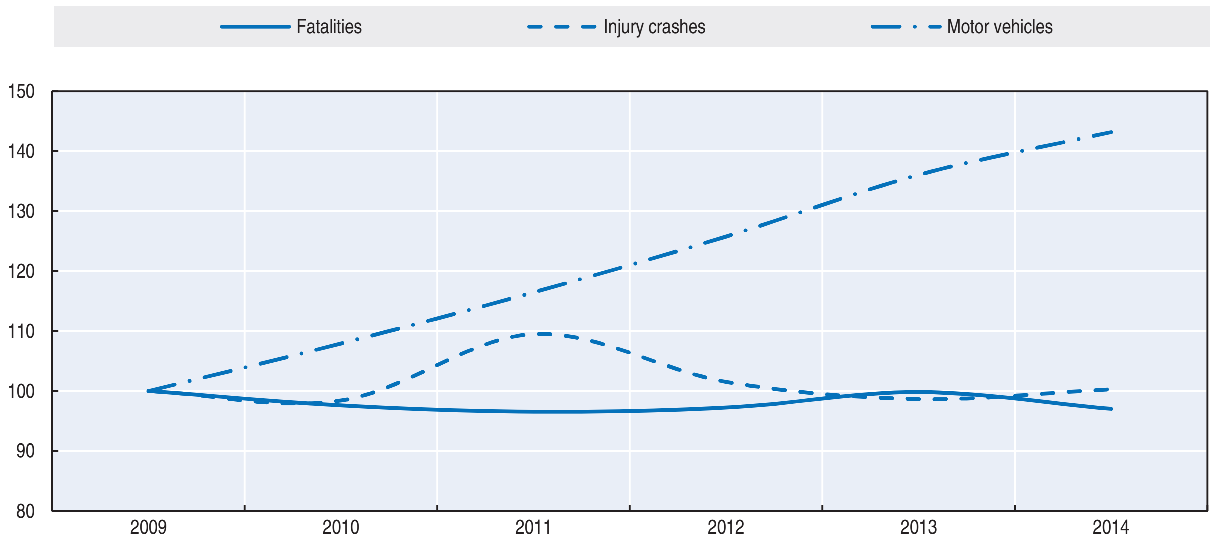
Rates

In 2013, the mortality rate was 12.3 deaths per 100 000 inhabitants. The fatality risk was at 2.3 deaths per 10 000 registered vehicles, a 19% decrease when compared to 2010. This rapid decrease is related to the fast increase in the vehicle fleet.

Table 2.1. **Road safety and traffic data**

	2009	2010	2012	2013	2013 % change from		
					2012	2010	2009
Reported safety data							
Fatalities	5 219	5 094	5 074	5 209	2.7	2.3	-0.2
Injury crashes	90 851	89 403	92 240	89 630	-2.8	0.3	-1
Deaths per 100 000 inhabitants	13	12.6	12.3	12.3	0.4	-1.8	-5.1
Deaths per 10 000 registered vehicles		2.9	2.5	2.3	-5.1	-18.9	-27.1
Traffic data							
Registered vehicles (thousands)	16 416	17 716	20 645	22 333	8.2	26.1	36.0
Registered vehicles per 1 000 inhabitants	409	437	500	529	5.8	21.0	29

Figure 2.1. **Road safety and traffic data index 2009 = 100**



Road safety by user group

Data collected by ANSV showed a steady decrease in car occupant fatalities between 2010 and 2013. However, the situation for motorised two-wheelers is worrying, with a 33% increase in fatalities during the same period, related to the 52% increase in the motorcycle fleet. Pedestrian and cyclist safety has also deteriorated with a respective increase of 32.5% and 59.3% in the number of fatalities.

The safety of powered two-wheelers is a major concern in Argentina, in particular in urban areas. Between 2008 and 2013, the number of crashes involving a motorcycle more than doubled. Since 2012 the safe interaction between motorcycles, pedestrian and cyclists in urban areas has become a priority.

Table 2.2. **Road fatalities by road user group**

	2010	2012	2013	2013 % change from	
				2012	2010
Cyclists	77	96	102	6.3	32.5
Motorcyclists	1 161	1 344	1 547	15.1	33.2
Passenger car occupants	2 923	2 778	2 619	-5.7	-10.4
Pedestrians	329	382	524	37.2	59.3
Others	604	474	417	-12.0	-31.0
Total	**5 094**	**5 074**	**5 209**	**2.7**	**2.3**

Road safety by age group

In 2013, 25% of traffic fatalities involve road users between 15 and 24 years old. Young people have a higher risk than the general population, followed closely by road users aged 25 to 64.

Child safety

Progress has been achieved to reduce the mortality of the 10-14 age group. However, there was an increase of 18% between 2012 and 2013 in fatalities of children aged 6-9. This

Table 2.3. **Road fatalities by age group**

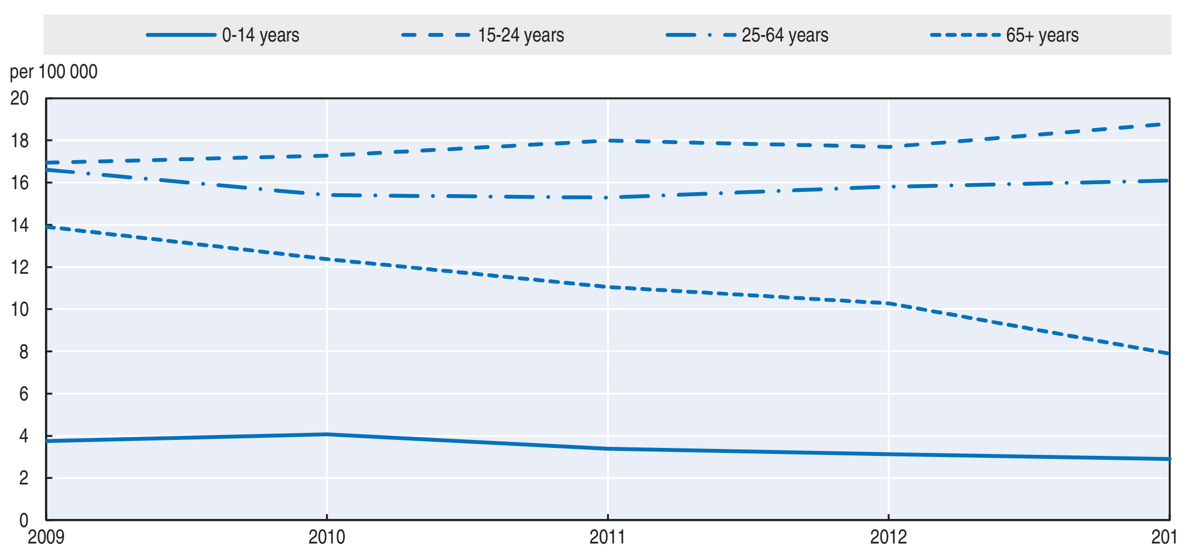
Age	2010	2012	2013	2013 % change from	
				2012	2010
0-5	166	129	128	-0.8	-22.9
6-9	108	81	99	22.2	-8.3
10-14	139	107	105	-1.9	-24.5
15-17	358	369	396	7.3	10.6
18-20	354	367	385	4.9	8.8
21-24	463	481	523	8.7	13.0
25-64	2 987	3 111	3 224	3.6	8.0
> 65	519	429	349	-18.6	-32.8
Total	**5 094**	**5 074**	**5 209**	**2.7**	**2.3**

could be associated with the fact that many children of this age group are driven to school on a motorcycle. ANSV is working with the educational community on the Safe Scholar Road project, promoting sustainable mobility for children on their way to school. This project involves the education community and parents. Infrastructure interventions, such as sidewalks renovation, pedestrian crossings and new specific traffic signs are implemented.

More information: *www.oisevi.org/a/index.php/caminos-escolares*.

In recent years, there has been a significant increase in the use of child restraint systems, especially in large cities.

Figure 2.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 2009-13



Road safety by road type

In 2013, 64% of all reported road crashes occurred in urban and suburban areas, accounting for 70% of injured persons and 57% of fatalities. Non-urban areas accounted for 36% of road crashes but 43% of fatalities.

The safety of pedestrians, cyclists and motorcyclists in urban areas remains a major challenge.

Figure 2.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants, 2013

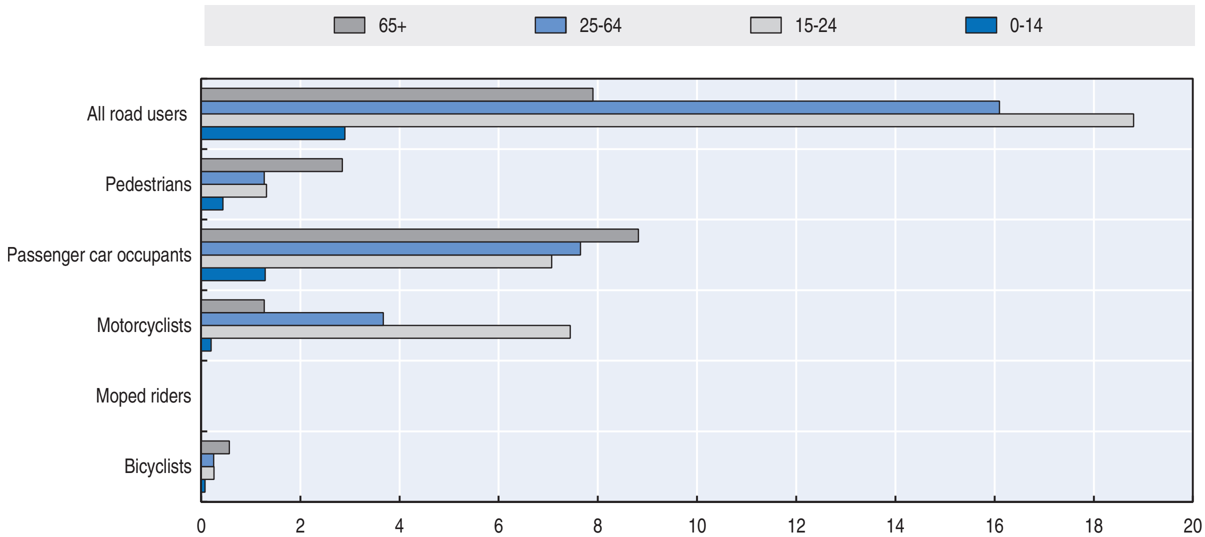
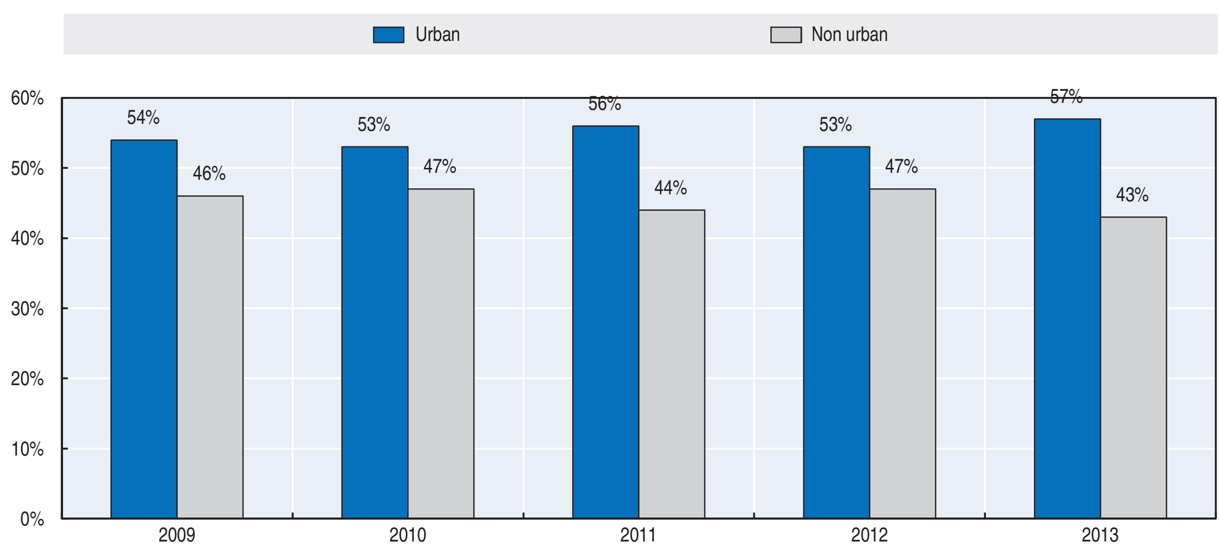


Figure 2.4. **Road fatalities by road type**



Source: ANSV.

Economic costs of traffic crashes

Road crashes represent huge costs for society. In 2010, it was estimated that they represented 1.2% of the gross domestic product (GDP) of Argentina (PAHO and ANSV, 2012). In 2014, ANSV estimated that the total cost of roads crashes amounted to USD 6.5 billion (1.1% of GDP).

Recent trends in road user behaviour

Impaired driving

Drink driving

A maximum legal blood alcohol content (BAC) was introduced in February 1995: 0.5 g/l for most road user categories and zero for professional drivers of buses, taxis, and trucks.

It is estimated than 24% of fatal crashes are due to drink driving (SEDRONAR, 2012).

Drugs and driving

The national traffic law prohibits driving while "having consumed illegal or legal drugs that reduce the ability to drive".

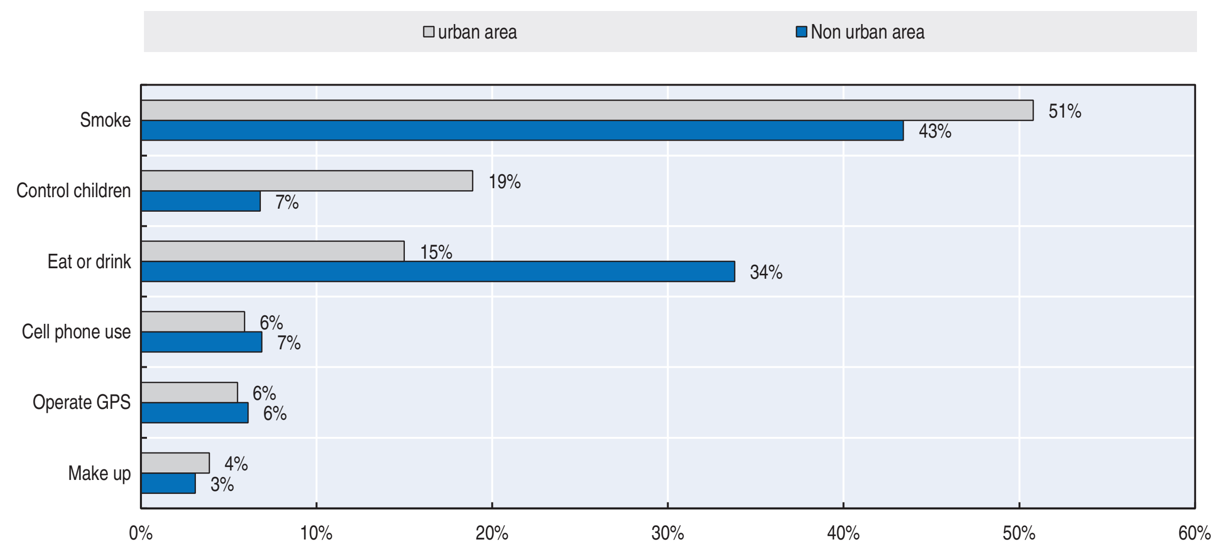
Recent research (SEDRONAR, 2012) estimated that in 2012, 22.5% of road casualties treated in emergency had consumed some type of psychoactive substance. This is a very high proportion and further research is planned on this issue.

Distraction

The national traffic law prohibits the use of mobile phones, electronic hand-held devices, DVD players and similar devices while driving.

A national survey on road user behaviour, conducted in 2013, analysed the distraction factors among car and motorcycle drivers. The results are illustrated in the figure below.

Figure 2.5. **Prevalence of distraction factors observed among car drivers**



National legislation requires professional drivers to rest eight hours after eight hours of driving. Controls are heavily focused on professional drivers of long-distance public transport.

Based on police reports and post-crash drivers' declarations, it is estimated that 5% of crashes in 2013 were due to fatigue. The true contribution of fatigue to fatal crashes could be much higher.

Speed

In 2013, based on police records, it was estimated that 13.5% of fatal crashes were due to speeding. The table below summarises the main speed limits in Argentina.

A speed survey was conducted in 2014 over selected corridors. The main conclusions are:

- The proportion of heavy vehicles travelling above the speed limit was 7.2%.
- The proportion of light vehicles above the speed limit was 4.3%.

Table 2.4. **Passenger car speed limits by road type, 2015**

Urban roads	30-60 km/h Buenos Aires City has a range of 20 to 70 km/h, in 5 categories
Rural roads	110 km/h
Motorways	130 km/h

Seat belts and helmets

Seat belt wearing is compulsory in front and rear seats since February 1995. Dedicated child restraint systems are mandatory for children under four years old. The table below summarises the evolution in the seat belt wearing rate. While there is some improvement, the wearing rate is very low in comparison to most OECD countries.

In 2013, 59% of car occupants killed were not wearing a seat belt when the crash occurred.

Table 2.5. **Seat-belt wearing rate by car occupancy**

%

	2011	2012	2013	2014
Front seat				
General	33	38	38	45
Drivers	39	44	42	52
Passengers	29	34	37	45
Rear seats				
Adults	11	18	26	19
Child restraint system	26	29	34	45

All riders of two-wheeled motor vehicles are required to wear helmets. In 2014, it was estimated that 68% of motorcycle drivers and 46% of passengers wore a helmet. These figures were respectively 42% and 26% in 2011, highlighting some progress but offering major scope for further improvement.

National road safety strategies and targets

Organisation of road safety

The National Road Safety Agency (ANSV), created in 2008 under the Ministry of Interior and Transport, is the leading road safety agency in Argentina. The agency has three councils and committees: a Federal Council, represented by one member of each province; a Scientific Committee, composed of expert members, engineers, doctors, etc.; and a Consultative Committee, represented mainly by relatives of road safety victims.

All road safety policies are decided within the National Road Safety Agency. Since its inception, the focus has been on the creation of a national drivers' licence, a national education plan, a national control plan and creation of the National Road Safety Observatory.

Road safety strategy for 2011-20

The Argentina Road Safety Plan is based on the pillars recommended by the United Nations Road Safety Plan for the Decade of Action for Road Safety.

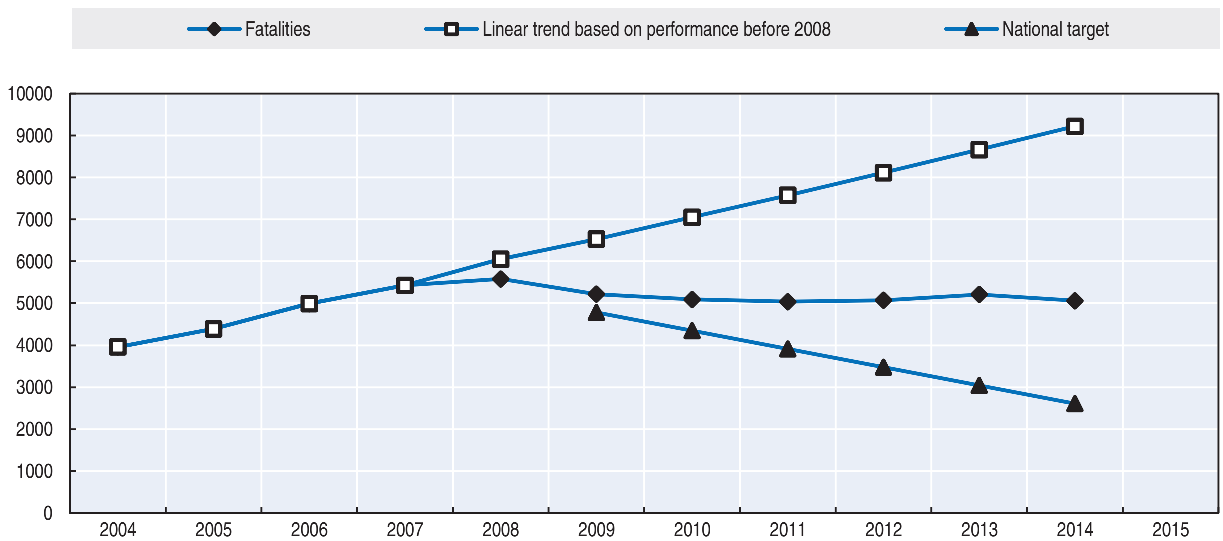
Road safety targets

The national government set an objective of a reduction in the number of road traffic fatalities by 50% between 2009 and 2014. Specific targets for 2020 are being developed following the pillars of the Decade-of-Action Plan.

Monitoring

The target to halve the number of fatalities between 2009 and 2014 was probably unrealistic in such a short time frame and was not achieved.

Figure 2.6. **Trends in road fatalities towards national target**



Recent safety measures (2012-14)

Road safety management

National licensing system

- In 2014, 23 of the 24 Argentinean provinces adopted a new National Driving Licence system. The national licensing system centralises driving documentation. This mechanism allows criminal background checks, traffic violation checks, judicial disqualifications and the scoring of the person seeking the licence.

Road users

Motorcyclist safety

- In 2012, the National Road Safety Agency, in co-operation with the Ministry of Health, motorcyclists' associations and other stakeholders, launched a National Motorcycle Plan: *http://observatoriovial.seguridadvial.gov.ar/documentos/plan-motos-2012_.pdf*.

Speed management

- In 2013, section control speed enforcement was tested. In 2014 a certification process began to make this a legal enforcement mechanism.

Impaired driving

- In 2013, the Road Safety Observatory proposed an amendment of the law on drink-driving and evaluated the possibility of incorporating a Zero Tolerance approach on drinking and driving. The amendment obtained parliamentary status in November 2013. In 2014, it was approved by the road safety commission. In 2015 (when this report was prepared), the amendment was included in the parliamentary agenda for discussion and approval by the Chamber of Deputies.

Infrastructure

- The National Road Safety Agency has conducted risk analysis on national roads, in order to develop a road risk map. The results of this work are being considered by the national road authority for future interventions.

Vehicles

- An agreement was reached in 2011 with car manufacturers and importers to implement European standards for new vehicles sold in Argentina (for example, from January 2014, every new car should include Antilock Brake Systems and airbags).
- In 2014 a new agreement was signed between car manufacturers and the Ministry of Industry to make Electronic Stability Control mandatory in all new vehicles as of 2018.

Post crash measures

- ANSV has elaborated medical, legal, technical and security guidelines, with the aim of developing a national protocol for action following road crashes.

Recent and ongoing research

- The third National Survey on Road Safety Behaviour was conducted during the first week of October 2013 and focused on professional drivers. *http://observatoriovial.seguridadvial.gov.ar/documentos/tercer-relevamiento-nacional.pdf*.
- The fourth National Survey on Road Safety Behaviour was conducted in November 2014. Results will be available in June 2015.
- The first sociocultural survey on road safety was conducted in May 2015, through focus groups and interviews.

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Websites

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National Road Safety Observatory: *http://observatoriovial.seguridadvial.gov.ar*.

Chapter 3

Australia

*This chapter presents the most recent crash data for Australia, as well as an update on the Australian road safety strategy and recently implemented safety measures.**

* All data stem from the Australia Department of Infrastructure and Regional Development and IRTAD unless otherwise noted. For more information please contact: John.Goldsworthy@infrastructure.gov.au.

Australia's 23.5 million inhabitants suffered 1 156 road deaths in 2014, a 2.6% decrease from 2013 and a road mortality rate of 4.9 deaths per 100 000 inhabitants. While 2013 fatalities decreased by 17% from the 2008-10 base period, they fell by 31% for drivers aged 17-25 and rose by 36% for drivers aged 65 and over. National and state road safety strategies emphasise the importance of road infrastructure improvements, including relatively low-cost measures applicable to single-carriageway roads. The Australian Government committed AUD 500 million over five years to the national Black Spot Programme.

Road safety data collection

Definitions applied in Australia

- Road death: A person who dies within 30 days of a crash as a result of injuries received in that crash.
- Road crash: Any apparently unpremeditated event attributable to the movement of a road vehicle on a public road reported to the police or other relevant authority and resulting in death, injury or property damage.

Data collection

In Australia, crash data are collected and validated by the police and transport agencies in each of the eight states and territories.

Common protocols for the collection of fatality data have enabled the establishment of a reliable national road fatality database, which is managed by the federal Department of Infrastructure and Regional Development (the Department). This database is the source of the fatality data included in this report.

With respect to the collection of serious injury road crash data, there are currently substantial differences in the approaches adopted by the Australian states and territories. The federal Department is working with state and territory agencies on options to develop a national serious injury database; however, significant issues must be resolved before this can occur.

Road deaths from 2011 onwards are provisional and subject to revision.

Most recent safety data

Road crashes in 2014 – provisional data

During 2014 there were 1 156 road deaths. This is a 2.6% reduction compared to 2013.

At December 2014 the rate of annual deaths per 100 000 inhabitants was 4.9. Compared to 2013, this is a 4.1% reduction.

Road crashes in 2013

The total number of road deaths in Australia decreased by 8.7% in 2013 compared with 2012 (1 187 deaths compared with 1 300 deaths).

Under Australia's National Road Safety Strategy 2011-20, key statistical indicators are benchmarked against the three-year period 2008 to 2010. Overall, fatality numbers to the end of 2013 decreased by 17%. However, there were notable differences in trends for some road user groups and crash types:

- Deaths of drivers aged 17-25 of cars and motorcycles decreased by 31%.
- Deaths of drivers aged 65+ of cars and motorcycles increased by 36%.
- Deaths involving heavy vehicles (trucks and buses) decreased by 23%.
- Deaths of motorcyclists decreased by only 8%.
- Deaths of bicycle riders increased by 55% (though relatively small numbers).

Trends in traffic and road safety (1990-2014)

Traffic

Between 1990 and 2014, the number of motorised vehicles registered for road use increased by 75%, and overall vehicle-kilometres travelled increased by at least 50%.

While light passenger vehicles still account for more than 71% of traffic volume in Australia, there has been a gradual increase in the presence of motorcycles and commercial vehicles. Between 1990 and 2014, the number of vehicle-kilometres travelled by light commercial vehicles grew by 97%, articulated trucks grew by 90%, motorcycles grew by 66% and cars grew by 39%.

Road safety

Crashes and casualties

Since 1990, there has been an underlying and relatively constant downward trend in road deaths, with an overall reduction in total fatalities of 50%. Key measures contributing to this reduction, particularly over the last decade, have been the implementation of intensive speed compliance measures, progressive introduction of graduated licensing restrictions, targeted safety investment in road infrastructure and continuous vehicle safety improvements.

In contrast to the continuing decline in fatal road crashes in Australia, available hospital data suggest that serious non-fatal crashes have not been reduced over the last decade. Between 2000 and 2012, the number of people hospitalised due to road crashes increased from 26 963 to 34 091, with much of this increase attributable to vulnerable road users (especially motorcyclists and cyclists).

Rates

Since 2010, the rate of annual deaths per inhabitants decreased by 20%. The biggest declines were in New South Wales, the Northern Territory and Victoria.

Road safety by user group

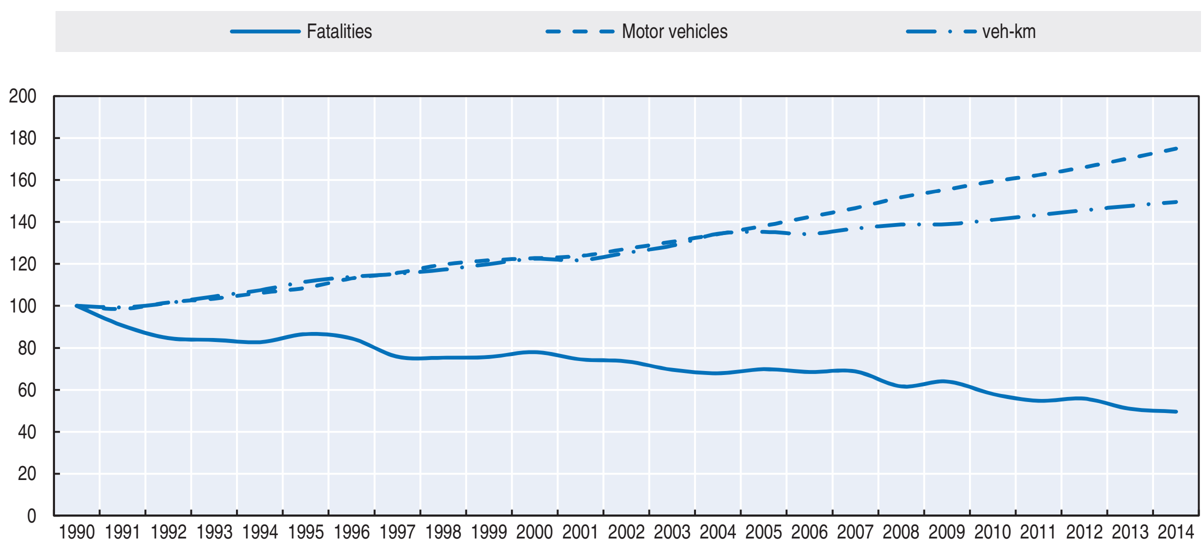
Over the past decade, passenger and pedestrian deaths have decreased at the fastest rates, with driver deaths also falling. In contrast, cyclist deaths showed a marginally increasing trend.

Crash types are classified into single-vehicle crash (no pedestrian killed), multiple vehicle crash (no pedestrian killed) and pedestrian crash. All three types have declined over the decade; however, the decline in pedestrian fatal crashes has been strongest.

Table 3.1. **Road safety and traffic data**

	1990	2000	2010	2013	2014	2014 % change from 2013	2010	2000	1990
Reported safety data									
Fatalities	2 331	1 817	1 353	1 187	1 156	-2.6	-14.6	-36.4	-50.4
Injured persons hospitalised	24 961	26 963	32 775			n.a.	n.a.	n.a.	n.a.
Deaths per 100 000 inhabitants	13.7	9.5	6.1	5.1	4.9	-4.1	19.9	-48.5	-64.0
Deaths per 10 000 registered vehicles	2.3	1.5	0.8	0.7	0.7	-5.1	22.2	-55.4	-71.6
Deaths per billion vehicle kilometres	14.4	9.1	5.9	5.0	4.8	-3.8	-19.4	-47.9	-66.8
Traffic data									
Registered vehicles (thousands)	10 081	12 373	16 061	17 181	17 633	2.6	9.8	42.5	74.9
Vehicle kilometres (millions)	162 238	198 669	228 764	239 657	242 607	1.2	6.1	22.1	49.5
Registered vehicles per 1 000 inhabitants	591	650	729	743	751	1.0	3.0	15.4	27.1

Figure 3.1. **Road safety and traffic data index 1990 = 100**



Since 1990, the percentage reduction in pedestrian fatalities (-64%) has been considerably larger than that for vehicle occupant fatalities (-51%). There is evidence that lower 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 they have benefited vehicle occupant safety, though there is no direct evidence to that effect.

Cyclist fatalities have dropped by 44% since 1990. Reduced urban travel speeds and the introduction of compulsory helmet laws for cyclists have contributed to this improvement. The number of cyclists killed rose sharply in 2013 by 52%, though it is too early to determine if this reflects an underlying upward trend. While Australia does not have national exposure data for cyclists, there is some evidence that cycling activity is generally increasing.

Changes in motorcycle fatalities have been influenced by changes in exposure (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 motorcycles have no front number plates.

Between 2000 and 2014, the number of motorcycle deaths (including passengers) in Australia increased by 0.5%, and as a proportion of total road deaths they increased from 11% to 17%. Motorcyclists and cyclists are the only road user groups to have increased fatalities over this period. The overall increase in motorcycle rider fatalities can be largely attributed to a growth in motorcycling activity: Between 2000 and 2014, the estimated number of motorcycle vehicle-kilometres travelled in Australia increased by 110%, compared with an increase of 22% for all motorised vehicles.

Table 3.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2014 (prov)	2013 % change from			
							2012	2010	2000	1990
Cyclists	80	31	38	33	50	45	51.5	31.6	61.3	-37.5
Motorcyclists	262	191	224	221	213	193	-3.6	-4.9	11.5	-18.7
Passenger car occupants[1]	n.a.	n.a.	723	666	588		-11.7	-18.7	n.a.	n.a.
Pedestrians	420	287	172	174	162	152	-6.9	-5.8	-43.6	-61.4
Others	n.a.	n.a.	195	203	174		-14.3	-10.8	n.a.	n.a.
Total	***2 331***	***1 817***	***1 353***	***1 300***	***1 187***	***1 156***	***-8.7***	***-12.3***	***-34.7***	***-49.1***

1. From 2008 onwards, *Passenger car occupants* can be separately identified. Prior to this, the data in the relevant cell refers to occupants of *any* four-wheeled vehicle.

Road safety by age group

In 2014 road users aged 16 or under accounted for approximately 5.7 % of all deaths. This group has had the second highest rate of decline over the decade, with deaths in the 17-25 and 26-39 age groups also falling consistently. In age groups 40 years and over, declines over the decade have been weaker and in the 60-69 group deaths have increased.

These age-related trends are thought to be linked to demographic changes in Australia, particularly the ageing of the population. However, this issue requires further investigation.

Table 3.3. **Road fatalities by age group**

Age	1990	2000	2010	2013	2014	2014 % change from			
						2013	2010	2000	1990
0-5	70	51	26	20	30	50.0	15.4	-41.2	-57.1
6-9	55	17	13	19	11	-42.1	15.4	-35.3	-80.0
10-14	59	46	17	12	13	8.3	- 23.5	-71.7	-78.0
15-17	129	104	53	39	28	-28.2	-47.2	-73.1	-78.3
18-20	340	204	138	80	86	7.5	-37.7	-57.8	-74.7
21-24	278	178	141	106	102	-3.8	-27.7	-42.7	-63.3
25-64	1 046	923	745	637	642	0.8	-13.8	-30.4	-38.6
≥ 65	351	294	219	274	241	-12.0	10.0	-18.0	-31.3
Total	***2 331***	***1 817***	***1 353***	***1 187***	***1 156***	***-2.6***	***-14.6***	***-36.4***	***-50.4***

The death rate per inhabitants in the age group 18-20 is 70% higher than the total average. The rate for the age group 65+ is also significantly higher than average and has increased over the last few years.

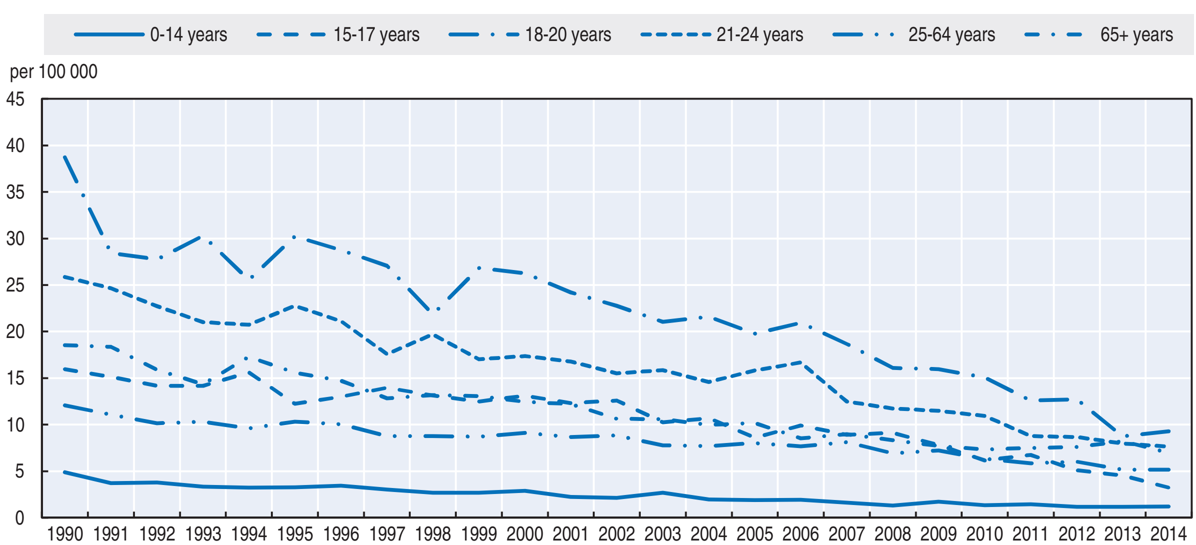
Child safety

Australian Road Rules require all children aged 6 months and under to be in an approved rearward-facing child restraint; children from 6 months to 4 years must be in an approved child restraint; and all children aged at least 4 years and under 7 years must use an approved forward-facing child restraint or booster seat. Children aged 0-14 years account for about 4.6% of people killed in 2014 road crashes and 6.6% of people hospitalised in 2012 crashes. Child deaths and serious injuries have trended downward in recent years, both in absolute numbers and as a proportion of total casualties:

- Between 2004 and 2014 child fatalities decreased by 32%, compared with a 27% decrease in total road fatalities.
- Between 2006-07 and 2012, the number of children hospitalised from road crashes decreased by 30%, compared with an increase of 4.0% in total hospital admissions.

Child road users have benefited from many of the general road safety measures implemented in recent years, such as vehicle safety advances, road infrastructure improvements and speed management initiatives. However, some specific measures targeting children are also likely to have contributed to improved safety outcomes for this age group. These include the application and enforcement of lower speed limits (mainly 40 km/h) in school zones and high-pedestrian areas; and a strengthening of compulsory child restraint laws through the Australian Road Rules.

Figure 3.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2014



Road safety by road type

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 seat belt use is more difficult in rural areas.

Figure 3.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants, 2013

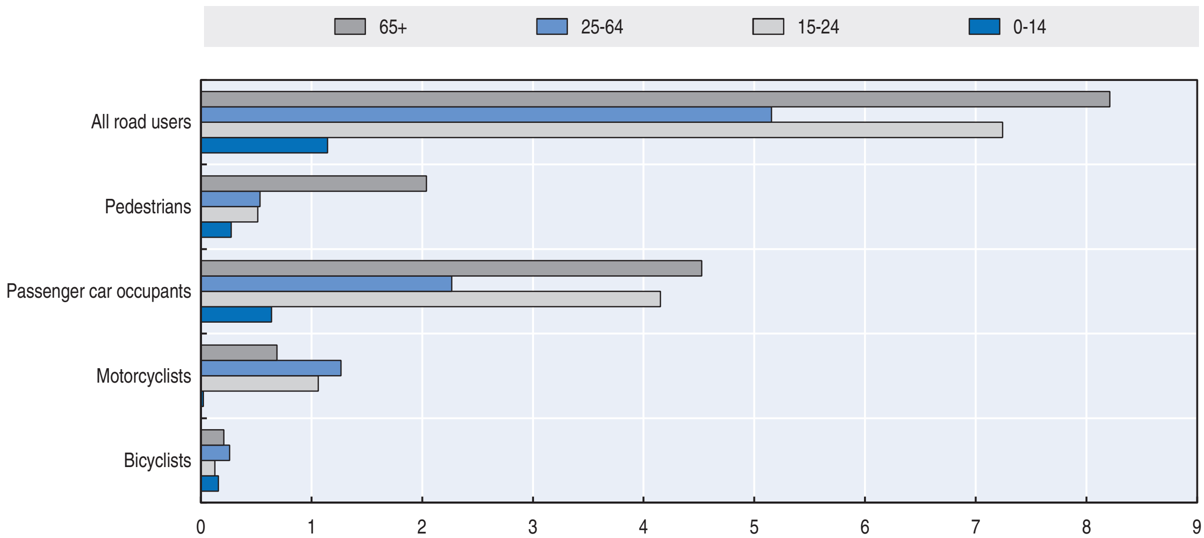
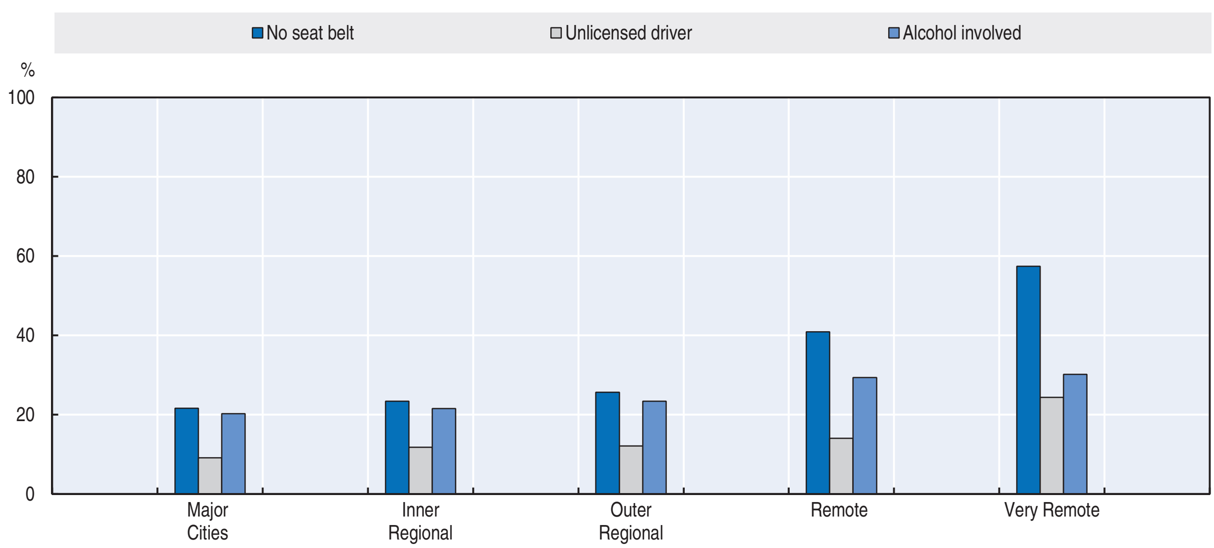


Figure 3.4. **Behaviour contributory factors: vehicle occupant deaths 2008 to 2012**[1]



1. Excludes cases where killed occupant's seat belt use, drivers' licence status or blood alcohol content were unknown.
Source: BITRE (2014); Australian Bureau of Statistics (2013).

Only a small proportion of the rural road network 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.

In 2014, 46% of fatal crashes occurred on roads with posted speed limits at or above 100 km/h, while 30% occurred on roads with limits of 60 km/h or lower.

Economic cost of traffic crashes

The annual economic cost of road crashes in Australia is an estimated AUD 27 billion per year, based on 2006 data. This estimate is equivalent to 1.8 per cent of the national gross domestic product in 2012-13. A willingness-to-pay methodology was used to value the human losses from road crashes.

Table 3.4. **Costs of road crashes, 2006**

	Unit cost [AUD]	Total in [AUD billion]
Fatalities		9.9
Injury and disability		10.3
Property damage and other costs		6.9
Total		27.1
Total as % of GDP (2012-13)		1.8%

Source: BITRE (2010); BITRE (2014).

Recent trends in road user behaviour

Impaired driving

Drink driving

In Australia, it is illegal to drive a motor vehicle with blood alcohol content (BAC) of 0.5 g/l or higher. Lower BAC limits apply to truck, bus and taxi drivers (typically 0.2 g/l) and to novice drivers (0.0).

All jurisdictions have had considerable success in reducing the contribution of alcohol to road trauma, largely attributable to the combination of intensive random breath-testing programmes and ongoing public education campaigns. While absolute numbers of alcohol-related fatalities have continued to decline over the last decade, it is estimated that about 28% of all fatally injured motorists have a BAC above the maximum legal limit of 0.5 g/l.

This figure varies significantly among jurisdictions, with rural and remote areas of Australia presenting particular challenges for the implementation of effective deterrence measures.

Drugs and driving

While a smaller problem than alcohol, there is evidence that other drugs (both illicit and prescription) are a factor in Australian road trauma. It is very difficult to obtain reliable data on drug involvement in serious crashes, though estimates from coroner information have suggested that about 7% of road deaths involve drug-driving as a factor (excluding cases also involving alcohol).

In recent years, most jurisdictions have introduced random roadside drug-testing programmes, supported by laws that make it illegal to drive a motor vehicle with a prescribed drug present in their blood or oral fluid. These laws currently focus on selected illicit drugs, such as cannabis, methamphetamines and ecstasy.

Distraction

Distracted driving is recognised as a major and potentially growing problem in Australia. Mobile phone use is a particular concern, with self-report surveys consistently finding that about 60% of drivers use a mobile phone while driving. Of particular concern is the significant minority of drivers who admit to reading (32%) or sending (18%) text messages while driving.

It is illegal to use a hand-held phone while driving in all jurisdictions. Learner and provisional licence-holders in some jurisdictions are subject to further restrictions, including a total ban on phone use while driving. Breaches attract fines and licence demerit points.

Fatigue

There is no definitive measure of fatigue involvement in crashes, though various estimates suggest that fatigue may be a factor in 20%-30% of fatalities.

Speed

Australia does not have reliable national data on the contribution of speed to serious crashes. Police crash reports have suggested that excessive speed is a factor in about a third of all fatal crashes, though this is likely to be an underestimate.

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. For example, an authoritative evaluation of a package of Victorian speed-management initiatives in the early 2000s found a 10% reduction in all casualty crashes and a 27% reduction in fatal crashes. National data on speed distributions are not available. Obtaining such data has been identified as a priority to support the effective monitoring of progress under the National Road Safety Strategy.

Under Australia's National Road Safety Strategy, there have been moves to better align posted speed limits with the objective risk profiles of roads. This has led, for example, to an expansion of lower urban speed zones (typically 40 km/h) in areas with high pedestrian and cycling activity.

Nationally-co-ordinated work has recently been undertaken to develop guidelines for speed limits at high-risk locations and to facilitate the adoption of best practice speed limits more broadly.

Over the last 10 years, most Australian jurisdictions have taken steps to strengthen speed enforcement programmes, particularly through increased use of mobile and fixed cameras; in recent years several jurisdictions on a modest scale have introduced, or planned to introduce, point to point camera systems to measure average speed.

Most jurisdictions have reviewed their speeding sanctions and several have announced stronger penalties, mainly for high-range offences.

Efforts to facilitate the implementation of intelligent speed adaptation (ISA) have been proceeding through the cross-jurisdictional Australasian Intelligent Speed Assist Initiative. Current work is focused on the development of suitable speed-limit maps and exploration of the potential regulatory role of ISA in managing high-risk drivers. New South Wales has recently introduced an ISA advisory app for mobile phones that is available free-of-charge to the public.

The table below summarises the main speed limits in Australia. It should be noted that speed limits are state-based, but there is broad consistency across jurisdictions.

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

Table 3.5. **Passenger car and truck speed limits by road type, 2014**[1]

	General speed limit Passenger cars	General speed limit trucks > 3.5 t
Urban roads (non-arterial)	50 km/h Increasing use of 40 km/h limits in urban areas with high pedestrian activity	50 km/h
Urban roads (arterial)	60 km/h to 80 km/h	60 km/h to 80 km/h
Rural roads (undivided)	100 km/h	100 km/h
Rural roads (divided)	100 km/h or 110 km/h	100 km/h
Motorways	110 km/h	100 km/h

1. Speed limits are state-based and may vary from one state to another.

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 that usage rates for both front- and rear-seat occupants are now in excess of 95%.

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.

Table 3.6. **Seat belt wearing rate by car occupancy**

%

	2000	2013
Front seat	96	97
Rear seats	89	96

Helmets are compulsory for motorcycle and moped riders and cyclists. Approximately 1 in 10 motorcyclists and 1 in 4 cyclists killed in road crashes were not wearing a helmet. There is no national data on general helmet usage rates.

National road safety strategies and targets

Organisation of road safety

In Australia's federal system, government responsibilities for road safety vary across jurisdictions. The Australian Government is responsible for regulating safety standards for new vehicles and for allocating infrastructure resources, including for safety, across the national highway and local road networks.

State and territory governments are responsible for funding, planning, designing and operating the road network, managing vehicle registration and driver licensing systems, and regulating and enforcing road user behaviour.

Local governments have responsibilities for funding, planning, designing and operating road networks in their local areas.

Road safety strategy for 2011-20

The National Road Safety Strategy 2011-2020 was approved and released by the former Australian Transport Council on 20 May 2011. The strategy represents the commitment of

Australia's nine federal, state and territory governments to an agreed set of national road safety goals, objectives and actions. The strategy is firmly based on Safe System principles and is framed by the guiding vision that no person should be killed or seriously injured on Australia's roads.

Some of the major strategic challenges for Australian road safety are to:

- Reduce the number of serious casualty crashes involving the three major crash types: single-vehicle run-off-road, intersection and head-on crashes.
- Reduce the number of crashes involving heavy vehicles.
- Reduce the number of serious casualties among pedestrians and cyclists.
- Reduce the number of serious casualty motorcycle crashes.
- Protect young road users, particularly novice drivers.
- Reduce poor road user behaviour and the consequences of such behaviour, particularly:
  - drink-driving (28% of fatally injured drivers are over the legal limit)
  - failing to wear seat belts (28% of vehicle occupant fatalities are unbelted)
  - illegal and inappropriate speed (a major causal factor in 34% of deaths).
- Develop interventions that respond to the different needs and circumstances of urban, regional and remote Australia.
- Reduce serious casualties on roads controlled by local government.
- Local roads account for more than 50% of serious casualties in some states.
- Reduce the incidence of serious casualties within indigenous communities and among other disadvantaged people.

On 7 November 2014, the Transport and Infrastructure Council endorsed the National Road Safety Action Plan 2015-2017, which was developed to support the implementation of the *National Road Safety Strategy (NRSS) 2011-2020*. The new Action Plan is intended to focus national efforts in the next three years on strategically important initiatives.

Road safety targets

As a step towards this long-term vision, the strategy presents a 10-year plan to reduce the annual numbers of both deaths and serious injuries on Australian roads by at least 30% by 2020, relative to the average numbers of fatalities and serious injuries in the baseline period 2008-10.

In developing these targets, data modelling was carried out to calculate the level of serious casualty reduction that could realistically be achieved over the life of the strategy. The modelling employed evidence-based estimates of the effectiveness of various road safety interventions.

Provisional road fatality statistics show that the number of national deaths in 2014 (1 156) was 19% below the strategy baseline average (1 426).

Monitoring

To help monitor the implementation of the national strategy, a range of high-level outcome indicators and more specific Safety Performance Indicators (SPIs) were adopted as empirical measures of progress. The indicators are mainly based on crash data and have necessitated the development of a new national compilation of state and territory data, which is managed by the Department's Bureau of Infrastructure, Transport and Regional Economics (BITRE).

In addition to data monitoring, the Department works with state and territory transport agencies to periodically gather and compile information on actions taken to deliver the strategy's initiatives.

A review of Australia's National Road Safety Strategy 2011-2020 has been undertaken. This included a review of recent road safety research literature, an assessment of progress in implementing the national strategy and identification of issues to be addressed as a matter of priority.

In February 2015 Austroads published the results of a project it commissioned to provide substantial input to the review of the National Road Safety Strategy. This work was designed to identify new countermeasures or changes in trauma patterns that would inform national road safety priorities. The main findings of the review are described in brief below:

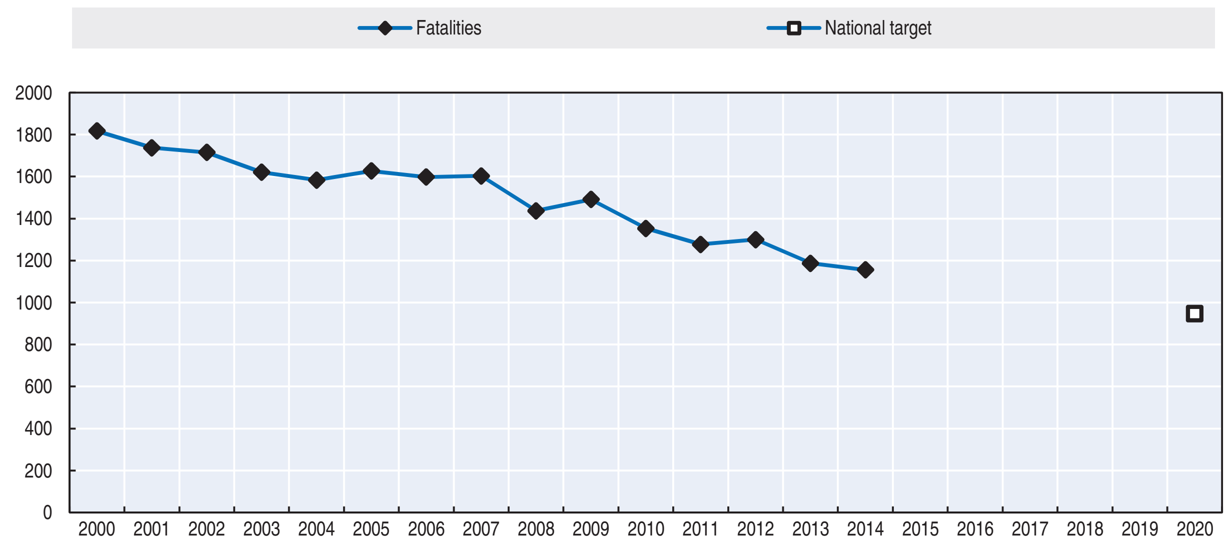
- Good statistical progress was made in the first three years of the National Road Safety Strategy, as measured by overall changes in annual road fatalities. The number of deaths in 2013 was 17% below the 2008-10 baseline period.
- Fatality trends were less positive for certain sub-groups of road users, particularly cyclists, motorcyclists and older drivers.
- Progress in reducing serious injury numbers was difficult to determine because of the lack of reliable, nationally consistent, non-fatal crash data. Available hospital data provided some evidence that serious injury levels had not declined in concert with the general downward trend in deaths.
- The review found that progress in implementing the 59 "first steps" actions in the National Road Safety Strategy was varied, though there was evidence that most had progressed to some extent and that there had been a number of clear achievements. Progress had been particularly strong in the vehicle safety area.
- The review concluded that the high-level content of the strategy – its guiding vision, targets, key directions and Safe System principles – remain valid and appropriate for the 10-year strategy.
- The review identified a range of priority areas where road safety progress appears to have been lagging.
- The review also concluded that the next phase of the National Road Safety Strategy should be guided by a more concise action plan than the initial agenda for first steps: It should focus on issues that clearly warrant national attention and that can be addressed through specific national actions. The findings of the strategy review informed the development of the three-year Action Plan for 2015-2017.

Evaluation of past road safety strategy

In November 2000, Australia's transport ministers endorsed the National Road Safety Strategy 2001-2010. The strategy provided a framework for prioritising the road safety activities of federal, state, territory and local governments, as well as other organisations that could influence road safety outcomes. Its target was to reduce the annual road fatality rate by at least 40% over the 10-year period, from 9.3 deaths per 100 000 inhabitants to no more than 5.6 deaths.

Despite significant gains over the decade, the 40% reduction target was not reached. By the end of 2010 the fatality rate was 6.1 deaths per 100 000 inhabitants, a reduction of 34%. Factors thought to have influenced this outcome included:

Figure 3.5. **Trends in road fatalities towards national target**



- Australia experienced conditions of relatively high economic growth over the decade, with a greater than expected increase in vehicle numbers and traffic volumes.
- An unforeseen expansion in motorcycling activity contributed to an 18% increase in rider fatalities between 2000 and 2010.

A review of Australia's road safety performance and strategic priorities noted that the nation had historically benefited greatly from strong enforcement and education programmes, targeting high-risk behaviours such as speeding, drink-driving and non-usage of seat belts. It concluded that these measures continue to be important, but that greater emphasis is required on non-behavioural means of improving the safety of the road transport system, including safer road infrastructure, accelerating safety improvements in the nation's vehicle fleet; making greater use of technologies that can support behaviour-change; identifying and addressing systemic safety deficiencies in rural and remote areas of Australia.

Recent safety measures (2012-14)

Road safety management

- Improved co-ordination and advisory arrangements for national road safety activities (including the National Road Safety Strategy) were put in place through Austroads. This included arrangements for better national engagement between transport and police agencies.
- The National Road Safety Forum was established as a major annual gathering of national road safety stakeholders across all sectors to discuss strategic priorities.
- The National Road Safety Partnership Program was launched in 2014 as a major industry-supported initiative encouraging private sector organisations to develop positive road safety cultures and implement effective road safety strategies within their workplaces.

Road users

Driver licence

There has been ongoing work in several Australian states to strengthen graduated licensing systems (GLS), supported by Austroads research on the safety evidence associated with different GLS elements. In 2014, New South Wales led a national project to develop a best-practice policy framework for GLS.

Several jurisdictions have initiated licensing support programmes for people in indigenous communities. This includes the successful completion of a major two-year trial of the DriveSafe NT Remote program in the Northern Territory, which helped 623 people in remote and very remote regions obtain a full driver's licence.

Drink driving

States have continued to expand the use of alcohol interlock programmes.

Speed management

- Significant action was taken in some jurisdictions to adopt safer speed limits. Most notably, rural speed limits were reduced on substantial sections of the rural network in South Australia and on unsealed roads in Tasmania; while 40 km/h limits were introduced in most capital cities targeting areas with high pedestrian activity.
- Most jurisdictions took steps to improve the effectiveness of speed enforcement programmes, including some progress towards the implementation of point-to-point (average speed) camera systems.

Infrastructure

Federal, state and territory governments invested significantly in a range of infrastructure improvement initiatives. These included:

- The Australian Government committed AUD 500 million over five years to the national Black Spot Programme.
- Major investments in safe roads of AUD 1 billion in Victoria and AUD 100 million in South Australia.
- Significant infrastructure upgrades including wide median treatments on 20% of the Bruce Highway in Queensland; and AUD 36 million from fine revenue toward addressing single vehicle run-off-road crashes in Western Australia.
- The New South Wales Community Safety Fund (fines from speed cameras) allocated more than AUD 60 million for targeted road safety infrastructure treatments and Black Spots under the "Safer Roads Engineering Program".

Austroads developed the Australian National Risk Assessment Model (ANRAM) to help jurisdictions better target infrastructure safety investments using an objective risk-based approach.

Vehicles

Major vehicle safety activities in recent years have included:

- Increased harmonisation of Australia's vehicle safety standards – the Australian Design Rules – with regulations of the United Nations Economic Commission for Europe and Global Technical Regulations.
- New Australian Design Rules for seat belt reminders, ISOFIX child seats, Brake Assist Systems for light passenger and commercial vehicles, Electronic Stability Control for light commercial vehicles and Antilock Brake Systems for heavy vehicles.

- Regulation Impact Statements are under development to consider ADRs on pole side impact protection for light passenger and commercial vehicles, Antilock Brake Systems for motorcycles and Electronic Stability Control for heavy vehicles.
- Continued expansion of the Australasian New Car Assessment Programme (ANCAP).
- Under Australia's National Road Safety Strategy 2011-2020, statistical performance indicators are benchmarked against the three-year period 2008 to 2010. Data to 2013 showed positive changes in key vehicle safety indicators:
  - ❖ The proportion of new vehicles sold with a 5-star ANCAP rating increased by 61% to 65% of new vehicles.
  - ❖ The proportion of new vehicles sold with Electronic Stability Control increased by 63% to 93% of new vehicles.
  - ❖ There was also considerable improvement in the proportion of light commercial vehicles sold with a 5-star rating, from 4% to 31%.

Recent and ongoing research

Recent research

Bureau of Infrastructure, Transport and Regional Economics

- The impact of airbags and electronic stability control on Australian light vehicle fatalities: *www.bitre.gov.au/publications/2015/is_068.aspx*.
- Impact of road trauma and measures to improve outcomes: *www.bitre.gov.au/publications/2014/report_140.aspx*.
- Road safety of older Australians: recent statistics: *www.bitre.gov.au/publications/2014/is_050.aspx*.
- Austroads
- Options for rehabilitation in interlock programs: *www.onlinepublications.austroads.com.au/items/AP-R484-15*.
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Ongoing research

- Austroads has an ongoing programme of national research with a focus on work that will support the development of Safe System transport networks. This includes research projects on land use planning processes, infrastructure performance and the development of a Safe System assessment framework, as well as work to help translate Safe System infrastructure research and knowledge into practice.

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Chapter 4

Austria

*This chapter presents the most recent crash data for Austria, as well as an update on the Austrian road safety strategy and recent safety measures that have been implemented.**

* All data stem from KFV (Kuratorium für Verkehrssicherheit), IRTAD unless otherwise noted. For more information please contact: klaus.machata@kfv.at.

The 455 road fatalities in 2013 was the lowest number since 1961 when safety records began, and 2014 set a new record with 430 road deaths. Weather was an important factor in the pattern of road crash fatalities 2014. Fatalities increased by 26% in the first six months, probably because mild winter temperatures led to increased exposure, while a decline in the second half, resulting in the full year decline, is probably related to a rainy summer that reduced exposure.

Road safety data collection

Definitions applied in Austria

Data included in this report correspond to the consolidated set of police data.

- Road fatalities refer to deaths within 30 days of the crash.
- Injury crashes are crashes resulting in at least one injured or killed person.
- Since 2012 injured persons are subdivided into seriously injured and slightly injured. (Before 2012, a third category for "unknown degree of severity" existed).
  - Seriously injured are persons suffering an injury that entails an inability to work or health problems for more than 24 days.
  - Slightly injured are all other injured persons.

Data collection

In Austria, crash data are collected by the police. The crash data acquisition process was completely transformed in January 2012 from paper forms to integrated data input including Geographic Information System support. It is believed that has significantly reduced underreporting rates, especially for less severe road crashes. However, because the collection method changed, data for injuries and crashes since 2012 cannot be directly compared with previous figures. This does not apply to the number of fatalities.

Injury severity is assessed by the police at the crash scene, with only occasional feedback from hospitals; it is not possible to link police and hospital data directly on the basis of the present data architecture.

For the crash data 2014, a new estimate for the number of serious injuries will be required by the European Commission, based on the Maximum Abbreviated Injury Scale of 3 or more (MAIS3+). For Austria, this estimate will be derived from International Classification of Diseases-10 hospital data on road traffic victims.

Most recent safety data

Road crashes in 2014 – final data

The number of road fatalities declined by 5.5% in 2014 to 430. Fatalities increased significantly (26%) in first half of 2014, probably due to mild winter temperatures leading to increased exposure, and the later decline resulting in the full year improvement is probably due to a rainy summer that may have reduced exposure.

Road crashes in 2013

The long-term downward trend of road fatalities continued in 2013. In 2013 there were 455 road fatalities, which is the lowest number since 1961 when safety records began. This development holds true in particular for car drivers and occupants (279 deaths versus 193 in 2012) whereas a rise was observed in motorcycle deaths (87 versus in 68 on 2012; for the first time, motorcycle fatalities are now the second largest group of road casualties).

Although part of this reduction is related to the long-term downward trend, the good results achieved in 2013 were also influenced by sustained periods of snow and ice in the winter, which may have been favourable to road safety (less exposure and lower speeds).

In 2013, the police recorded 38 502 injury crashes (-5.7 % compared to 2012). Due to a change in crash data collection, however, a direct comparison with data recorded before 2012 is not possible and the observed reduction has to be interpreted with caution.

Trends in traffic and road safety (1990-2013)

Traffic

Since 1990, the number of vehicles increased by 62% and kilometres driven increased by 59% (2012 data). Until 2008, the average yearly increase of kilometres driven was nearly 3%; in 2008, the trend shifted downward and growth since then has been about 1.2% annually.

Road safety

Crashes and casualties

Between 1990 and 2013, the number of road fatalities decreased by more than 70%. More recently (2000-13), the number of fatalities decreased by 53%. A rise of crash figures in 2012 was artificially induced by the new data collection methodology. As a result, injury crash counts for 2012 and later cannot be compared to previous years.

Rates

The road death rate per 100 000 inhabitants has decreased by more than 70% since 1990, while the number of vehicles per 1 000 inhabitants has increased by 47%.

The substantial decline in the road mortality since 1990 was marked by the implementation of the first two integrated road safety programmes in Austria with a variety of measures including:

- second phase education for novice drivers after granting the driving licence
- automatic section control of average speeds along stretches of motorways
- awareness campaigns in such areas as seat belt and child restraint use, alcohol and child safety
- large-scale roadside testing for alcohol using alcohol screening devices
- penalty point system.

Road safety by user group

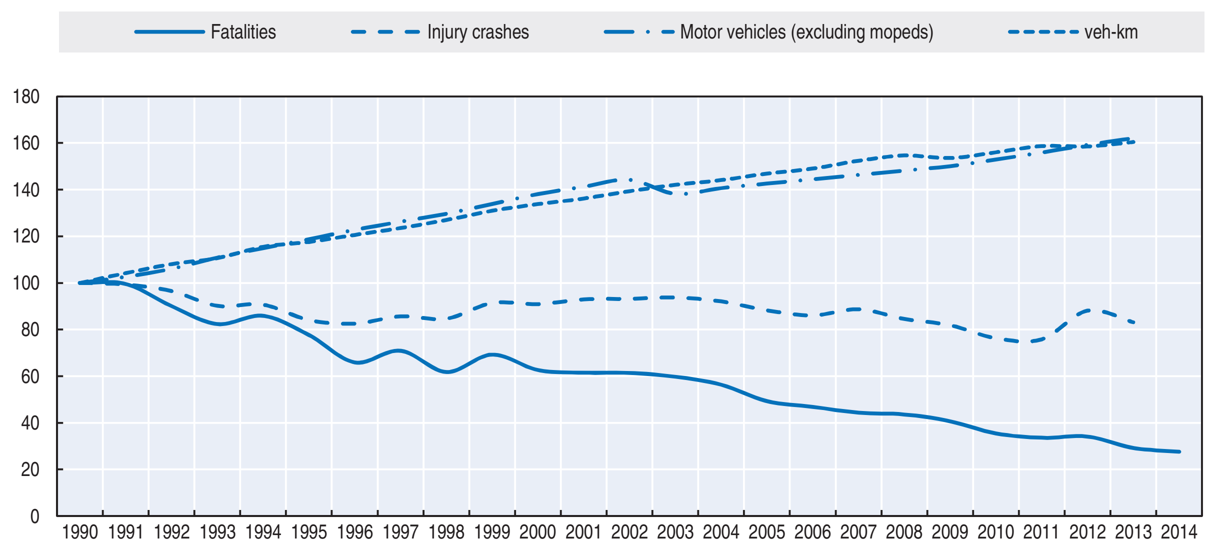
Since 1990, all road users in Austria have benefited from improvements in road safety. Since 2000 fatality reductions were highest among car occupants (-79%), with a substantial further 34% reduction between 2012 and 2013. This positive development is contrasted by

Table 4.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	1 558	976	552	531	455	-14.3	-17.6	-53.4	-70.8
Injury crashes[1]	46 338	42 126	35 348	40 831	38 502	-5.7	-	-	-
Deaths per 100 000 inhabitants	20.4	12.2	6.6	6.3	5.4	-14.8	-18.5	-55.9	-73.6
Deaths per 10 000 registered vehicles[2]	4.2	1.9	1.0	0.9	0.8	-15.8	-22.2	-60.3	-82.0
Deaths per billion vehicle kilometres	32.0	15.0	7.3	6.9	5.8	-15.7	-20.2	-61.3	-81.9
Traffic data									
Registered vehicles[2] (thousands)	3 701	5 111	5 659	5 892	5 999	1.8	6.0	17.4	62.1
Vehicle kilometres (millions)	48 687	65 144	75 957	77 185	78 107	1.2	2.8	19.9	60.4
Registered vehicles per 1,000 inhabitants	484	639	678	701	710	1.3	4.8	11.1	46.6

1. Due to the above change in crash data collection a direct comparison of data on injury crashes, or injured road users, with data recorded before 2012 is not possible.
2. Registered vehicles excluding mopeds.

Figure 4.1. **Road safety and traffic data index 1990 = 100**



Note: Due to the above change in crash data collection a direct comparison of data on injury crashes, or injured road users, with data recorded before 2012 is not possible.

an increase in motorcycle fatalities (28%) and pedestrian fatalities (2.5%). Car occupants represent 40% of all fatalities.

Cycling popularity is increasing in Austria and municipalities are providing additional – and safer – cycling infrastructures. Still, cycling accounts for 11% of all fatalities.

Road safety by age group

Historically, young people represent a high-risk group in road safety. In Austria, in 1990, the highest number of fatalities per 100 000 inhabitants was recorded for persons 18-20 years old (59), followed by the 21-24 years old group (35). In 2013 this rate decreased to eight for both groups and has even gone below the rate for senior citizens (nine fatalities per 100 000 inhabitants of 65+ years, albeit with a significantly lower incidence rate than adolescents in non-fatal crashes).

Table 4.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	106	62	32	52	51	-1.9	59.4	-17.7	-51.9
Moped riders	88	44	18	18	15	-16.7	-16.7	-65.9	-83.0
Motorcyclists	112	112	68	68	87	27.9	27.9	-22.3	-22.3
Passenger car occupants	913	549	292	279	193	-30.8	-33.9	-64.8	-78.9
Pedestrians	260	140	98	81	83	2.5	-15.3	-40.7	-68.1
Others including unknown	78	69	44	33	26	-21.2	-40.9	-62.3	-66.7
Total	***1 558***	***976***	***552***	***531***	***455***	***-14.3***	***-17.6***	***-53.4***	***-70.8***

Among pedestrian and cyclist fatalities, the age group 65+ is overrepresented. Due to the physical frailty of elderly persons, crashes that would result in injuries to younger people more often lead to fatal consequences in this age group.

The mortality rate for motorcyclists in the age group 25-64 has been increasing recently and at 1.4 fatalities per 100 000 inhabitants in 2013, it almost equals the rate of the age group 15-24 (1.5 fatalities per 100 000 inhabitants). The trend is expected to continue.

Child safety

In 2013 in Austria, 10 children were fatally injured in road crashes, four as car occupants, four as pedestrians and two on powered two-wheelers. “Austrian Vision Zero” proclaimed by the Kuratorium für Verkehrssicherheit (KFV) in 2014 aims at zero accidental fatalities for children including drowning, falls, etc., and the road has a high share, accounting for about 40% of all killed children in 2013.

Since 1990 child mortality on Austrian roads was reduced from 4.5 fatalities per 100 000 children under 15 years of age to 0.8 (a decrease to about one-fifth, while overall traffic mortality is decreased to only one-third).

While the share of fatally injured children who are car occupants has remained more or less constant at about 45% since 1990, the share killed as pedestrians has gradually increased from about 30% to 40% in 2013. The Transport Ministry responded to this unfavourable trend with a broad awareness campaign in 2013 that is currently being evaluated.

Child restraint devices have been compulsory in Austria since 1994. Since 2009 all children killed in crashes had a child restraint device applied, with the exception of 2011.

In 2013, no fatal cycle accident occurred among children under 15 years of age. New legislation introduced in 2012, requiring helmets for children under 12 years of age while cycling on the road, may have contributed to this favourable development.

Road safety by road type

In 2013, 67% of fatalities occurred on rural roads, 25% in urban areas and 7% on motorways. This share is only slightly different from previous years with the most relevant change having occurred on motorways.

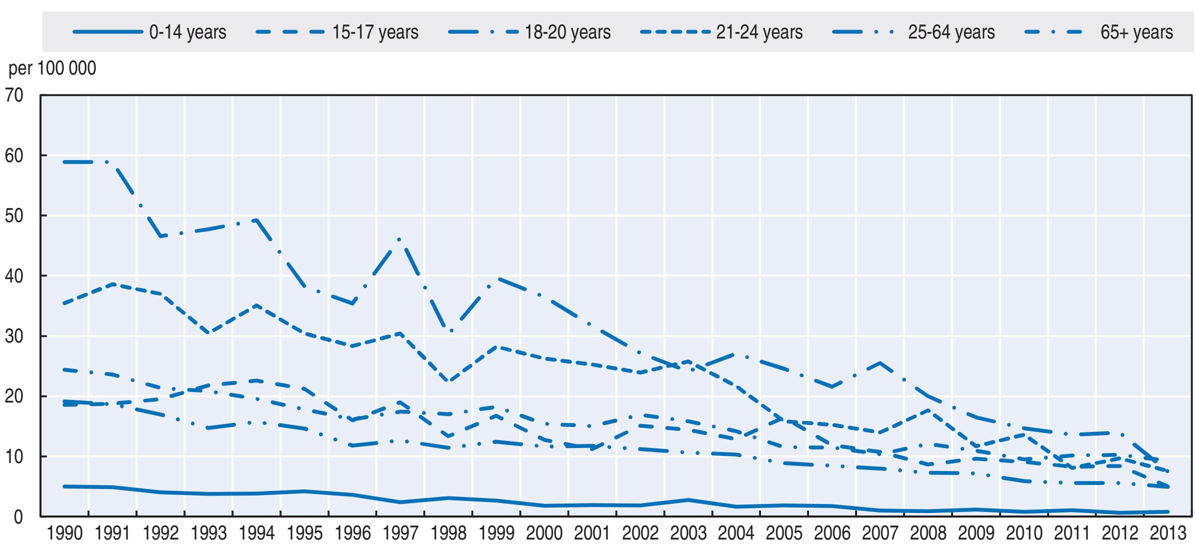
Economic costs of traffic crashes

Traffic crashes represent a very significant cost for the Austrian society, estimated at around EUR 10 billion (about 3.4% of Gross Domestic Product).

Table 4.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from 2012	2010	2000	1990
0-5	32	6	5	1	2	Figures too small for meaningful comparison in %		-66.7	-93.8
6-9	16	5	1	1	1			40.0	-56.3
10-14	19	14	4	6	7			-71.4	-78.9
15-17	55	37	27	24	14	-41.7	-48.1	-62.2	-74.5
18-20	205	105	45	43	23	-46.5	-48.9	-78.1	-88.8
21-24	186	99	57	41	33	-19.5	-42.1	-66.7	-82.3
25-64	764	518	273	261	233	-10.7	-14.7	-55.0	-69.5
≥ 65	278	190	140	154	142	-7.8	1.4	-25.3	-48.9
Total incl. unknown	***1 558***	***976***	***552***	***531***	***455***	***-14.3***	***-17.6***	***-53.4***	***-70.8***

Figure 4.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013



There is no regular update of economic costs of traffic crashes in Austria, but according to a recent study (Herry et al., 2013), the costs of human suffering make up almost half of the crash costs (48% using the "willingness to pay" approach), while the most important other costs are material damage (25%), loss in achievement potential (15% using human capital approach), insurance administration (7%) and legal costs (2%).

Figure 4.3. **Road death rate by age and road user group, 2013**
Fatalities per 100 000 inhabitants

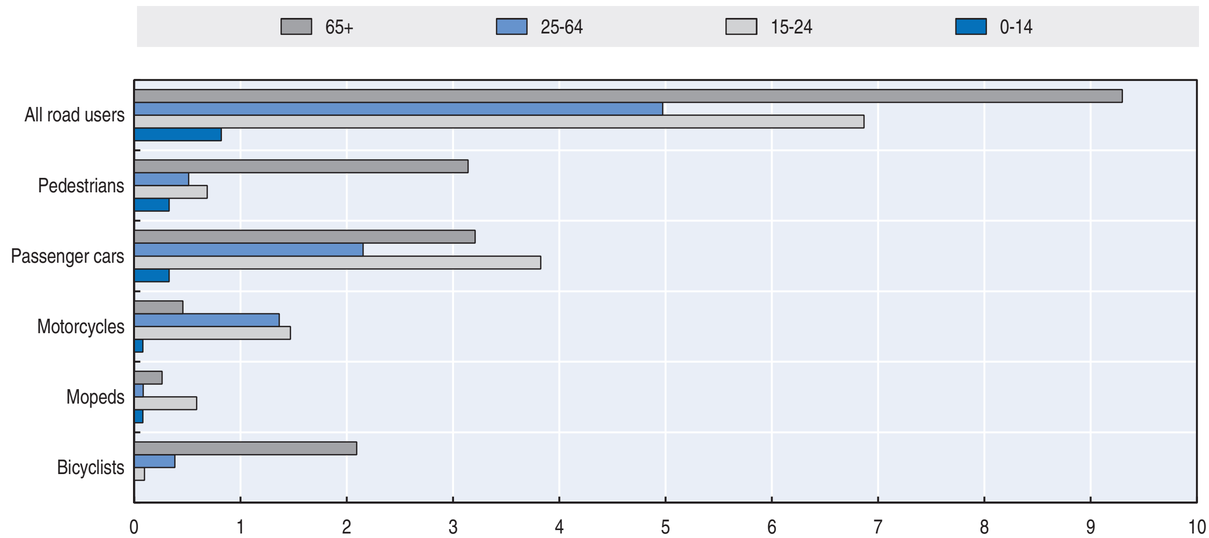


Figure 4.4. **Road fatalities by road type**

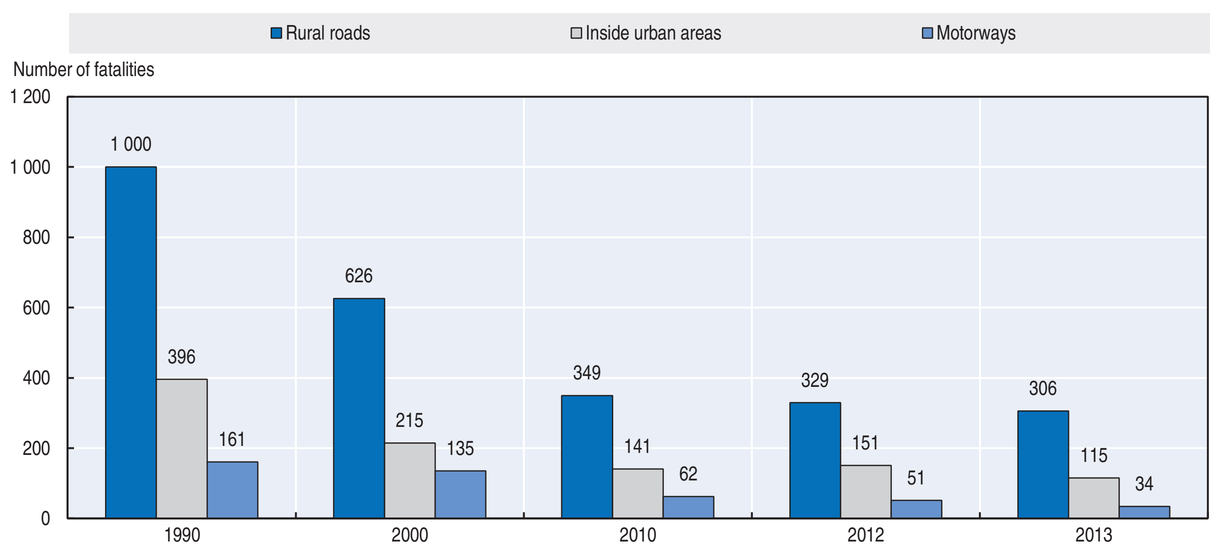


Table 4.4. **Costs of road crashes**

Cost category	Unit cost (EUR)	Costs (EUR billion)
Fatalities	3 016 194	1.58
Hospitalised people	381 480	4.01
Slight injuries	26 894	0.93
Property damage costs	8 245	3.58
Total (EUR)		10.09
Total as % of GDP		3.4%

Source: Herry et al., 2013.

Recent trends in road user behaviour

Impaired driving

Drink driving

To define drink driving crashes, Austria uses the definition recommended by the European Union project SafetyNet: Any crash in which any active participant was found with a blood alcohol level above the legal limit.

The maximum permissible blood alcohol content (BAC) level for drivers in Austria is generally 0.5 g/l since 1998. The level is 0.1 g/l for moped drivers younger than 20 years, novice drivers (holding a licence for less than two years), drivers of trucks of more than 7.5 tonnes and drivers of buses with more than nine seats.

Since 2002, every driver involved in an injury crash is tested for alcohol. However, it is not permitted in Austria to test a corpse or an unconscious person. Therefore the number of unreported cases is believed to be substantial.

In 2013 there were 2 350 drink-driving crashes (-12% compared to 2012) with 3 065 injured persons (-11%) and 31 fatalities (-21%).

Drink driving remains a predominantly male problem. However, the share of drunk females in alcohol-related crashes has been on a steady increase since 2000 (7.7%) and reached 13% in 2013. The share of fatalities in crashes involving an alcohol-intoxicated person decreased from 7.3% in 2012 to 6.8% in 2013.

Drugs and driving

Austrian regulations specify no specific thresholds for drug concentrations. It is forbidden to drive or ride a motor vehicle while under the influence of drugs.

Little is currently known about the prevalence of drugs as a causal factor in accidents. According to subjective assessment of the Austrian police, 4.1% of all injury crashes and 1.9% of all road fatalities were caused by impairment due to alcohol, illicit or medical drugs in 2013 (Statistik Austria, 2014).

Distraction

In 2013, about 37% of all road traffic crashes and 22% of all road fatalities were attributed to inattentiveness or distraction as the main causes for the crash (Statistik Austria, 2014).

In Austria, it is not allowed to drive while using a hand-held mobile phone. However, the use of hands-free devices is tolerated. The use of hand-held mobile phones while cycling was banned in 2013.

Fatigue

The share of fatigue as a causal factor in crashes is especially challenging to detect. According to the Austrian Statistics Bureau and based on police assessment, in 2013, 1.3% of all injury crashes and 4% of all road fatalities were caused by sleepy drivers. The real figures may be significantly higher.

Speed

The problem of speeding has remained comparatively high. Speed, and especially inadequate speed, is one of the main causes of crashes in Austria. According to police assessment in 2013, 15% of all injury crashes and 28% of all road fatalities were caused by inadequate speed (Statistik Austria, 2014).

Due to restrictions in manpower, increases in speed surveillance by traffic police cannot be expected in future, but automatic speed enforcement including section controls will be further developed. The table below summarises the main speed limits in Austria.

Table 4.5. **Passenger car and truck speed limits by road type, 2014**

	General speed limit Passenger cars	General speed limit trucks > 3.5 t
Urban roads	50 km/h	50 km/h
Rural roads	100 km/h	70 km/h
Motorways	130 km/h	80 km/h

Seat belts and helmets

Seat belt wearing has been compulsory in Austria since 1984 in front seats and 1990 in rear seats. The belt wearing rate on front seats has been steadily increasing and was around 95% in 2014, whereas rear seat belts are still used by only 77% of car occupants.

The use of dedicated child restraint devices has been mandatory in Austria since 1994 for children under 14 years of age or less than 150 cm tall.

The share of fatally injured car occupants that were not using a seat belt has gone down from about 50% in 2000 to 33% in 2013.

Table 4.6. **Seat belt wearing rate by car occupancy and road type**

%

	1990	2000	2012	2013	2014
Front seat					
General		76	89	91	95
Urban roads (driver)	63	70	89	91	95
Rural roads (driver)	74	75	88	90	95
Motorways (driver)	75	78	90	92	95
Rear seat					
General		45	75	76	77
Child restraint		71	94	95	99

Helmets are compulsory on all motorised two-wheelers. The helmet-wearing rate by riders of motorised two-wheelers is not surveyed regularly, but it is believed to be at practically 100%.

Since June 2011, helmets are compulsory for children up to 12 years of age on cycles.

National road safety strategies and targets

Organisation of road safety

Primary responsibility for road safety in Austria lies with the Federal Ministry for Transport, Innovation and Technology (BMVIT). BMVIT co-operates with the Federal Ministry of the Interior (BM.I) and other government ministries, regional and local authorities, interest groups, chambers of commerce and industry, trade and labour associations and road safety organisations through the Road Safety Programme.

The Road Safety Advisory Council, established at BMVIT, serves as the institutional platform for partners in the Road Safety Programme. It was established in 2006 as the forum for decision makers in matters relating to road safety and, in particular, for the preparation, ongoing evaluation and development of road safety programmes for all modes of transport. Members are transport spokespersons for the parliamentary political parties, representatives of government ministries, local and regional authorities, automobile clubs, chambers of commerce and industry, trade and labour associations, interest groups and research institutions.

The Austrian Road Safety Fund, also established at BMVIT, was set up with the aim of promoting and furthering road safety. The Road Safety Fund is funded with revenues of personalised vehicle number plates. The Road Safety Fund plays a key role in financing road safety related research and activities relating to the Road Safety Programme. Funding priorities are aligned to Road Safety Programme targets.

Road safety strategy for 2011-2020

Despite significant progress in the last decade, Austrian road safety figures are still only average compared to the European Union as whole and are below average for the EU15 countries. The new Road Safety Programme 2011-2020 aims at "making Austria one of the five safest countries in Europe". It is based on the Safe System approach and has an increased focus on reducing the number of serious injuries on Austrian roads. The Programme features 17 main fields of action.

Road safety targets

Targets are ambitious:

- -50% fatalities by 2020, based on the average for the years 2008-10 (Interim target: -25% by 2015)
- -40% serious injuries by 2020, based on the average for the years 2008-10 (Interim target: -20% by 2015)
- -20% injury crashes by 2020, based on the average for the years 2008-10 (Interim targets: -10% by 2015).

The targets are based on the EU fatality reduction target as well as the European Transport Safety Council proposal for a serious injury reduction target.

Monitoring

To ensure the Road Safety Programme is successfully implemented, the Road Safety Advisory Council provides support in all 17 fields of action throughout the duration of the programme. It will gather and analyse available annual crash statistics, behaviour parameters and safety indicators. Based on this information, measures will be adjusted as required to accommodate changes in road behaviour and crashes.

The interim fatality target for the year 2015 was reached in 2013.

The Annual Report 2013 by the Federal Ministry for Transport, Innovation and Technology (BMVIT, 2013) provides the most recent overview of the implementation status of the Road Safety Programme and therefore serves as an ongoing programme evaluation tool.

Figure 4.5. **Trends in road fatalities towards national target**

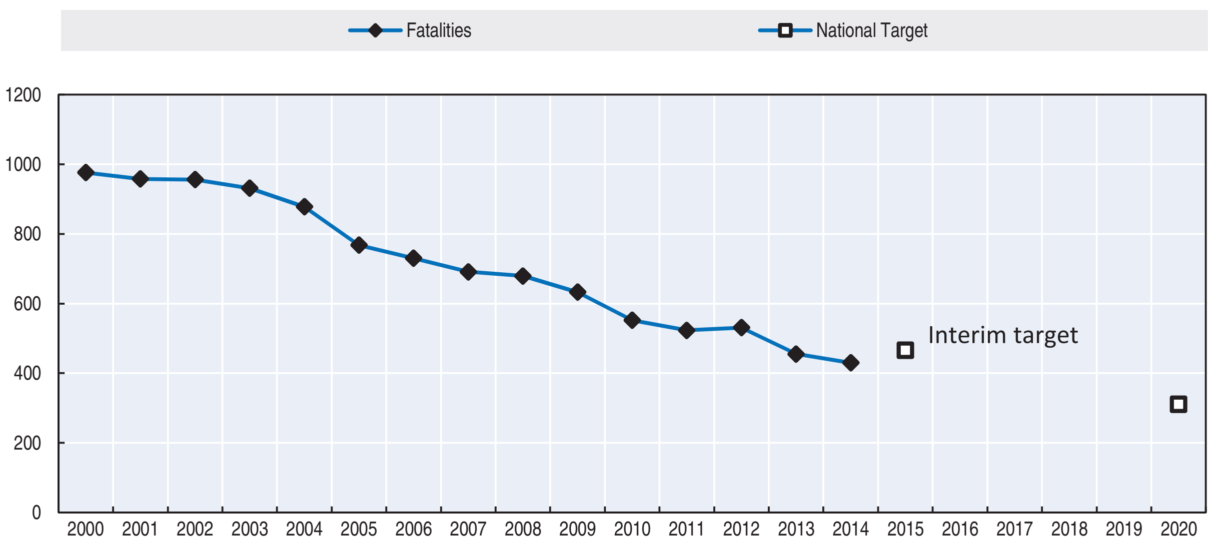
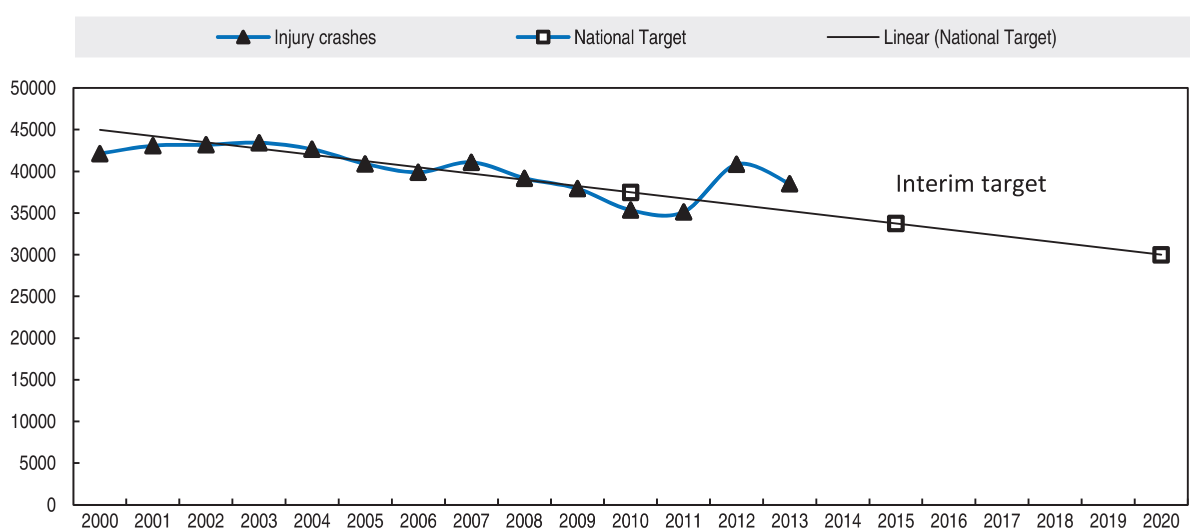


Figure 4.6. **Trends in injury crashes[1] towards national target**

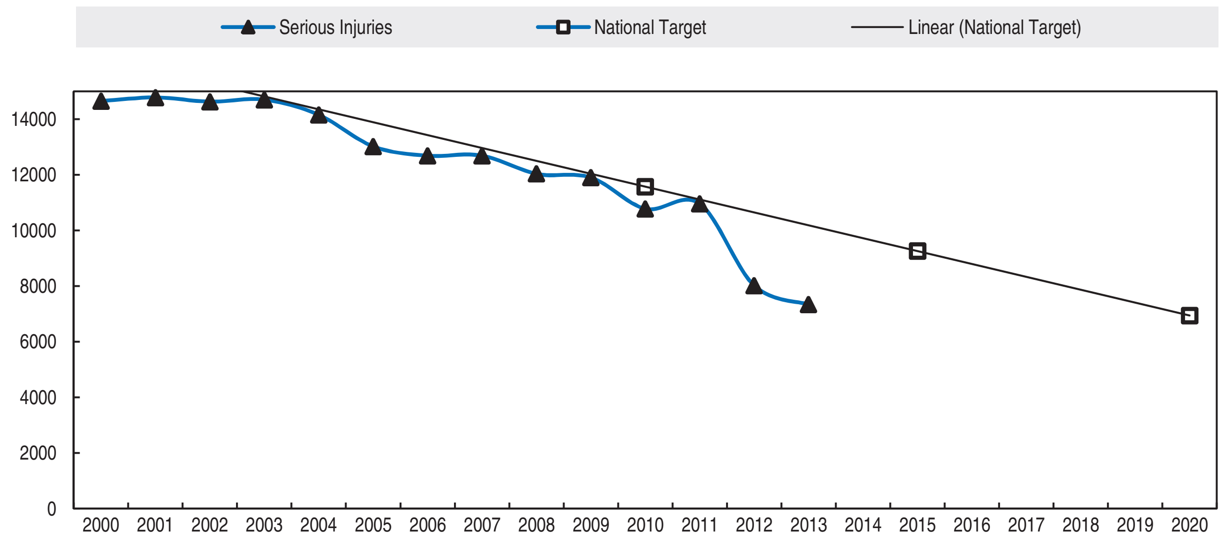


1. Crash data acquisition process changed in 2012.

Evaluation of past road safety strategy

With 552 fatalities in 2010, Austria nearly reached its 50% fatality reduction target of 500 killed set in the Austrian Road Safety Programme 2002-2010. Likewise, a 20% reduction in injury crashes was almost met (35 348 vs. 33 000 [BMVIT, 2013]).

Figure 4.7. **Trends in the number of serious injuries[1] towards national target**



1. Crash data acquisition process changed in 2012.

Recent safety measures (2012-14)

Road safety management

- An Austria-wide mobility survey was launched in 2013. This marks the start of regular nationwide mobility surveys.
- A law on a Risk Assessment System for transport companies (implementation of Directive 2006/22/EC) was passed in 2013.

Road users

Motorcyclist safety

- A late starter motorcycle driving licence (for age group 39+) was introduced in 2014, featuring new modules on risk competence and practical handling of heavy bikes.
- In the general motorcycle second phase rider training (post-licence, category A), risk identification training and a feedback driving session were introduced.

Cyclist safety

- A ban on the use of hand-held mobile phones while cycling was issued in 2013.

Infrastructure

- In 2014, trucks > 7.5 t were banned from using fast lanes on motorways with three or more lanes.
- The Encounter Zone ("*Begegnungszone*") was introduced into the Highway Code in 2013, with a speed limit of 20 km/h. All traffic is allowed on the carriageway, including walking and roller-skating.
- Cycle Roads ("*Fahrradstraße*") were introduced into the Highway Code in 2013. On these roads, powered vehicles have restricted access.

- Flexibility in the compulsory use of cycling paths was introduced in 2013. Authorities are now entitled to decide whether a specific cycling path is to be used by cyclists voluntarily or mandatorily.

Vehicles

- Winter tyres are now obligatory for four-wheeled light vehicles ("Microcars").
- An Austria-wide database on vehicle roadworthiness certificates has been established.

Recent and ongoing research

The Austrian Road Safety Fund (RSF) has been issuing thematic calls for tenders since 2010. The respective themes are defined by BMVIT in line with Road Safety Programme goals and current accident trends. For all RSF projects, reports are available on the BMVIT website (in German, with English abstracts). Some examples are listed here:

- *Objektive Beurteilung von Navigationssystemen* (Assessment of Navigation Systems), *www.bmvit.gv.at/bmvit/verkehr/strasse/sicherheit/fonds/vsf/37_ortung.html*.
- *Einfluss optischer Anzeigen auf Ablenkung, Ermüdung und Konzentration* (Influence of LED-based Variable Message Signs of Distraction, Fatigue and Alertness), *www.bmvit.gv.at/bmvit/verkehr/strasse/sicherheit/fonds/vsf/35_einflussoptischeranzeigen.html*.
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Chapter 5

Belgium

*This chapter presents the most recent accident data for Belgium, as well as an update on the country's road safety strategy and the recently implemented safety measures.**

* All data stem from the Belgian Road Safety Institute and IRTAD unless otherwise noted. For more information please contact: info@ibsr.be or info@bivv.be.

The 1.2% decrease in road fatalities in 2014 mainly occurred during the second and fourth quarters. Lack of progress during the first quarter can be partly explained by mild weather conditions favourable to driving. The 6% reduction in fatalities in 2013 is almost exclusively caused by a strong reduction in fatalities from crashes involving heavy goods vehicles.

Road safety data collection

Definitions applied in Belgium

- Road fatality: Person who died immediately or within 30 days of a crash.
- Seriously injured: Person who stays for treatment for more than 24 hours in a hospital after the crash.

Data collection

Road safety data are electronically collected and centralised by the police force. After some validation procedures, data are transferred to the National Statistics Office. The National Statistics Office carries out some corrections and adds the fatalities occurring within 30 days to the database. This latter operation is done through linking the death certificate, still in paper form, obtained from the Justice Department. The number of road safety fatalities is therefore very reliable.

The number of slightly and seriously injured is the most likely to be underreported, as these are not counter-checked. In 2015 a new procedure is being implemented to take hospital data into account. The data in this report, however, are not corrected for underreporting in police records.

Most recent safety data

Road crashes in 2014 – provisional data

With an estimate of 715 fatalities in 2014 there is a slight decrease in the number of fatalities (-1.2%) compared to 2013 (BIVV, 2014).

The decrease in road fatalities mainly occurred during the second and fourth quarters. Lack of progress during the first quarter can be partly explained by weather conditions favourable to driving. Belgium experienced a mild winter at the beginning of 2014, with just one day of snow: The structural downward trend in the number of injury accidents and injuries was broken.

Road crashes in 2013

With 724 fatalities in 2013, for the second year in a row, there was a strong decrease in the number of fatalities (2012/2011: -11%; 2013/2012: -6 %).

While all user groups show a reduction in injury crashes from 2012 to 2013, the reduction in the fatalities is almost exclusively caused by a strong reduction in fatalities from crashes involving heavy goods vehicles (106 in 2012 vs. 83 in 2013). The decrease from 2011 to 2012 had been mainly achieved due to fewer deaths among motorcyclists, and although the number of motorcyclists killed in 2013 is still lower than in 2011, there was an increase from 2012.

Trends in traffic and road safety (1990-2014)

Traffic

Since 1990, the distance travelled has increased by more than 40%. In the same period, the number of vehicles doubled. After stagnation in vehicle-kilometres between 2007 and 2010, vehicle-kilometres increased again in 2011 and 2012.

Road safety

Crashes and casualties

Between 1990 and 2013, the number of fatalities decreased by more than 60%, and the number of injury crashes by more than 30%. The total change since 2000 amounts to more than 50%.

Around the time of the millennium change, road safety became an issue of great public interest in Belgium. While the number of fatalities had been stagnating or even increased in the late 1990s, the number of fatalities has declined steadily since 2001, the year in which the first national assembly on road safety (*États généraux de la sécurité routière/ Staten Generaal van de Verkeersveiligheid*) initiated many improvements in infrastructure, enforcement and education. The reduction in the number of fatalities in the years following this event is more striking then it seemed at first sight, because between 2001 and 2004 the registration of crashes was revised and strongly improved, which would normally lead to an increase in registered fatalities. The decline has been relatively steady since, with small variations that are probably due to the economic situation (decrease in 2008) or meteorological variations (2010-11).

Rates

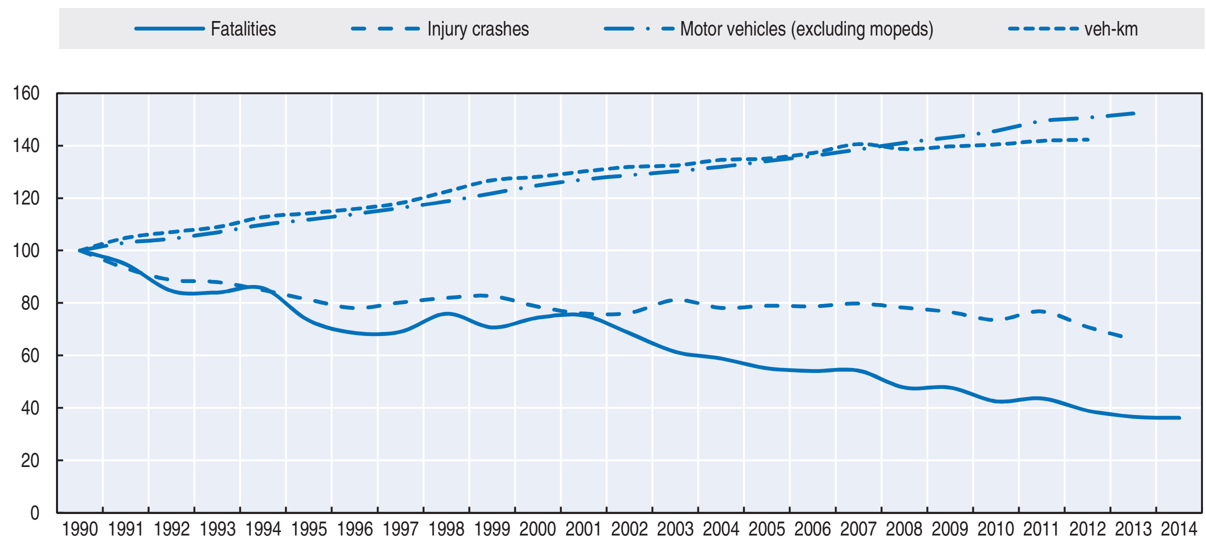
Between 1990 and 2013, the road traffic mortality rate, expressed in terms of deaths per 100 000 inhabitants decreased by more than 60%, and risks expressed in deaths per number of vehicles decreased by more than 70%.

Table 5.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	1 976	1 470	840	770	724	-6.0	-13.8	-50.7	-63.4
Injury crashes	62 446	49 065	45 927	44 234	41 279	-6.7	-10.1	-15.9	-33.9
Injured persons hospitalised	17 479	9 847	5 984	5 277	4 947	-6.3	-17.3	-49.8	-71.7
Deaths per 100 000 inhabitants	19.9	14.4	7.7	6.9	6.5	-6.5	-16.3	-54.8	-67.3
Deaths per 10 000 registered vehicles	4.3	2.6	1.3	1.1	1.0	-7.0	-17.6	-59.6	-75.9
Deaths per billion vehicle kilometres	28.1	16.3	8.5	7.7	7.1	-8.2	-17.0	-56.7	-74.9
Traffic data									
Registered vehicles[1] (thousands)	4 594	5 735	6 689	6 921	6 994	1.1	4.6	21.9	52.2
Vehicle kilometres (millions)	70 276	90 036	98 678	99 977	102 423	2.4	3.8	13.8	45.7
Registered vehicles per 1 000 inhabitants	462	560	617	624	627	0.4	1.5	11.9	35.7

1. Registered vehicles excluding mopeds.

Figure 5.1. **Road safety and traffic data index 1990 = 100**



Road safety by user group

All user groups, but especially pedestrians, cyclists and passenger car occupants have benefited from safety improvements since 1990.

While the number of fatalities for car occupants, pedestrians, moped riders and cyclists have shown a more or less regular decline in the last two decades (from 60% to 85%), fatalities among motorcyclists, and truck and van occupants have shown only a relatively small decrease (20%).

In the last five years there was an average decrease of 23%. However, while fatalities for vans and mopeds show a stronger decrease, the other two-wheelers show smaller improvements and pedestrian fatalities have not declined.

Table 5.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	196	134	70	69	73	5.8	4.3	-45.5	-62.8
Moped users	110	64	22	15	13	-13.3	-40.9	-79.7	-88.2
Motorcyclists	106	118	102	87	102	17.2	0.0	-13.6	-3.8
Passenger car occupants	1 181	922	444	390	342	-12.3	-23.0	-62.9	-71.0
Pedestrians	301	142	106	104	99	-4.8	-6.6	-30.3	-67.1
Others	82	90	96	105	95	-9.5	-1.0	5.6	15.9
Total	***1 976***	***1 470***	***840***	***770***	***724***	***-6.0***	***-13.8***	***-50.7***	***-63.4***

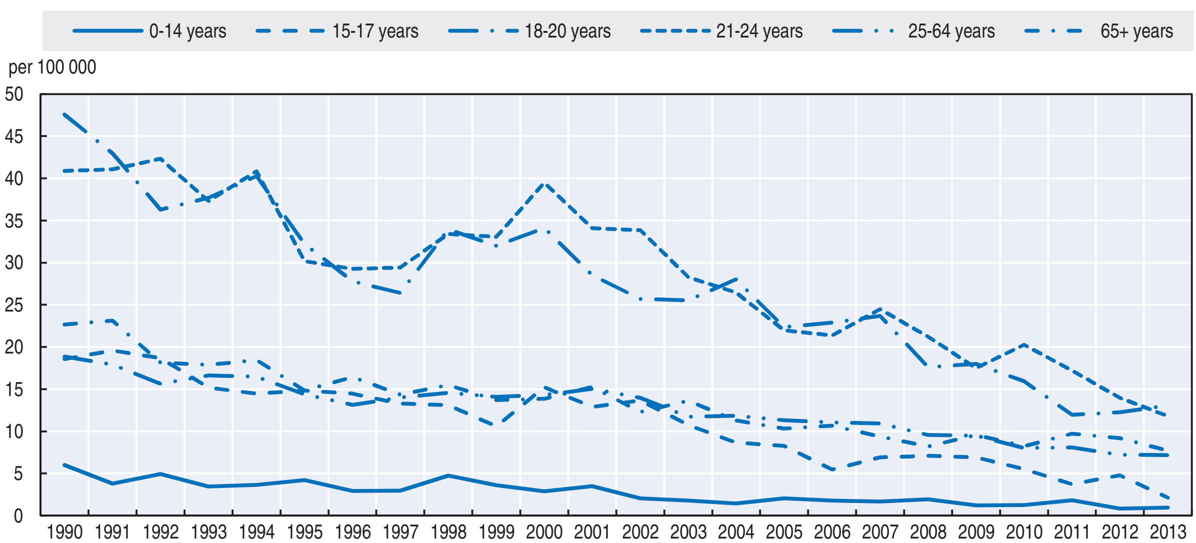
Road safety by age group

Since 1990, the reduction in fatalities has benefited all age groups, but the most impressive reduction concerns children aged 0 to 14 years (-83%). Despite substantial reductions, young people aged 18-24 are still a high-risk group, with a fatality rate nearly twice as high as that of the general population.

Table 5.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	33	17	8	9	5	-44.4	-37.5	-70.6	-84.8
6-9	27	12	6	2	4	100.0	-33.3	-66.7	-85.2
10-14	48	23	9	5	9	80.0	0.0	-60.9	-81.3
15-17	72	55	21	18	8	-55.6	-61.9	-85.5	-88.9
18-20	202	130	64	50	52	4.0	-18.8	-60.0	-74.3
21-24	245	198	107	78	67	-14.1	-37.4	-66.2	-72.7
25-64	992	784	467	430	427	-0.7	-8.6	-45.5	-57.0
≥ 65	334	238	153	177	151	-14.7	-1.3	-36.6	-54.8
Total	***1 976***	***1 470***	***840***	***770***	***724***	***-6.0***	***-13.8***	***-50.7***	***-63.4***

Figure 5.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013



Road safety by road type

In 2013, around half of fatalities occurred on rural roads, 25% in urban areas and 11% on motorways. Since 1991, the greatest reduction in fatalities has occurred on rural roads (-66%).

Economic costs of traffic crashes

In Belgium there is no recent information on the costs of crashes. The most recently published estimate is based on 2002 crash data (de Brabander and Vereeck, 2007). Taking willingness-to-pay into account, the authors state “the total costs of road crashes in 2002 are valued at EUR 7.2 billion (2004 prices)”.

Recent trends in road user behaviour

Impaired driving

Drink driving

In Belgium, the maximum authorised blood alcohol content is 0.5 g/l. Since January 2015 the limit for professional drivers is 0.2 g/l.

Figure 5.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants, 2013

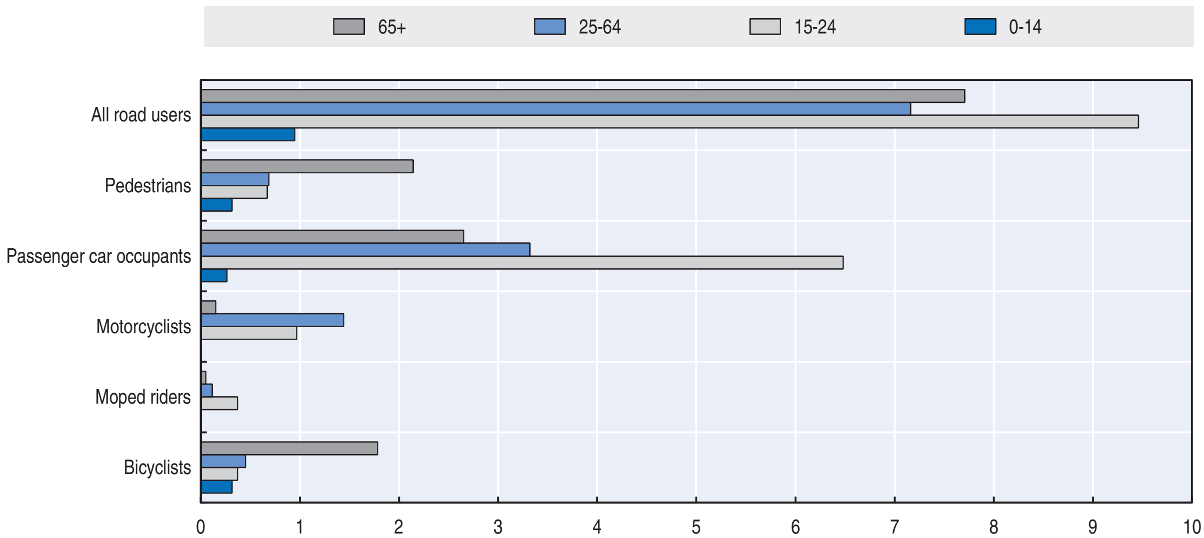
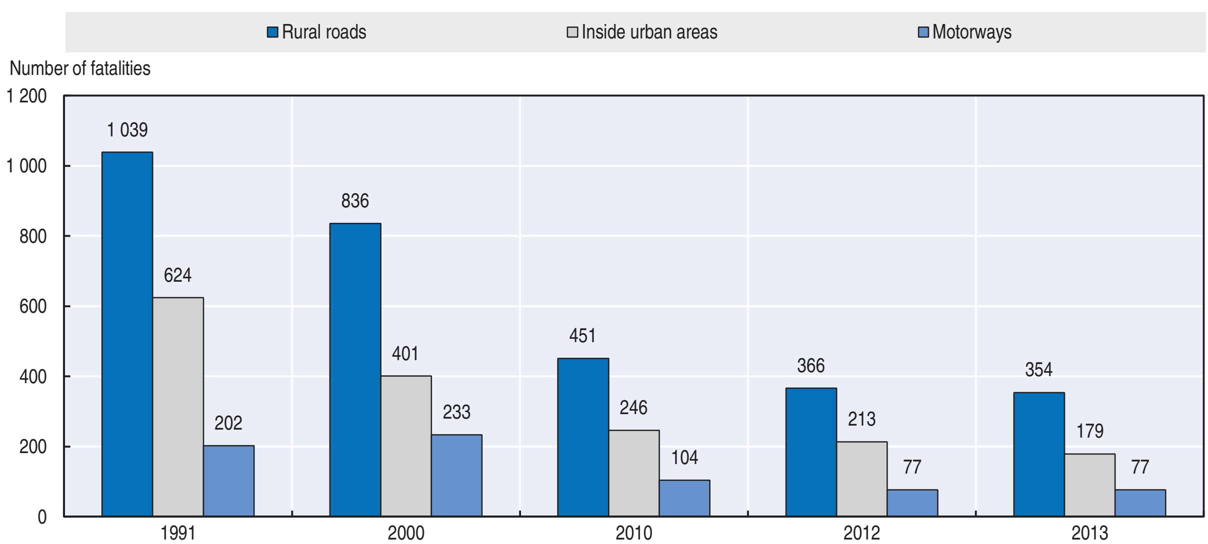


Figure 5.4. **Road fatalities by road type**



An alcohol-related crash is defined as a crash involving a driver who was subjected to a test and either refused to be tested or had a blood alcohol concentration of 0.5 g/l or higher. In 2012, 63% of the drivers involved in crashes were subjected to tests, and 10.5% were either positive or refused to be tested.

Roadside surveys establish that a relatively high percentage of drivers – more than 2% – are under the influence of alcohol. At night more than 7% of drivers are above the legal limit.

Drugs and driving

In Belgium legislation sets limits for driving under the influence of THC or cannabis (1 ng/ml), amphetamines (25 ng/ml), MDMA or ecstasy (25 ng/ml), morphine (10 ng/ml), and cocaine (25 ng/ml).

Drivers suspected of being impaired are tested for drugs. They can also be tested if the driver transports drugs or admits to having taken drugs or is involved in a crash.

The European research project, "Driving Under the Influence of Drugs, alcohol and medicines" (DRUID), found for the sample in Belgium that 0.5% of all drivers drove under the influence of cannabis, 0.4% under the influence of cocaine and 0.2% under the influence of heroin. No trace of amphetamines ("speed" and/or "ecstasy") was found among the population of examined Belgian drivers.

Distraction

The use of hand-held phones while driving is forbidden. The use of hands-free devices while driving is authorised. In a 2013 roadside survey, 2% of drivers were talking on the phone without a hands-free kit. Another 1.2% held the phone in their hand. Drivers of vans and trucks were significantly more often observed with hand-held devices than car drivers. Overall it was estimated that at any time 4% of drivers are using a hands-free or hand-held phone (Riguelle and Roynard, 2014).

Speed

The table below summarises the main speed limits in Belgium.

Table 5.4. **Passenger car speed limits by road type, 2015**

Urban roads	30/50 km/h
Rural roads	70/90 km/h
Motorways	120 km/h

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 87% for drivers and 85% for front seat passengers in passenger cars. Clear progress in seat belt usage occurred between 2003 and 2012. However, the 2010 target of 95% seat belt usage has still not been met.

Since 2006, the Belgian traffic decree specifies that passengers under 18 and smaller than 135 cm must travel in an adapted child restraint device. They can travel either in the front or rear seat if the child restraint system conforms to the latest European standards. There are exceptions to the main rule (Traffic Code, 2012).

Table 5.5. **Seat belt wearing rate by car occupancy**

%

	2003	2012
Front seat		
General	56.6	86.4
Drivers	52.6	87.0
Front seat passengers	65.2	84.9
Rear seats		
Adults		62.8
Children (dedicated restraint system)		79[1]

1. 52% were correctly restrained (appropriate child restraint system without misuse) (Roynard, 2014).

Source: Riguelle (2013), Meesmann and Boets (2014), Roynard et al. (2014).

All riders of motorised two-wheelers are required to wear helmets. Motorcyclists (> 50 cc) also have to wear gloves, boots that protect the ankle and long sleeved/legged jacket and trousers. The helmet-wearing rate by riders of motorised two-wheelers is not systematically monitored for the whole country. In Brussels, the observed rate was 99.3% in 2013.

There is no mandatory helmet-use law for cyclists.

National road safety strategies and targets

Organisation of road safety

The agency responsible for formulating road safety policy priorities in Belgium is the Interministerial Committee for Road Safety. National and regional ministers are members of the committee, which reports to the Federal Minister for Mobility. Although the members are decision-makers, it is up to the ministers to implement decisions in their area and there is no legal impetus for this.

There is no officially-defined lead agency. Recommendations on road safety policy are formulated by the Federal Commission for Road Safety. This is an intersectoral institution which was established as a forum for all stakeholders involved in road safety. The commission includes national and regional government representatives, representatives of the different groups of road users and other non-government organizations, police and justice representatives. The Belgium Road Safety Institute (BRSI) is a research institute that collects data and conducts research on road safety. Research results are then fed into the policy making process. The BRSI managing director chairs the Federal Commission for Road Safety and the BRSI is secretariat of the commission. Thus research and practice are structurally linked.

The road safety programme decided by the Assembly on Road Safety (*États généraux de la sécurité routière/Staten Generaal van de Verkeersveiligheid*) follows the European Commission's targets and timescales. It includes both targets and recommendations for action, and monitoring of progress is planned to be performed half-way through and at the end of the programme.

There is no specific road safety budget from the Federal Treasury. However, taxes on vehicle inspections and driving licence examinations are used to finance BRSI, and fines generated from road safety interventions are passed to the police to be used for further road safety work.

Road safety strategy for 2011-20

A new road safety strategy was released in 2011. The mission, defined in 2001, to achieve a 50% decrease in fatalities over a 10-year period, was renewed for the period 2011-20. The road safety assembly announced 20 recommendations in order to reach this target (*www.cfsr.be*), and the Belgian government approved these recommendations in 2011.

Road safety targets

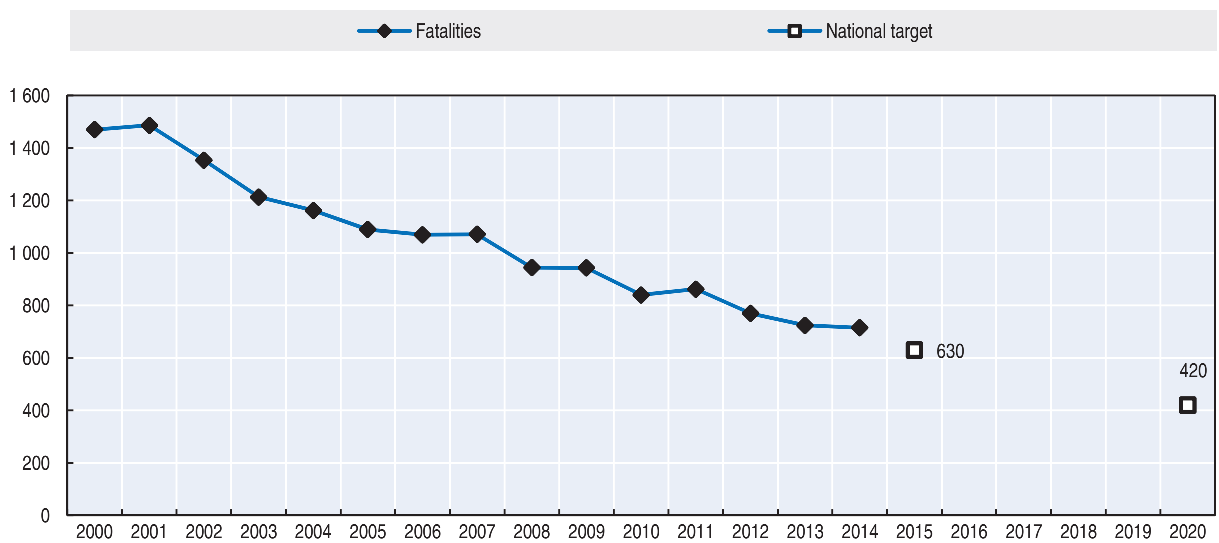
The European target of halving fatalities by 2020 was adopted, meaning fewer than 420 road fatalities. Forecasting based on past development predicts a number higher than 500 fatalities for 2020. Therefore, additional efforts and measures will be required to achieve the target.

Monitoring

Regular monitoring of road safety performance is being undertaken. The results are taken into account by policy makers at the federal and regional levels, but there is no explicit structure for how these are used to define the road safety strategy.

- Monitoring output:
  - A road safety barometer is published four times a year containing the most recent number of fatalities (excluding those who did not die at the scene). Publication lag is two or three months.
  - Full statistical report based on all police-registered injury accidents is published yearly. Publication lag is 18-24 months.
- Representative safety performance measures:
  - roadside surveys every three years of driving under the influence of alcohol, speed and seat belt use (next measurements foreseen in 2015)
  - annual survey of national opinions on road safety
  - survey of road safety attitudes, acceptance of measures and self-reported behaviour.

Figure 5.5. **Trends in road fatalities towards national target**



Recent safety measures (2012-14)

Road safety management

Driving licence

- The driving licence for motorcyclists was reformed in May 2013.

Speed management

- Belgium's first speed camera system to control average speed on a section of highway was put into operation in June 2012, and three more sections were added in March 2013. A nine-month evaluation of one of those showed a reduction of the mean speed by 5 km/h. Speed violations were reduced by 71% and severe violations (> 10 km/h) by 85%. The number of crashes was reduced by 26% (University of Hasselt, 2014). Four more sections were added in 2014, and average speed control is expected to rise to about 20 sections in 2015.

Enforcement

Recidivism

- The time span defining recidivism was standardised in February 2012 and is currently three years. Recidivism punishment is more severe, with a prolonged duration of the driving ban, and four reintegration exams are mandatory.

Driving under the influence of alcohol

- Since January 2015, the maximum legal alcohol limit for professional drivers is 0.2 g/l, while 0.5 g/l remains the maximum level for other drivers.

Seat belt and helmet use

- More severe penalties were introduced in March 2013 for non-wearing of seat belts or non-use of child restraint systems.

Fines and vehicle immobilisation

- Since July 2013, customs officials are allowed to immobilise a vehicle in case of outstanding traffic fines.
- Since January 2013 non paid police fines in case of certain traffic offences will be settled more quickly with an order for payment by the prosecutor. If this order is not paid, the amount can be claimed by the Ministry of Finance.

Road Safety Campaigns

Road safety campaigns are regularly conducted to encourage:

- designated drivers (Bob campaigns) against drink driving
- social disapproval of speeding targeting 25-39 year-old drivers
- safe driver behaviour and more respectful attitude towards other road users
- safety for motorcyclists, other road users and novice drivers
- safety belt use
- safe seasonal behaviour (Focus Back2school and back2business)
- young drivers to be safe throughout the year
- safer speeds with an emotional and confrontational approach
- non-distracted driving (“Beep beep! Boem Boem!” campaign) targeting 18-29 year-old drivers.

Vehicles

- Upon advice from the Belgian Road Safety Institute it has been decided not to make winter tyres mandatory.
- New guidelines for the technical inspection of vehicles adapted to the needs of disabled drivers were adopted to allow for a more strict application of homologation criteria. Changes concern inspection procedures (approval of adaptations by certified manufacturers or specialised inspection centres) and the registration of changes

(BEVASYS). Some adaptations routinely performed, such as adapted seats or pedals, may not easily meet these criteria (*http://bivv.be/frontend/files/userfiles/files/cara-keuring%20frans.pdf*).

- The insurance policy of all vehicles registered in Belgium will be checked during the technical inspection to reduce the number of uninsured vehicles (November 2013).
- New license plate combinations enable vehicle categories to be more easily distinguished.

Infrastructure

- Since March 2014, alternate merging is mandatory in case of congestion. This is actually not a road safety measure but a road capacity measure.
- Eight new signs were added to the Code (in particular to better manage cycling traffic).
- Cycle roads were created in February 2012 on which cyclists have priority.
  - On cycle roads, the cyclist can use the full width of the street when it is open in one direction and half the width on the right side when it is open to two-way traffic.
  - Motor vehicles can circulate on the cycle roads but cannot pass cyclists, and speed can never be greater than 30 km/h.

Recent and ongoing research

- The methodology for evaluating campaigns has been updated and now contains pre- and post-measurements based on the recommendations of the European Commission's Campaigns and Awareness Raising Strategies in Traffic Safety. In 2014 three national campaigns have been evaluated with this methodology.
- The Belgian Road Safety Institute has completed the following projects:
  - @Risk. Analysis of the risk of serious or fatal injuries in traffic according to age and mode of transport: Summary.
  - Statistical analysis of the road traffic accidents resulting in death or injury that were registered in Belgium in 2012: Summary.
  - Belgium within European context: Comparative analysis of road safety performances: Summary.
  - How severe are the injuries of victims of road traffic accidents Analysis of the MAIS severity scale for injuries suffered by victims of road traffic accidents hospitalized in Belgian hospitals between 2004 and 2011: Summary.
  - The BRSI three-yearly road safety attitude survey. Appendix Methodology & Questionnaire. Results on speeding, alcohol, seat belt, distraction and public support available in separate chapters: Full report.
  - Are there more accidents in the rain? Exploratory analysis of the influence of weather conditions on the number of road accidents in Belgium: Summary.
  - Fatalities on highways. In-depth analysis of fatal road traffic accidents on Belgian motorways between 2009 and 2013: Summary.
  - Motorcycle Accident Causation: Factsheet.
  - Influence of social norm and probability to get caught for driving under influence of alcohol: Belgium compared to 18 European countries: Research report.

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Websites

- BIVV-IBSR(Belgian Road Safety Institute): *www.bivv.be* (Dutch)/*www.ibsr.be* (French).
- BIVV-IBSR research reports: *http://ibsr.be/fr/presse/etudes-et-statistiques* (French); *http://ibsr.be/nl/pers/onderzoek-en-statistieken* (Dutch).
- Statistical report: *http://ibsr.be/fr/presse/etudes-et-statistiques/statistiques-d-accidents* (French); *http://ibsr.be/nl/pers/onderzoek-en-statistieken/verkeersongevalstatistieken* (Dutch).
- Road Safety barometer: *http://ibsr.be/fr/presse/baromètre-de-la-sécurité-routière* (French); *http://ibsr.be/nl/pers/verkeersveiligheids-barometer* (Dutch).
- Federal Commission for Road Safety: *www.cfsr.be* (French) *www.fcvv.be* (Dutch).
- Vlaamse stichting verkeerskunde: *www.vsv.be/nl/home*.
- Conseil supérieur wallon de la sécurité routière: *www.cswsr.be*.
- Agence wallonne pour la Sécurité routière: *www.awsr.be*.
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- Steunpunt Verkeersveiligheid: *www.steunpuntverkeersveiligheid.be/en*.

Chapter 6

Cambodia

*This chapter presents the most recent crash data for Cambodia, as well as an update on the Cambodian road safety strategy and recently implemented safety measures.**

* All data stem from National Road Safety Committee unless otherwise noted. The National Road Safety Committee joined the International Road Traffic and Accident Database (IRTAD) group in 2010. Data presented in this report are data reported by police and are under validation by IRTAD. Actual numbers are likely to be higher. For more information please contact: voun.chhoun@gmail.com.

Rapid increases in motorisation and large numbers of young people have resulted in steadily increasing road fatalities in Cambodia. Road deaths rose 51% between 2006 and 2014. Road crashes disproportionately affect the most vulnerable road users. Motorcycles make up 80% of registered vehicles and account for nearly 70% of fatalities. The Royal Government of Cambodia has committed to a national road safety action plan to reduce road fatalities by 50% in 2020.

Road safety data collection

Definitions applied in Cambodia

- Road fatality: Person who died immediately in a crash or within 30 days.
- Seriously injured person: Person injured in a traffic crash and hospitalised for at least eight days due to crash injuries. At this stage, it is not envisaged to adopt a definition based on the Maximum Abbreviated Injury Scale.

Data collection

The Road Crash and Victim Information System (RCVIS) was initiated and developed by Handicap International, in close collaboration with the Ministry of Health, the Ministry of the Interior, and the Ministry of Public Works and Transport. Data are reported by traffic police and health facilities nationwide. Currently, the ministries of health and interior are in charge of data collection at provincial level and provide a soft copy to the National Road Safety Committee (NRSC).

The NRSC combines data from the ministries of health and interior using a data-linkage system developed with support from the Institute for Road Safety Research (SWOV) of the Netherlands, in the framework of twinning under the International Road Traffic and Accident Database. Duplicate entries are automatically identified. Work is ongoing to assess the level of underreporting.

Most of the data are available from 2006. Data presented in this report are data *currently reported* by the police and are under validation process by IRTAD. Actual numbers are likely to be higher.

Most recent safety data

Road crashes in 2014 – provisional data

Based on provisional data for 2014, the number of reported road fatalities increased by 11.3%.

Road crashes in 2013

In 2013, RCVIS reported 1 950 fatalities, a 1% decrease compared to 2012. On average, road crashes caused more than five fatalities and 15 injuries every day. Vulnerable road users (pedestrians, cyclists and users of motorised two-wheelers) represented 80% of all road fatalities.

Trends in traffic and road safety (2006-14)

Traffic

Cambodia motorisation is rapidly increasing. Since 2006, the number of motorised vehicles has tripled. In 2013 alone there was a 13% increase in the number of registered vehicles. Powered two-wheelers account for 80% of the motor vehicle fleet and play an important role in day to day life of people and in the transport sector.

Road safety

Crashes and casualties

Between 2006 and 2014, the reported number of fatalities in RCVIS increased by 51%. This dramatic increase is explained by the economic boom, the tripling of registered vehicles and the young population, as well as the reconstruction of paved roads over the last five years. Road crashes disproportionately affect the most vulnerable road users (motorcyclists, pedestrians and cyclists).

Traffic crashes have major impacts on both the social economy and welfare of Cambodia and are one of the major causes of mortality. Unless additional road safety actions are taken, the number of fatalities in Cambodia could increase to 3 200 by 2020. Therefore, the Royal Government of Cambodia has committed to develop a national road safety action plan 2011-20 in order to reduce the number of road fatalities in 2020 by 50% from the estimated forecast of 3 200 road deaths.

Rates

In 2014, the reported death rate per 100 000 inhabitants was 14.3, an increase by nearly 10% compared to 2013.

From 2006 to 2014, the reported fatalities rate per 10 000 vehicles decreased rapidly from 18.1 to 7.9 as the number of number of registered vehicles increased rapidly. The figure is high compared to other IRTAD countries.

Table 6.1. **Road safety and traffic data**

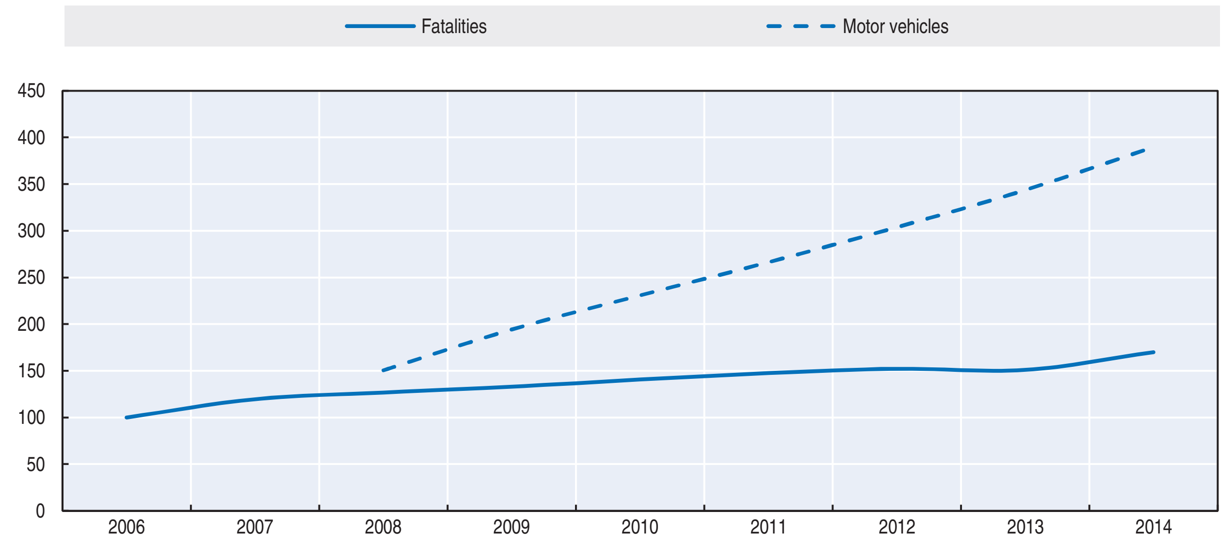
	2006	2010	2012	2013	2014	2014 % change over		
						2013	2010	2006
Reported safety data								
Fatalities	1 292	1 816	1 966	1 950	2 170	11.3	19.5	50.9
Injury crashes		18 287	15 615	16 227				
Deaths per 100 000 inhabitants	9.6	12.7	13.3	13.0	14.3	9.7	12.6	35.7
Deaths per 10 000 registered vehicles	18.1	11.0	9.0	7.9	7.8	-1.3	-29.1	-56.4
Traffic data								
Registered vehicles (thousands)	715	1 650	2 175	2 457	2 786	13.0	48.9	243.6
Registered vehicles per 1 000 inhabitants		115	147	149	151	1.3	29.2	

Source: RCVIS. Safety data are those currently reported by the police. Actual numbers are likely to be higher.

Road safety by user group

Vulnerable road users (motorcyclists, pedestrians and cyclists) represent more than 80% of traffic casualties in Cambodia. Riders of motorised two-wheelers are the most vulnerable road users. In 2014, they represented 80% of the motorised vehicle fleet and 72% of all fatalities. Improving the safety of motorcyclists is a key priority in Cambodia.

Figure 6.1. **Road safety and traffic data index 2006 = 100**



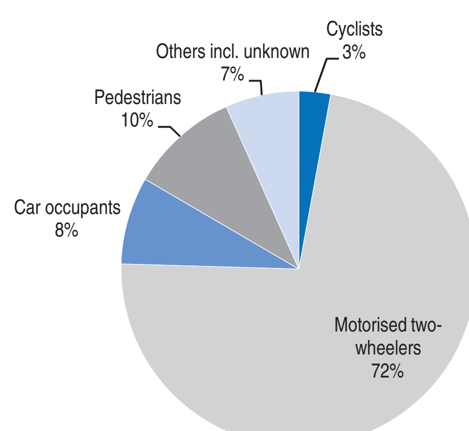
Source: RCVIS.

Table 6.2. **Reported road fatalities by road user group**

Road users	2008	2009	2010	2011	2012	2013	2014	*2014 % change over*		
								2013	2010	2008
Cyclists	71	65	72	51	77	45	63	40.0	-12.5	-37
Motorised two-wheelers	1 107	1 218	1 209	1 262	1 340	1 351	1 574	16.5	30.2	22
Passenger car occupants	115	79	140	144	155	165	173	4.8	23.6	43
Pedestrians	207	215	217	255	207	246	215	-12.6	-0.9	19
Others incl. unknown	138		178	254	187	143	145	1.4	-18.5	4
Total	1 638	1 717	1 816	1 905	1 966	1 950	2 170	11.3	19.5	19

Source: RCVIS. Safety data are those reported by police. Actual numbers are likely to be higher.

Figure 6.2. **Share of road fatalities by user group, 2014**



Source: RCVIS.

Road safety by age group

In 2013, the 20-24 age group accounted for 21% of total fatalities, while they represented only 11% of the total population. About half of total fatalities are between 15 and 29 years old. In 2014, the 21-24 age group has the highest fatality rate with 31 deaths for 100 000 inhabitants.

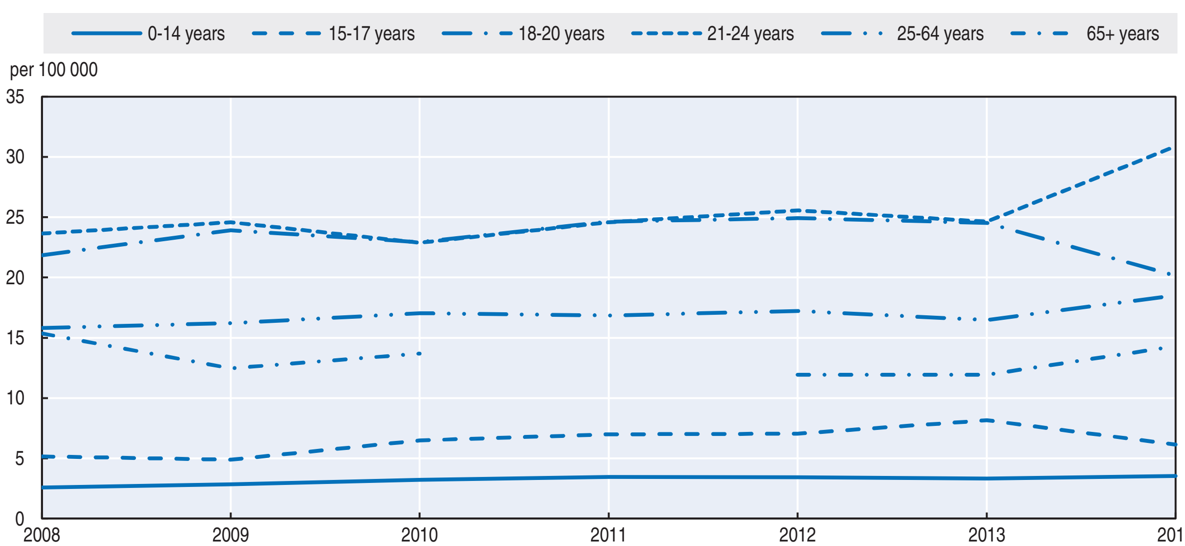
The elderly (above 65) are particularly vulnerable as pedestrians.

Table 6.3. **Reported road fatalities by age group**

Age	2010	2011	2012	2013	2014	*2014 % change over*	
						2012	2010
0-5	49	47	43	50	60	*20.0*	*22.4*
6-9	50	60	58	66	45	*-31.8*	*-10.0*
10-14	49	51	55	35	55	*57.1*	*12.2*
15-17	68	73	73	83	61	*-26.5*	*-10.3*
18-20	228	250	257	254	208	*-18.1*	*-8.8*
21-24	271	302	325	322	412	*28.0*	*52.0*
25-64	1 000	1 020	1 075	1 061	1 231	*16.0*	*23.1*
65+	84	90	77	79	98	*24.1*	*16.7*
Total incl. unknown	1 816	1 905	1 966	1 950	2 170	*11.3*	*19.5*

Source: RCVIS, data are those reported by police. Actual numbers are likely to be higher. 2014 data are provisional.

Figure 6.3. **Reported road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 2008-13



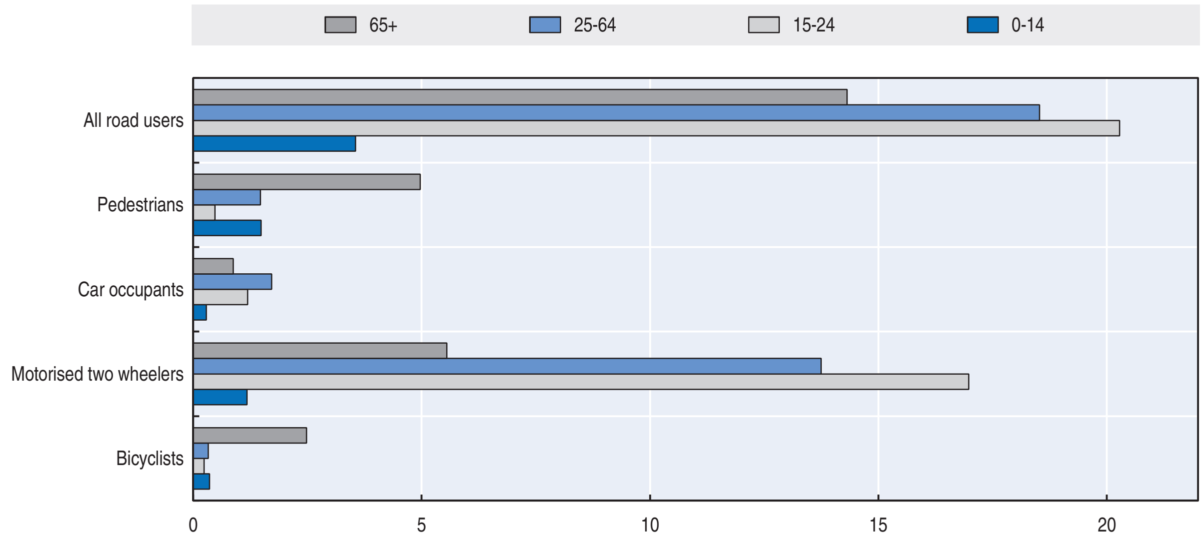
Source: RCVIS. Data are those reported by the police. Actual numbers are likely to be higher.

Road safety by road type

In Cambodia, the roads are classified as follows:

- National roads: Long roads connecting provinces.
- Provincial roads: Roads connecting districts within a province.
- Main and minor roads in cities and towns: Small/short roads.
- Local road/track: Small roads in villages.

Figure 6.4. **Reported road death rate by age and road user group**
Fatalities per 100 000 inhabitants, 2013



Source: RCVIS. Data are those reported by police. Actual death rates are likely to be higher.

There is no motorway network in Cambodia. The large majority of fatalities (65%) occur on national roads.

Economic costs of traffic crashes

It is estimated that in 2013 the economic cost of road crashes equalled approximately USD 337 million. This represents 2.3% of the Gross Domestic Product of Cambodia. The cost was estimated by Handicap International based on a methodology developed by the Asian Development Bank and updated by Handicap International Belgium and Hasselt University (2012).

The capital approach (human capital method) was used to calculate the cost of road crashes, which includes property damage costs, administrative costs, medical costs, lost output cost and human costs.

Recent trends in road user behaviour

Impaired driving

Drink driving

The maximum authorised blood alcohol content (BAC) is 0.5 g/l for all drivers. A drink-driving related crash is defined as a crash caused by a road user with a BAC over the limit.

Drink driving is the second major cause of road crashes and casualties in Cambodia after speeding. In 2013, 14% of reported fatalities were due to drink driving. The number of alcohol related fatalities increased by 14% over 2012.

In 2013, a peak of drink-driving fatalities was observed between 6 p.m. and 7 p.m. (13%). Saturdays, Sundays and Mondays had the highest percentages of alcohol related fatalities: 20%, 16% and 15% respectively. The percentage of fatalities during night time (57%) was higher than during day time. According to RCVIS, 92% of at-fault drivers in drink-driving crashes were motorbike drivers.

Drugs and driving

Cambodia has neither a legal framework nor facilities to enforce drug driving penalties.

Distraction

The new land traffic law bans hand-held mobile phones while driving. Hands-free phones can be used.

Speed

Excessive speed is the leading cause of traffic crashes in Cambodia, responsible for nearly half of fatalities in 2013.

The number of speeding related fatalities decreased by 12% in 2013. Until 2013, the number of speeding related fatalities was increasing annually due to the development of roads and road rehabilitation throughout the country, allowing drivers to drive faster.

The table below summarises the main speed limits in Cambodia.

Table 6.4. **Speed limits by road type and vehicle type, 2015**

	Motorcycles, tricycles	Passenger cars
Inside built up areas	30 km/h 40 km/h on national roads	40 km/h
Outside built up areas	90 km/h	90 km/h

Source: RCVIS.

Seat belts and helmets

Seat belt wearing has been compulsory on front seats since 2007. Seat belt wearing is not compulsory for rear-seat passengers. Enforcement is weak and the rate of use is low.

Babies less than 10 months old must use a baby seat with the safety belt firmly attached. Children between 10 months and 4 years old must use a child seat with safety belt attached. Children less than 10 years old in front seats must be accompanied by an adult and must wear a seat belt. The compliance rate is low.

In 2013, 83% of passenger car drivers who died in a crash did not wear a seat belt.

Table 6.5. **Seat belt wearing rate by car occupancy and road type**

%

	2009	2010	2011	2012
General	23	30	27	16
Urban roads (driver)	52	41	44	
Rural roads (driver)	42	35	41	

Source: RCVIS.

Helmet wearing is compulsory since 2007 for operators of powered two wheelers over 49 cc, for motorcycles with trailers and for motorised tricycles. Helmets are not compulsory on mopeds below 49 cc. The mandatory use of helmets by passengers is under discussion and could become law in 2015.

The helmet wearing rate is low, and 80% of motorcycle drivers killed in a road crash did not wear a helmet, and 99% of killed child passengers did not wear a helmet.

National road safety strategies and targets

Organisation of road safety

The National Road Safety Committee (NRSC) was established in 2005 as the lead agency for road safety, under the responsibility of the Ministry of Transport and Public Works. Its role is to manage and co-ordinate all road safety activities in Cambodia. In the framework of the new traffic law, expected to come into force in 2015, oversight of the NRSC will be shifted to the Ministry of Interior.

Road safety strategy for 2011-2020

In order to respond to the current situation with road traffic accidents, the NRSC has developed the National Plan for Road Safety 2011-20, based on the Action Plan developed to support the United Nations Decade of Action for Road Safety. The plan was submitted to the Prime Minister and was approved by the Council of Ministers in 2014.

The IRTAD twinning programme allowed the NRSC to collaborate with Handicap International, the Institute for Road Safety Research of The Netherlands and Road Safety for All. Collaboration was instrumental in developing the road safety strategy and defining targets and performance indicators to monitor progress. The Action Plan consists of seven Pillars:

- road safety management
- infrastructure
- safe vehicles
- safe road user behaviour
- post-crash care
- traffic law legislation and enforcement
- driver licensing
- better transport services for passengers and cargo.

Measures are chiefly focused on the main risk factors, which are the absence of helmets, speeding and drink-driving.

Road safety targets

This plan includes, for the first time, quantified national targets and safety performance indicators. The main target is to reduce the forecasted number of fatalities by 50% by 2020, as recommended by the United Nations.

Monitoring

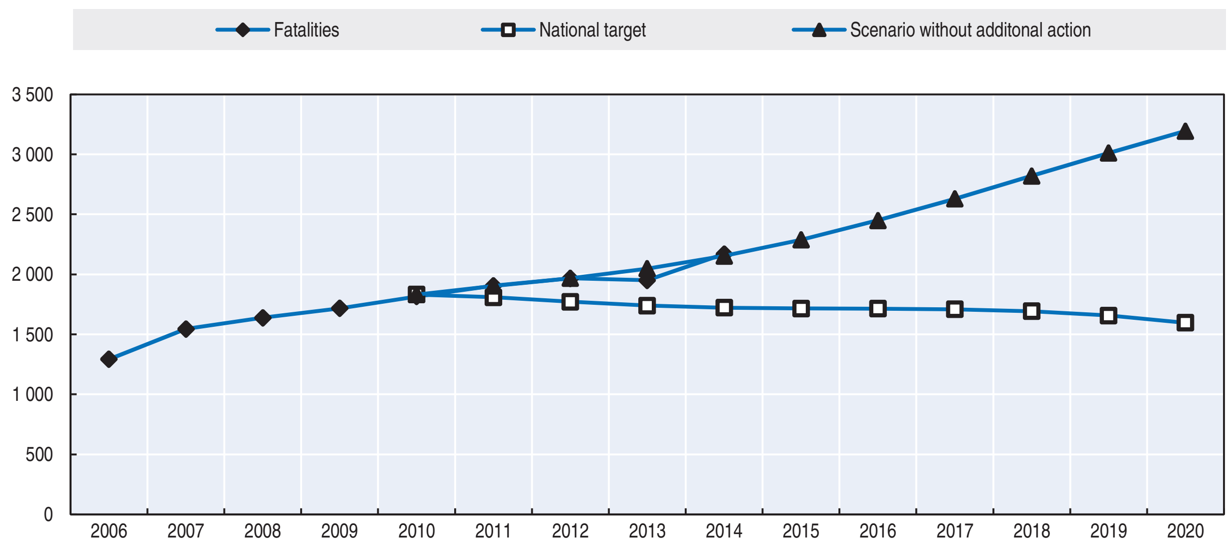
Monitoring tools have been developed in the co-operation between Cambodia and the Netherlands. The tools include:

- Analysis of data from the RCVIS:
  - fatalities and trends (by age groups, road users, provinces, etc.)
  - fatalities caused by head injuries, speeding and drink-driving.
- Observational studies:
  - helmet-wearing rate during daytime and night-time
  - drink driving measurement
  - speed measurement: average speed, percentage of drivers exceeding the limit, etc.

- Roadside surveys/interviews to improve knowledge on attitudes and practices:
  - helmet wearing
  - drink-driving
  - speeding.

It is estimated that unless additional road safety actions are taken, the number of fatalities in Cambodia will increase up to 3 200 by 2020. The target is therefore to reduce the number of fatalities to less than 1 600. If the targets is achieved progressively, 7 350 lives will be saved.

Figure 6.5. **Trends in road fatalities towards national target**



Source: RCVIS. Data are those reported by police. Actual death rates are likely to be higher.

Recent safety measures (2013-14)

Infrastructure

- Measures implemented since 2012 focus on engineering solutions to reduce speed, particularly in zones with a high volume of vulnerable road users, such as schools and residential areas.
- Black-spot improvement programmes along the national road network, as well as road safety audits, are planned.

References

Handicap International Belgium and the Institute of Mobility – Hasselt University of Belgium (2012), *Cost Analysis of Road Crashes in Cambodia*. Phnom Penh: Handicap International Belgium, 2012.

Website

- National Road Safety Committee**:** *www.nrsc.gov.kh*.

Chapter 7

Canada

*This chapter presents the most recent crash data for Canada, as well as an update on the Canadian road safety strategy and recently implemented safety measures.**

* A complete set of data for the year 2013 was not available when this report was prepared; therefore this report is primarily based on 2012 data, however, 2013 data have been provided where possible. All data stem from Transport Canada and IRTAD unless otherwise noted. For more information, please contact: kim.benjamin@tc.gc.ca.

Canada has seen long-term reduction in road crash casualties. Based on preliminary data, the 1 923 motor vehicle fatalities in 2013 were 7% below those of 2012. Examining the casualty data in 2012 against comparable data from 2006 to 2010 shows that the least amount of progress in reducing fatalities was observed with crashes involving vulnerable road users and crashes involving commercial vehicles.

Road safety data collection

Definitions applied in Canada

- Road fatality: Person who died as a result of a reportable motor vehicle crash within 30 days of its occurrence.
- Seriously injured person: Person admitted to hospital for treatment or observation.

Data collection

Transport Canada has a well-established road safety data programme and has been reporting on motor vehicle crash statistics since the 1970s. Police-reported road traffic crash information is collected and processed by provinces and territories and is then sent to Transport Canada for final processing and for compilation of national crash statistics.

Transport Canada considers the motor vehicle crash data to be relevant, of good quality overall and reliable for most analytical purposes. However, there are areas for improvement, as some specific data variables are not provided by certain jurisdictions or consistently reported by all of them. Availability challenges with respect to some variables can limit the scope and degree of analysis in some instances. In some cases, where data has not been received from all jurisdictions within Canada, methodologies are used to ensure that national estimates take into account any non-reporting.

Transport Canada is currently working with provincial and territorial road safety partners in the area of electronic data collection and other initiatives aimed at improving the timeliness and accuracy of motor vehicle crash data.

A *National Collision Database* online web application is a query tool that contains national level statistics on vehicle crashes occurring on public roads in Canada. Approximately 23 of the data elements contained in the *National Collision Database* are available to users, so that they can select and extract data of interest to them. A second version created for provinces and territories allows access to more detailed information.

Most recent safety data

Road crashes in 2013 – provisional data

Based on preliminary data, in 2013 motor vehicle fatalities (1 923) and serious injuries (10 315) were both down about 7% from 2012. The rate of fatalities per billion vehicle kilometres travelled, at 5.6, was significantly lower than the rate of 6.1 seen in 2012. The rate in the number of fatalities per 100 000 inhabitants of 5.5 was also down from 2012.

Trends in traffic and road safety (1990-2013)

Traffic

Motor vehicle registrations in Canada have been steadily increasing over the last two decades, rising by 34%. Between 2000 and 2012, light-duty vehicle registrations rose by about 23%, while commercial vehicle registrations were up by about 42%. Driver exposure in that period as measured by vehicle-kilometres travelled for light-duty and commercial vehicles increased by approximately 10%.

It is believed that the challenging economic climate dampened the level of driver exposure in particular in 2007 and 2008. Canada's gross domestic product grew modestly by 0.7% between 2007 and 2008, subsequently declining by 2.7% in 2009, before growing by 3.1%, 2.5% and 2.0% in years 2010, 2011 and 2012, respectively. During this same five-year period, vehicle travel remained fairly constant: first declining by almost 2% in 2008 over 2007, then increasing by 2.4% in 2009, followed by estimated increases of 0.8% and 0.5% and 0.9% respectively in 2010, 2011, and 2012.

Road safety

Crashes and casualties

The long-term downward trend in both fatalities and serious injuries is very much evident. Motor vehicle casualties decreased significantly in 2013, dropping below 2 000 for the first time in five decades of data compilation by Transport Canada.

Fatalities were down approximately 52% as compared to two decades earlier, with the number of serious injuries having fallen 59%.

This progress was achieved despite on-growing growth in recent years in the number of licensed drivers, in the number of registered vehicles and in vehicle kilometres travelled.

It is believed that increased efforts by key stakeholders in developing and implementing road safety strategies, plans and countermeasures that focused on key areas of concern, such as speeding, impaired driving and unbelted occupants, contributed to the overall progress. Other contributors include improvements in vehicle safety features and equipment.

Rates

The rate of fatalities per 100 000 inhabitants has fallen from 14.3 in 1990 to 5.5 in 2013; a decrease of 62%.

Road safety by user group

The increase in fatalities in 2012 was primarily for car drivers and passengers while vulnerable road users (pedestrians, cyclists and motorcyclists) as a group experienced a slight decline in fatalities as compared with 2011.

Looking at vehicle type in 2012, over one-half of fatalities were passenger car occupants, with another one-quarter being occupants of other light duty vehicles and approximately 8 per cent were motorcycle occupants.

Road safety by age group

In 2012, young drivers and passengers (aged 15 to 24) continued to account for nearly one-quarter of motor vehicle fatalities, while older drivers and passengers (aged 65 and over) represented approximately 20 per cent of fatalities.

Table 7.1. **Road safety and traffic data**

	1990	2000	2010	2011	2012	2012 % change from			
						2011	2010	2000	1990
Reported safety data									
Fatalities	3 963	2 904	2 238	2 023	2 076	2.6	-7.2	-28.5	-47.6
Injury crashes	181 960	155 838	125 636	124 198	124 794	0.5	-0.7	-19.9	-31.4
Injured persons hospitalised	25 020	15 581	11 796	10 940	11 116	1.6	-5.8	-28.7	-55.6
Deaths per 100 000 inhabitants	14.3	9.5	6.6	5.9	6.0	1.4	-9.2	-36.9	-58.3
Deaths per 10 000 registered vehicles	2.3	1.6	1.0	0.9	0.9	2.1	-9.4	-42.8	-60.2
Deaths per billion vehicle kilometres		9.3	6.6	6.0	6.1	1.7	-8.5	-35.2	
Traffic data									
Registered vehicles (thousands)	16 981	17 882	21 848	22 247	22 366	0.5	2.4	25.1	31.7
Vehicle kilometres (millions)		308 631	335 912	337 747	340 694	0.9	1.4	10.4	
Registered vehicles per 1 000 inhabitants)	613	583	642	648	644	-0.7	0.2	10.4	4.9

Figure 7.1. **Road safety and traffic data index 1990 = 100**

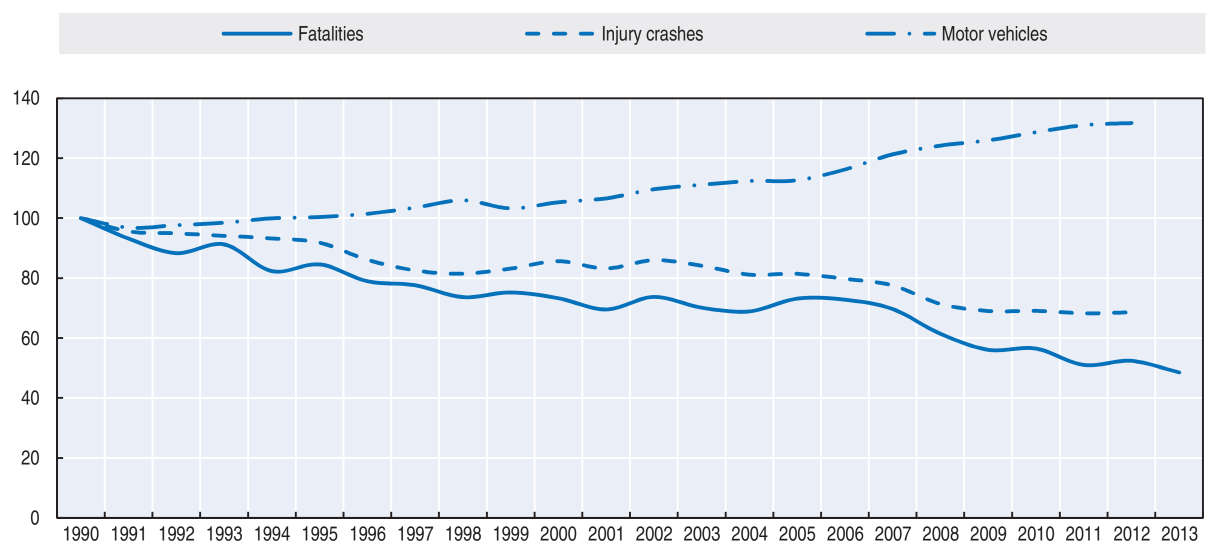


Table 7.2. **Road fatalities by road user group**

	1990	2000	2010	2011	2012	2012% change from			
						2011	2010	2000	1990
Bicyclists	106	40	61	56	62	10.7	1.6	55.0	-41.5
Moped users	8	4	5	7	7	% comparisons not meaningful due to low figures			
Motorcyclists	252	166	187	166	169	1.8	-9.6	1.8	-32.9
Passenger car occupants	2 244	1 669	1 270	1 088	1 122	3.1	-11.7	-32.8	-50.0
Pedestrians	584	372	305	322	313	-2.8	2.6	-15.9	-46.4
Others	769	653	410	384	403	4.9	-1.7	-38.3	-47.6
Total	***3 963***	***2 904***	***2 238***	***2 023***	***2 076***	***2.6***	***-7.2***	***-28.5***	***-47.6***

Young people (18-20) are the most at risk in traffic with a fatality rate twice that of the general population.

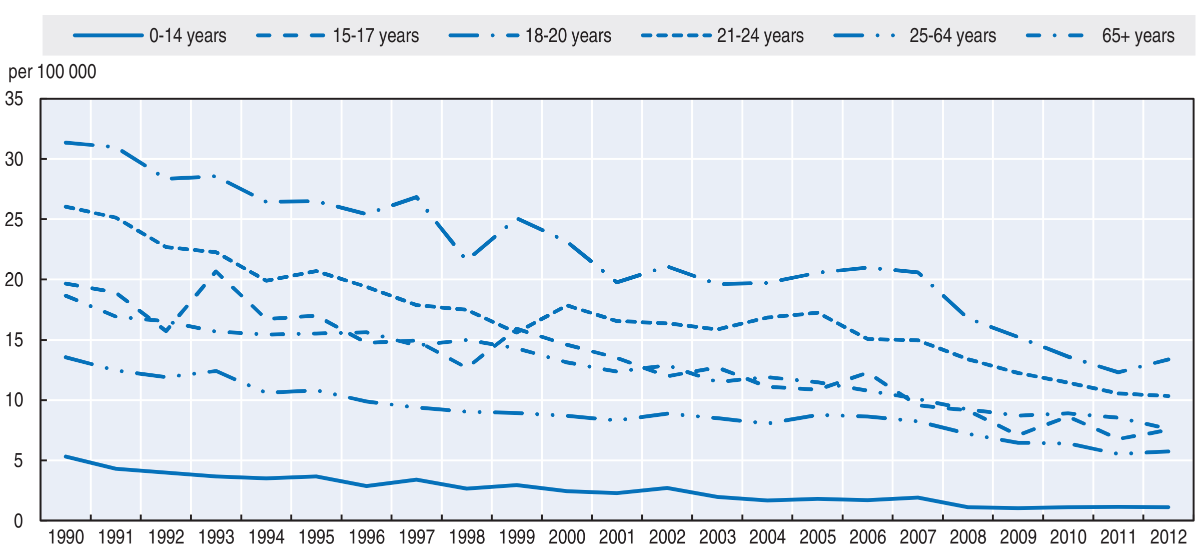
Table 7.3. **Road fatalities by age group**

Age	1990	2000	2010	2011	2012	2012 % change from			
						2011	2010	2000	1990
0-5	101	38	20	21	19	-9.5	-5.0	-50.0	-81.2
6-9	77	41	15	12	20	66.7	33.3	-51.2	-74.0
10-14	127	65	28	32	25	-21.9	-10.7	-61.5	-80.3
15-17	223	183	114	89	97	9.0	-14.9	-47.0	-56.5
18-20	382	293	192	173	188	8.7	-2.1	-35.8	-50.8
21-24	444	294	211	198	199	0.5	-5.7	-32.3	-55.2
25-64	2 003	1 460	1 219	1 058	1 108	4.7	-9.1	-24.1	-44.7
≥ 65	583	505	427	423	394	-6.9	-7.7	-22.0	-32.4
Total	***3 963***	***2 904***	***2 238***	***2 023***	***2 076***	***2.6***	***-7.2***	***-28.5***	***-47.6***

Child safety

In 2012, fatalities in children (aged 0 to 14) accounted for approximately 3% of all motor vehicle fatalities, significantly lower than the 6% in 2000 and 8% in 1990. Transport Canada assists in protecting children in vehicles through the development and enforcement of regulations for the manufacturing and importation of child car seats as well as through public awareness, investigation and research activities related to child car seats.

Figure 7.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2012



Road safety by road type

With 57% of fatalities in 2012, rural roads continued to account for a higher percentage than urban areas.

Figure 7.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants, 2013

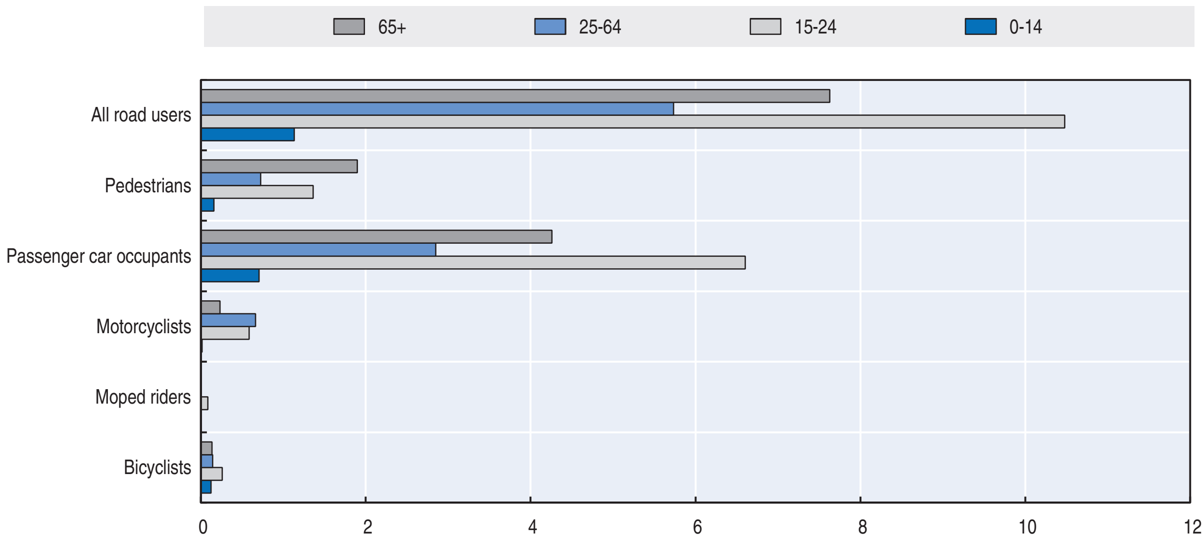
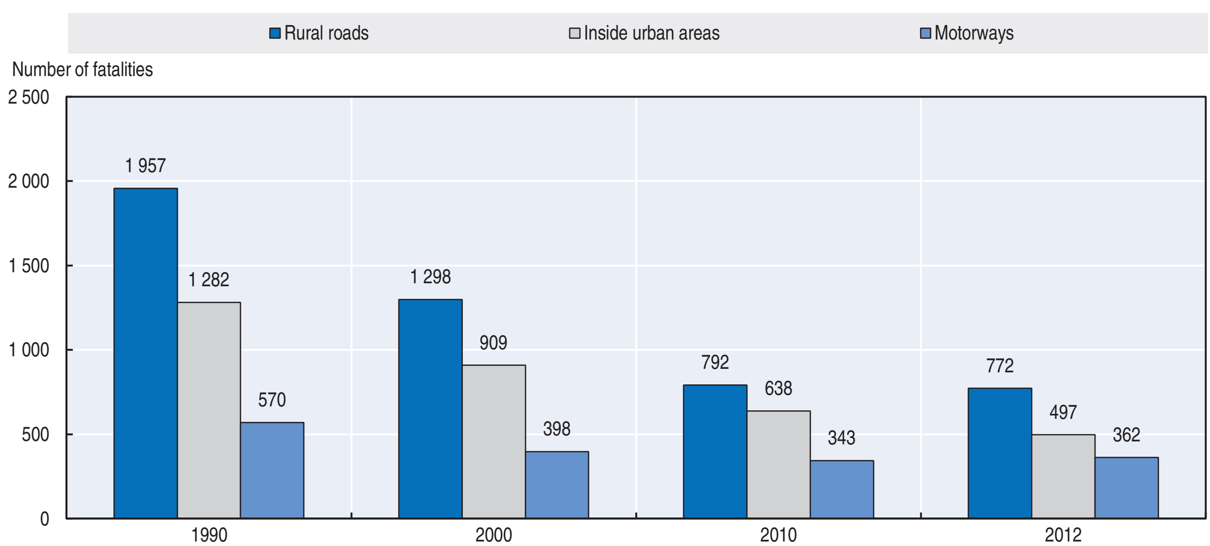


Figure 7.4. **Road fatalities by road type**



Economic costs of traffic crashes

For the purposes of this report, costs have been calculated using the willingness-to-pay approach. This means that the value of a statistical life is used to value fatalities, and fractions of that value are used to estimate the cost of injuries, based on quality-adjusted life years lost. The values noted below are still preliminary and may be subject to change.

Traffic crashes represent a significant cost for society, estimated at CAD 37.4 billion or 2.2% of gross domestic product in 2012.

Table 7.4. **Costs of road crashes, 2012**

Costs	Unit cost (2012 CAD)	Total (2012 CAD)
Fatalities	8 513 543	17.7 billion
Hospitalised people	1 057 382	11.4 billion
Slight injuries	22 890	3.6 billion
Property/damage costs	8 887	4.8 billion
Total (CAD)	69 948[1]	37.4 billion
Total as % of GDP		2.19%

1. Total Unit cost is per crash.

Recent trends in road user behaviour

Impaired driving

Drink driving

Under the Criminal Code of Canada the maximum permissible blood alcohol content (BAC) when driving is 0.8 g/l. However, in most provinces and territories, there is an additional administrative maximum level of 0.5 g/l (0.4 g/l in Saskatchewan, and in Quebec the 0.5 g/l limit only applies to commercial vehicles).

Penalties under these administrative programmes are significant but do not match the seriousness of a full Criminal Code of Canada charge. Penalties in both situations increase for repeat offenders. In addition, most provincial/territorial jurisdictions have a zero BAC limit for young (under 21) and/or novice drivers.

The 2012 preliminary data (most recent available) indicate that 33% of drivers who were fatally injured in road crashes had some level of alcohol in their blood, and 28% were over the 0.8 g/l threshold.

Information on the presence of alcohol is collected on police crash report forms, but as the data are not always reliable, a surrogate is used for instances of deaths of drivers and pedestrians involving alcohol. The percentage of fatally injured drivers who were tested for alcohol is applied to all motor vehicle deaths to estimate the percentage of all deaths which were alcohol related. With respect to injury crashes, any police report which indicates alcohol or any crashes that fit a surrogate model are identified as alcohol related (Mayhew et al., 1997).

Drugs and driving

The Criminal Code of Canada sections that govern impaired driving would also include impairment by drugs. The Criminal Code was updated in 2009 to detail a police investigation of suspected drug-impaired driving situations, based on behavioural indices of unsafe driving and following the procedures set out by the Drug Recognition Evaluator (DRE) programme of the International Association of Chiefs of Police. This programme is begun if there appears to be behavioural indices of impairment and no or little alcohol is found. The penalties are the same as for impairment by alcohol.

Canada began testing fatally injured drivers for drugs in 2000, similar to the method used for alcohol. The table below indicates the number and percentage of drivers who were tested and found positive or negative for drugs. Not all drivers are tested and the testing rate is typically lower than that of alcohol. It will be noted that the rate of psychotropic drugs found in fatally injured drivers is similar to that of alcohol.

Table 7.5. **Number and percentage of drivers who were tested and found positive or negative for drugs**

Year	Drivers tested for presence of drugs	Negative	Positive	% negative	% positive
2000	727	496	231	68.2	31.8
2001	798	527	271	66.0	34.0
2002	842	523	319	62.1	37.9
2003	835	575	260	68.9	31.1
2004	815	513	302	62.9	37.1
2005	970	601	369	62.0	38.0
2006	1 175	759	416	64.6	35.4
2007	1 197	749	448	62.6	37.4
2008	1 051	640	411	60.9	39.1
2009	999	623	276	62.4	37.6
2010	924	585	339	63.3	36.7

Distraction

The use of cellular phones or other electronic devices while driving is regulated by the provinces and territories.

An observational cell-phone survey was conducted at 286 urban sites during September 2012 and at 252 rural sites during September 2013. A total of 70 686 drivers of light-duty vehicles were observed while they were stopped at a traffic light or a stop sign at urban sites and 33 483 drivers were observed at rural sites at similar intersections. The use of a hand-held Electronic Communications Device (ECD) was recorded, as was the type of usage (i.e. speaking, typing, both), driver age and gender, number of passengers in the vehicle and type of vehicle. The data were weighted by population and number of vehicles passing through each survey site to obtain estimates of ECD use and the type of use.

The results are presented nationally, by jurisdiction, and by various subgroups (i.e. age, sex, type of vehicle, number of passengers). Nationally, an estimated 4.4% (±0.4) of the drivers used an ECD, varying by jurisdiction from 1.4 to 8.7%. ECD use was more frequent among drivers under 25 years of age, drivers of light trucks, drivers without passengers, and somewhat more by female drivers. ECDs were used for talking by 2.3% of drivers and for typing by 1.6% of drivers. Nationally, the use of hand-held ECDs for talking was 58% lower in the 2012-13 surveys than that observed in 2006-07 surveys.

Fatigue

A model was created to assess fatigued driving in Canada and is posted on the *www.ccmta.ca* website. However, the model has not been updated in a number of years.

The North American Fatigue Management Program (*www.nafmp.com*) for commercial carriers and drivers has begun in Canada and the United States.

Speed

Speeding, along with impaired and distracted driving, is a significant contributor to motor vehicle fatalities. In 2012, it is estimated that about one fifth of fatal crashes involved speeding. Over the last decade, speed-related fatalities have declined about 20%. Casualty data in 2012 indicates a 28% reduction in speed related crashes compared to the 2006 to 2010 period.

The table below summarises the main speed limits in Canada.

Table 7.6. **Passenger car speed limits by road type, 2015**

Urban roads	40-70 km/.h
Rural roads	80-90 km/h
Motorways	100-110 km/h

Seat belts and helmets

Seat belt use was made compulsory in Canadian jurisdictions between 1976 and 1988.

In Canada, road user behaviour is a provincial/territorial responsibility and the laws around the use of seat belts and child restraints are provincial or territorial. All provinces and territories have laws in place mandating the use of child restraints since the 1980s, and they are occasionally updated. In most cases, the driver is responsible for ensuring that a child is correctly restrained.

In Canada, child restraint use is promoted in four stages: Stage 1, rear facing; Stage 2, forward facing; Stage 3, booster sears; Stage 4, three-point seat belt in the rear seat. Graduation from one stage to another is based on the seat involved and the weight and height of the child. Usage for Stage 1 and Stage 2 seats is very high but only some provinces/ territories have legislation requiring booster seats.

A 2010 observational survey of child restraint use in Canada indicates that incorrect use of child restraints increases with the age of the child. The most significant incorrect usage issue is premature graduation from one stage to another, which reduces safety for the child (Snowdon et al., 2010).

Seat belt usage in Canada is approximately 95%. However, about 32% of occupants killed in 2012 were unbelted at the time of the crash; a slight decrease from 35% in 2010.

National road safety strategies and targets

Organisation of road safety

In Canada, the responsibility for road safety is divided among different levels of government and other road safety and private sector partners.

Federal, provincial and territorial departments responsible for transportation and highway safety work together through various committees and associations that report to the Council of Ministers Responsible for Transportation and Highway Safety. This council is assisted by the Council of Deputy Ministers Responsible for Transportation and Highway Safety. Within this structure, three committees co-ordinate multi-jurisdictional views and efforts (Canadian Council of Motor Transport Administrators, Engineering and Research Support Committee and the Policy and Planning Support Committee). In addition, the Transportation Association of Canada, which also includes a number of municipal partners, addresses infrastructure issues.

This structure is designed to promote national consistency, provide a platform to share information and assist jurisdictions in addressing the issues within their specific mandate. Ultimately the responsibility for implementation remains with the appropriate jurisdiction.

The Federal Government is responsible for regulations and standards related to the manufacture and importation of motor vehicles, tyres and child restraints. Provincial and territorial governments are responsible for licensing drivers, registering vehicles and administering justice and jurisdictional road safety programmes. They are also responsible for policy and regulations regarding the roadways. In many cases, the road authority responsible for the operations of the road may be regional or municipal governments, which must operate within the provincial guidelines.

Road safety strategy for 2011-15

Canada is now into its third national road safety plan, the Road Safety Strategy (RSS) 2015. The goal of the renewed programme is to achieve downward trends in fatalities and serious injuries throughout a five-year duration, comparing a rolling three-year average with the established baseline period.

Jurisdictional road safety plans in support of RSS 2015 can be found on the Canadian Council of Motor Transport Administrators website at *www.ccmta.ca*.

Road Safety Strategy 2015 will end on 31 December 2015. A full evaluation of the success of the strategy will not be possible until 2015 crash data are available. A review of RSS 2015 is underway for the development of a successor strategy.

Road safety targets

The goal of the current programme is to achieve downward trends in fatalities and serious injuries throughout its five-year duration.

Monitoring

The Canadian Council of Motor Transport Administrators with assistance from Transport Canada reports annually on progress toward the goals of fatality and injury reduction. A number of rate-based measures are used to focus on progress in specific areas factors as impaired driving, speeding, and unbelted occupants.

The fatality count in 2012 at 2 076 was 17% lower than the 2006-10 baseline period, as was the serious injury count of 11 116. Compared to 2011, fatalities rose about 3% while the serious injury count was up 2%. In 2012, the rate of 6.1 fatalities per billion vehicle kilometres travelled was about 19% lower than the average rate of 7.6 observed during the baseline period of 2006-10. Combining 2011 and 2012 data, the fatality rate dropped about 20% below the comparable baseline period.

Examining the casualty data in 2012 against comparable data from 2006 to 2010, showed that the least amount of progress in reducing fatalities was observed with crashes involving vulnerable road users (-9%) and crashes involving commercial vehicles (-15%).

Evaluation of past road safety strategy

The Road Safety Vision 2010 had an overall objective of achieving a 30% or greater decrease in the average number of road users killed or seriously injured in traffic crashes during the final three years of the initiative (2008-10) when compared with average deaths and serious injuries that occurred during the first national road safety plan ending in 2001. Although the ultimate objective was not attained, substantial reductions occurred. Fatalities and serious injuries were 22% and 26% lower, respectively, than during the 1996-2001 baseline period. The average number of road users killed in crashes during the final three years of Road Safety Vision 2010 was the lowest in 60 years.

Recent safety measures (2012-14)

Speed management

- A number of municipalities are examining issues related to a 30 km/h speed limit in districts like residential neighbourhoods and school zones. Jurisdictions continue to increase sanctions for street racing and drivers convicted to exceeding the speed limit significantly.

Road users

- Drug and distracted driving are being recognised as growing road safety challenges, and a number of jurisdictions are developing countermeasures to address the issues. Countermeasures to address drink driving include harsher licence suspensions and the use of breath alcohol ignition interlocks for identified impaired drivers.

Infrastructure

- National consistency on infrastructure design, build and maintenance is co-ordinated by the Transportation Association of Canada. A number of projects and publications are produced every year promoting strategies to improve safety. A number of provincial and municipal governments are conducting road safety audits to help design safer roads for all road users.

Vehicles

- The Motor Vehicle Safety Act has been updated to support alignment with other safety regimes in the United States and the United Nations Economic Commission for Europe and to increase its defect and recall powers. Additional enhancements to the act are being considered. The department is also a member of a United Nations effort to harmonise vehicle regulations, Working Party 29.

Recent and ongoing research

- Ontario has an evaluation of stunt driving and driving more than 50 km/h over the limit.
- British Columbia has evaluated its new impaired driving administrative laws.
- The Canadian Council of Motor Transport Administrators has completed projects related to electronic device use while driving and public knowledge and attitudes regarding road safety. The reports are available at *http://ccmta.ca/en/publications/ccmta-reports/distracted-driving/use-of-electronic-communication-devices-by-canadian-drivers-in-rural-areas-2014*.
- The Council has also completed a national survey on road safety, which found that 28% of Canadians surveyed rated their community's general road safety as "very safe". Overall, Canadians say the most dangerous driving behaviours are driving while texting (89%), driving after taking drugs such as cocaine or methamphetamines (86%), and aggressive driving (78%). Only 21% of respondents consider exceeding the speed limit by 10 km/h on the highway to be a dangerous behaviour. More information can be found at *www.ccmta.ca/images/publications/pdf//Forum_Survey_Report-September_16_2014.pdf*.

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Websites

- Transport Canada: *www.tc.gc.ca/*.
- Road Safety Vision 2010: *http://ccmta.ca/en/members/standing-committees/rsrp-member-page/rsrp-member-page-committee-reports*.
- Road Safety Strategy 2015: *www.ccmta.ca/crss-2015/strategy.php*.
- Transportation Association of Canada: *www.tac-atc.ca/*.
- National Collision Data Base On-Line Web application: *www.tc.gc.ca/VehicleCollisions*.

Chapter 8

Chile

*This chapter presents the most recent crash data for Chile, as well as an update on its road safety strategy and recently implemented safety measures.**

* Data included in this report are under validation by IRTAD.
All data stem from National Road Safety Commission (CONASET) unless otherwise noted. For more information please contact: CMedina@mtt.gob.cl.

Between 2000 and 2013, the number of motorised vehicles more than doubled, and the number of motorcycles multiplied more than fivefold.

In Chile, nearly 40% of road fatalities are pedestrians, which is the highest rate of pedestrian fatalities within the OECD countries. Safety of motorcyclists is a growing concern. Since 2010 the number of motorcyclists killed increased by more than 30% while the number of motorised two-wheelers increased by 45% over the same period. Improving the safety of motorcyclists is one of the main priorities in Chile. The government released at the end of 2014 the first Chilean national motorcycle plan.

Road safety data collection

Definitions applied in Chile

- Road fatality: Traffic casualty dying from injury within 24 hours of the crash. To conform to international definitions of a death within 30 days, the National Traffic Safety Commission (CONASET, Comisión Nacional de Seguridad de Tránsito) applies a correction factor of 1.3. Fatality data in this report correspond to the corrected data.
- Person seriously injured: Person injured and hospitalised for more than 24 hours.

Data collection

Following the occurrence of a traffic crash, the police (Carabineros de Chile) attending the site of the accident are responsible for filling out a "Data Collection Form of Road Traffic Accidents" (SIEC 2), which is used throughout the country. The information is later entered and stored in a road traffic crash database available to the police. In cases of crashes involving deaths or serious injuries, the crash report is sent by the police to the relevant judges. The police records only include data for the first 24 hours after the crash has occurred.

The official vital statistics, on the other hand, are generated through the National Vital Statistics Agreement (CNEV, whose members are the National Statistics Institute, the Ministry of Health, and the Civil Registry and Identification Service). The cause of death is coded by the Ministry of Health using the International Statistical Classification of Diseases and Related Health Problems (ICD-10). However, due to the complexity involved in collecting and validating data on deaths, the most recent information from the health database is from 2011. The collection and validation process also involves a crossing with police data. This process in not yet automated, which explains the delay in reporting data on vital statistics.

Due these challenges, to standardise the number of deaths to 30 days after the crash, and in accordance with the criteria set by the World Health Organisation (WHO), a correction factor of 1.3 is applied to the death data from police. CONASET is currently working together with police and other relevant institutions to develop an improved form and creating a new database with automated linkage between police and health data.

Most recent safety data

Road crashes in 2014 – provisional data

Based on provisional data there were 2 119 road deaths in 2014, nine more than in 2013, a 0.4% increase.

Road crashes in 2013

In 2013, there were 2 110 road deaths in Chile, a 6.6 % increase compared to 2012. The number of injury crashes increased by 14%.

The main highlight in road safety for 2013 was the improvement for delivery of driving licences, including new theoretical and practical exams.

Trends in traffic and road safety (1990-2014)

Traffic

Between 2000 and 2013, the number of motorised vehicles more than doubled, with the number of motorcycles multiplied by more than five from nearly 30 000 to nearly 150 000.

Traffic volume has increased significantly. A positive trend in the gross domestic product and a steady low unemployment rate have contributed to a sustained traffic. People are not travelling only by obligation, but also for pleasure. As an example, in the last five years the number of people travelling for holiday purposes has doubled.

There is a strong vehicle concentration in the main cities. As a consequence, congestion problems are increasing, especially during rush hours.

Road safety

Crashes and casualties

Between 2000 and 2013, the number of fatalities has been fluctuating between 2 207 and 2 210 deaths, with no clear trends. Chile observed a peak in the number of road deaths in 2008 with 2 317 fatalities.

Rates

Since 1990, the death rate per 100 000 inhabitants has decreased by 24%, while the number of vehicles per 1 000 inhabitants has increased by more than 70%. The huge difference in the evolution of both rates is explained by the explosion in the number of registered vehicles.

Road safety by user group

In 2013, pedestrians were the user group most affected by road fatalities (representing 39% of total road deaths) followed by car occupants (36%).

As in many other Latin American countries, safety of motorcyclists is a growing concern. Since 2010 the number of motorcyclists killed increased by more than 30% while the number of motorised two-wheelers increased by 45% over the same period. At the end of 2014 the government released the first Chilean national motorcycle plan to improve the safety of motorcyclists.

The number of deaths among cyclists increased dramatically in 2013 by 45%. This is partly explained by a growing popularity of cycling as a mean of transportation, and not only

Table 8.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	2 063	2 207	2 074	1 980	2 110	6.6	1.7	-4.4	2.3
Injury crashes		30 772	34 335	34 593	39 307	13.6	14.5	27.7	
Deaths per 100 000 inhabitants	15.7	14.3	12.1	11.4	12.0	5.6	-0.9	-16.0	-23.5
Deaths per 10 000 registered vehicles	19.2	10.4	6.3	5.1	5.0	-0.7	-19.5	-51.3	-73.6
Traffic data									
Registered vehicles (thousands)		2 129	3 376	3 974	4 262	7.2	26.4	100.2	
Registered vehicles per 1 000 inhabitants		135	193	223	237	6.4	22.6	75.9	

Figure 8.1. **Road safety and traffic data index 2000 = 100**

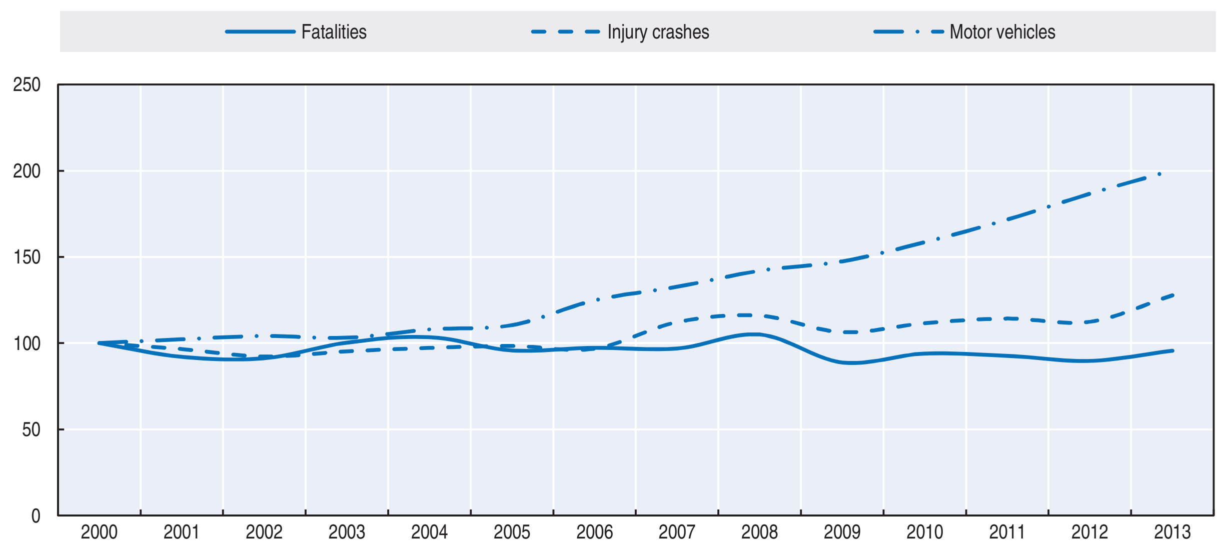


Table 8.2. **Road fatalities by road user group**

	2010	2012	2013	2013 % change from	
				2012	2010
Bicyclists	189	111	161	45.0	-14.8
Motorcyclists	111	146	146	0.0	31.5
Passenger car occupants	731	737	762	3.4	4.2
Pedestrians	815	758	820	8.2	0.6
Others	228	229	221	-3.5	-3.1
Total	***2 074***	***1 980***	***2 110***	***6.6***	***1.7***

for recreational purposes. To respond to this, CONASET implemented a number of awareness campaigns. Based on provisional data, the number of cyclists killed decreased in 2014.

Road safety by age group

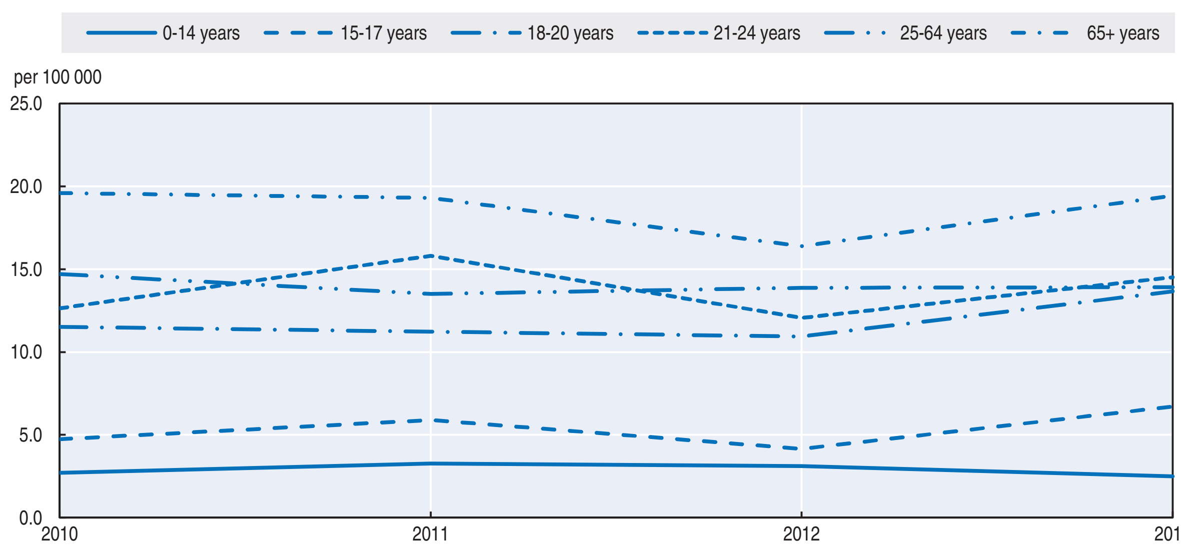
In Chile, senior citizens (above 65) are at the most risk in traffic, with a mortality rate of 19.4 deaths per 100 000 inhabitants. They are particularly vulnerable as pedestrians.

In 2013, fatalities increased the most for the young people (15-24) and for the elderly (above 65).

Table 8.3. **Road fatalities by age group**

Age	2010	2012	2013	2013 % change from	
				2012	2010
0-5	56	59	43	-27.1	-30.2
6-9	18	18	23	27.8	21.7
10-14	29	42	27	-35.7	-7.4
15-17	42	35	55	57.1	23.6
18-20	104	96	118	22.9	11.9
21-24	147	142	172	21.1	14.5
25-64	1 292	1 257	1 279	1.8	-1.0
> 65	302	272	334	22.8	9.6
Total	***2 074***	***1 980***	***2 110***	***6.6***	***1.7***

Figure 8.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 2010-13



Road safety by road type

In 2013, 61% of road fatalities occurred on roads outside urban areas.

Economic costs of traffic crashes

In Chile, the economic cost of road crashes is based on the human capital approach. This approach assesses the consequences of the crashes based on the loss of productivity resulting from a statistical death but does not include property damage and other costs.

Based on this methodology, road crashes cost USD 404 million in 2013.

However, the real costs of road crashes for Chilean society are actually much higher. First, the police data underestimated the true extent of casualties. Second, the mandatory vehicle insurance covers health expenses up to a certain amount, beyond which the expenses must be covered by the victims. In addition, this calculation does not consider property damage and other costs, including police, fire, legal, courts and administrative costs and legal paperwork.

Figure 8.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants, 2013

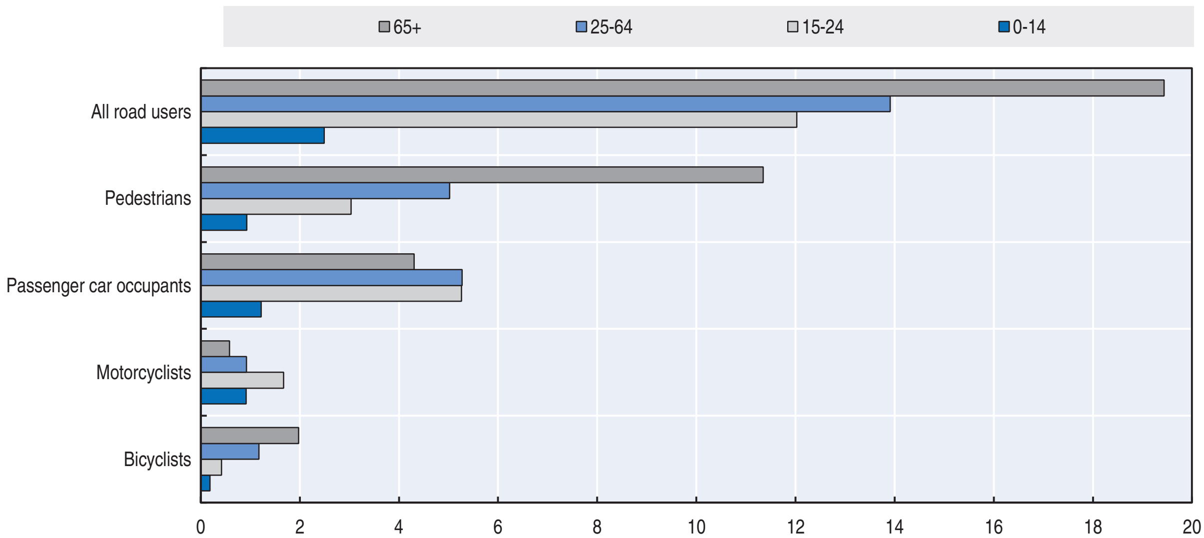


Figure 8.4. **Road fatalities by road type**

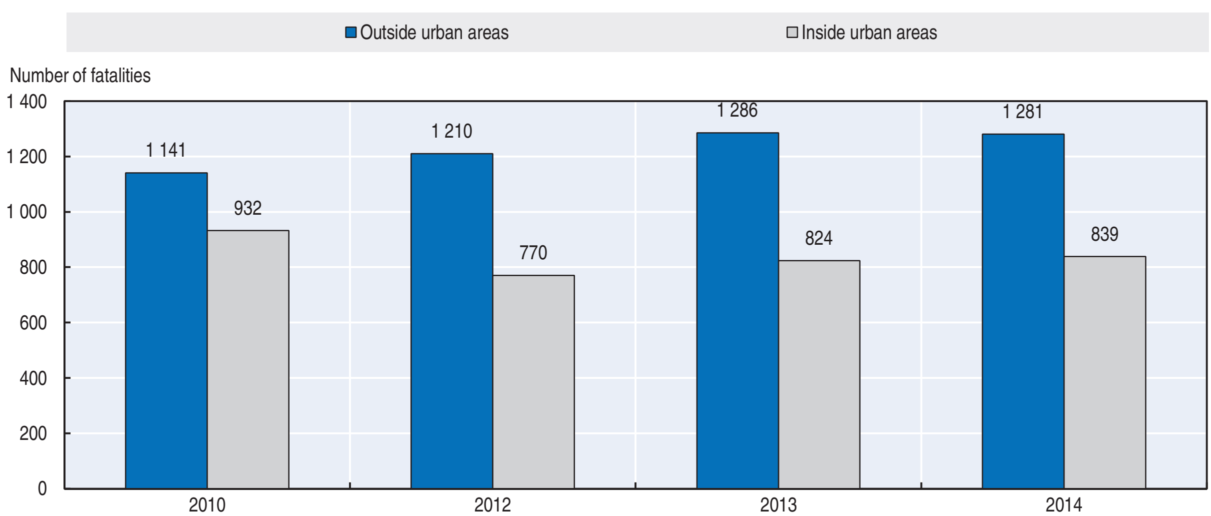


Table 8.4. **Costs of road crashes**
Estimation based on capital approach

	Lost productivity costs USD	Health costs USD	TOTAL USD
2012	378 million	33 million	411 million[1]
2013	379 million	26 million	404 million[2]

1. Exchange rates at December 31, 2012: USD = 478.6.
2. Exchange rates at December 31, 2013: USD = 523.76.

Recent trends in road user behaviour

Impaired driving

Drink driving

In 2012, the government of Chile introduced a new law to support the "zero tolerance" policy for drink driving. It sets the maximum permissible blood alcohol content (BAC) at 0.3 g/l. This measure has had good results in reducing the number of alcohol related crashes (see Figure 8.5).

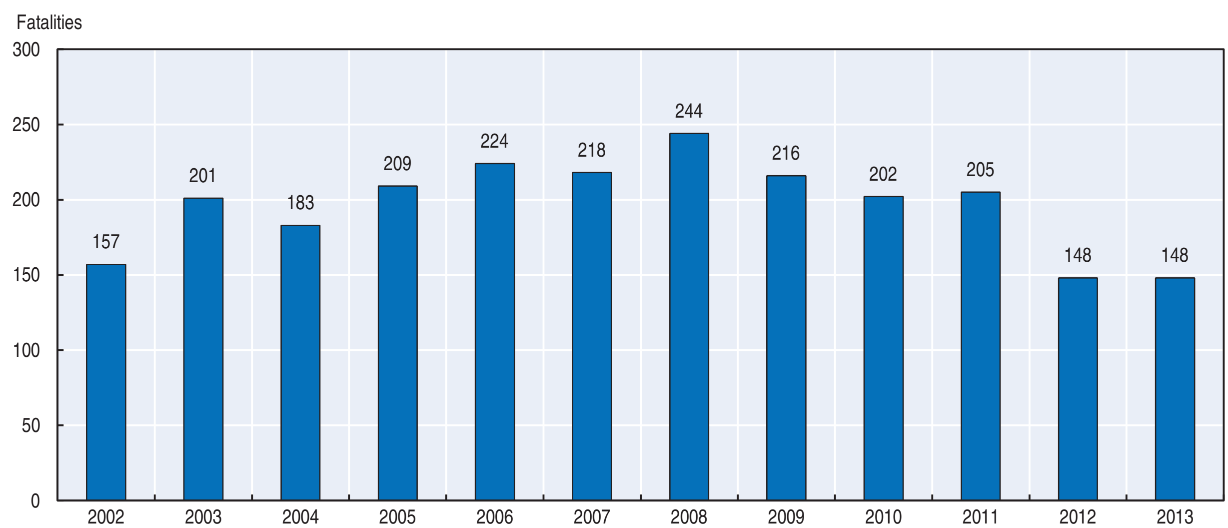
The law defines:

- Driving under the "influence of alcohol" as driving with a BAC between 0.3 g/l and 0.8 g/l.
- Driving while intoxicated, which entails much tougher sanctions, as driving with a BAC of 0.8 g/l or higher.

A crash is defined as an alcohol-related traffic crash when either a driver, or another person involved in the crash (including motorcyclists, cyclists or pedestrian), has a measurable or estimated BAC of 0.3 g/l or above.

The number of fatalities due to drink driving declined significantly in 2012, when the "zero tolerance law" was implemented. It is estimated that 9% of fatalities in 2013 – 148 – involved a driver impaired by alcohol.

Figure 8.5. **Fatalities caused by drink driving**



Drugs and driving

Currently there is no proper drug test process after a crash. Therefore the attribution of only 0.1% of deaths to driving under the influence of drugs is largely underestimated.

Distraction

Police data reported that 7% of crash deaths in 2013 were related to distracted driving.

Chilean traffic law considers driving while using a mobile phone a serious traffic violation, unless the person is using a hands-free device.

Fatigue

According to police data only 0.7% of traffic deaths in 2013 are related to fatigue.

Speed

There is little information on the share of crashes due to excessive or inappropriate speed. Moreover, data available underestimates the speed influence in the most serious crashes. Work is underway to get more accurate information. Meanwhile, it is roughly estimated that speeding is responsible for around 33% of fatal crashes.

The table below summarises the main speed limits in Chile.

Table 8.5. **Passenger car speed limits by road type, 2015**

Urban roads	60 km/h
Rural roads	100 km/h if there is one lane in each direction 120 km/h if there are two or more lanes in each direction
Motorways	120 km/h

Seat belts and helmets

Seat belt use has been compulsory for front seats since 1985 and rear seats since 2006. The wearing rate in 2014 was 78% for drivers, around 62% for front seat passengers and around 15% for rear seat passengers.

All riders of motorised two-wheelers are required to wear helmets. The helmet wearing rate by riders of motorised two-wheelers is high at 99%.

Table 8.6. **Seat-belt wearing rate by car occupancy, 2014**

%

Front seat	
Driver	78
Passengers	62
Rear seats	15

National road safety strategies and targets

Organisation of road safety

CONASET is an interministerial body created as a presidential advisory commission through Supreme Decree 223, of 27 December 1993.

CONASET has a board of 10 ministers (Ministry of the Interior Affairs, Ministry of the General Secretariat of the Presidency, Ministry of the General Secretariat of Government, Ministry of Education, Ministry of Justice, Ministry of Public Works, Ministry of Health, Ministry of Housing and Urban Development, Ministry of Labour, Ministry of Transportation) plus the National Police Director. CONASET is led by the Minister of Transportation, and CONASET's executive secretary is in charge of the national road safety strategy, which is agreed by the board.

In 1993, CONASET began working on a framework policy declaration, which has been the general strategic guide.

Road safety strategy for 2011-20

The Chilean Government has launched an ambitious development agenda that is the basis for the country's ultimate goal of achieving high-income developed status by 2018. Chile is a leading country in the Latin American region but lags behind standards of the

Organisation for Economic Co-operation and Development (OECD) regarding the Human Opportunity Index. In this context, it is important to achieve greater competitiveness and to improve the quality of road safety.

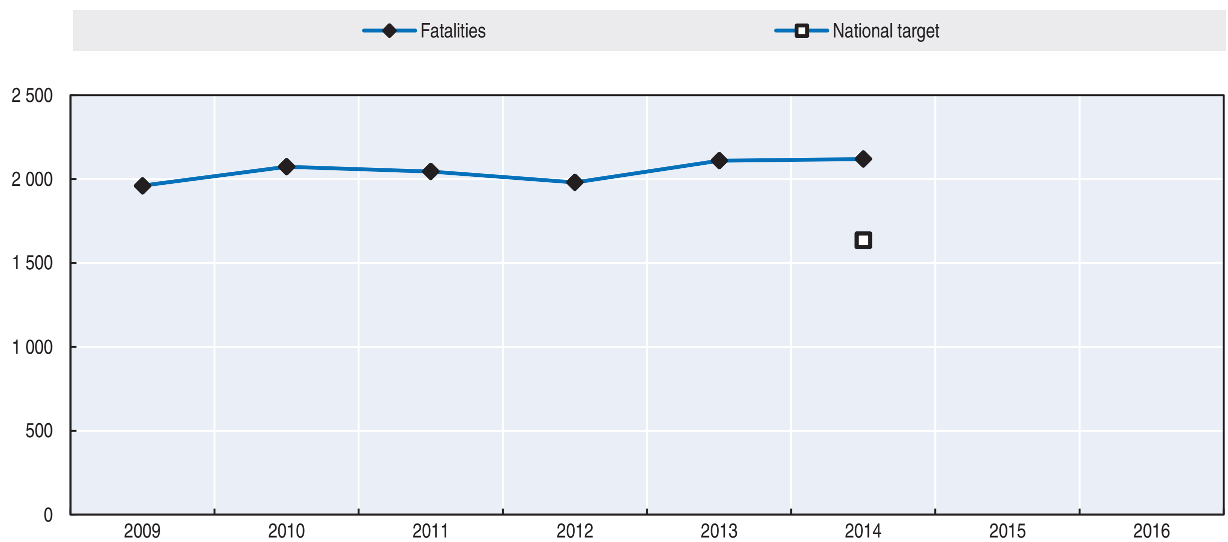
Road safety targets

In 2011, Chile set its first road safety target: a 20% decrease in the number of road deaths by 2014 (to 1 636 fatalities or fewer) compared to the level of 2011.

Monitoring

Based on provisional data for the year 2014, the target was not reached. Chile is currently developing a new National Road Safety Strategy.

Figure 8.6. **Trends in road fatalities towards national target**



Recent safety measures (2012-14)

Road safety management

Driving licence

A new driving practical and theory test, designed by CONASET, was implemented in 2013, with a main focus on safety. To avoid a possible increase in fraud (due to the increased difficulty of obtaining the licence and tougher enforcement leading to possible loss of the licence), the new driving licence document is more secure.

In mid-2013 applicants for bus and truck driving licences were included in the new testing process, and 39% of applicants are approved.

Road users

Impaired driving

In 2012, the government of Chile introduced a new law to support the "zero tolerance" policy for drink driving. It sets the maximum permissible blood alcohol content at 0.3 g/l. This new law was accompanied by a number of measures, including:

- more severe penalties for drinking and driving and strict enforcement

- regular communication and awareness campaigns
- inclusion of the risks of alcohol and drugs on driving in the new theory test
- road safety education in schools.

The results so far are promising, and the number of fatalities caused by drunk drivers decreased by 30% between 2011 and 2014.

A new law (called "Emilia's law" after the name of a child killed by a drunk driver) was approved in 2014 to toughen sanctions for drunk drivers involved in a serious injury or fatal crash. The driver is subject to at least one year of actual imprisonment. In addition, fleeing the scene or refusing an alcohol test becomes a crime.

Speed management

- Speed enforcement has traditionally been done by the Chilean police and inspectors of the Ministry of Public Works on the roadside. Given the limited resources and the widespread road network, the chance of being controlled for speeding was very low. Taking into account the successful experiences in other countries, the government of Chile proposed the progressive implementation of automatic speed enforcement throughout the country, and this initiative is currently under discussion in the Chilean Congress.

Pedestrians

- In Chile, nearly 40% of road fatalities are pedestrians, which is the highest rate of pedestrian fatalities within the OECD countries. A new "We Are All Pedestrians" awareness campaign was designed to improve pedestrian safety, and several media reports have resulted. More information: *www.conaset.cl/todos-somos-peatones.html*.

Motorcyclists

- In 2013, Member countries of the Ibero American Road Safety Observatory (OISEVI, *Observatorio Iberoamericano de Seguridad Vial*) agreed to develop a road safety manual for motorcycles. Chile carried out dialogues with motorcycle drivers, sellers, victims associations, cyclists associations and private citizens. *www.conaset.cl/motociclistas.html*.

Road safety education and campaigns

- During the last two years, CONASET and the Ministry of Education have added road safety activities to basic education programs. Nevertheless in most cases, students do not learn road safety at all. Teachers do not manage road safety concepts, so the implementation of the new road safety education program has not been effective. This is the main challenge for road safety professionals.
- CONASET is continuously developing road safety awareness campaigns. One of the most important campaigns in 2014 was against drinking and driving and speeding for the national independence holiday *Fiestas Patrias* in Chile.

More about the campaigns from CONASET: *www.conaset.cl/campanas-videos.html*.

Vehicles

Recent improvements to vehicle safety include:

- new safety devices for interurban buses, such as Antilock Brake Systems, Electronic Stability Control, rear fog light, back-up alarm (2013)

- an audible alarm for non-use of seat belts in new cars (2013)
- mandatory ISOFIX or LATCH anchoring systems for vehicles of 2 700 kg or less to simplify the correct installation of child restraint systems without the need to use seat belts (2014)
- reflective vests in cars starting as of January 2016 (2014)
- increased safety requirements for motorcycles, including standards for motorcycle features in line with international regulations (2014).

Recent and ongoing research

- Behavioural studies were conducted in 10 cities in 2013 and 2014, focusing on the use of seat belt, the use of helmets and distracted driving by car or motorcycle drivers. A similar study will be undertaken in 2015.
- A survey on speeds of cars on different road types in Chile was conducted in 2014.

Websites

National Road Safety Commission – CONASET: *www.conaset.cl*.

Chapter 9

Czech Republic

*This chapter presents the most recent crash data for the Czech Republic, as well as an update on its road safety strategy and recently implemented safety measures.**

* All data stem from CDV (Centrum dopravního výzkumu: Czech Transport Research Centre) and IRTAD unless otherwise noted. For more information please contact: jan.tecl@cdv.cz.

The Czech Republic programme for improving road safety aims at reducing deaths and serious injuries to the European average. The principal target of reducing the fatality rate per 100 000 inhabitants corresponds approximately to a 60% reduction in fatalities by 2020 compared to 2009, and a 40% reduction in the number of persons seriously injured. The annual interim target for deaths was achieved in 2013 with 654 road deaths against a target of 669, but the 688 deaths in 2014 were above the target of fewer than 600 road fatalities.

Road safety data collection

Definitions applied in the Czech Republic

- Road fatality: Person who died immediately after the crash or within the next 30 days.
- Serious injury: Injury categories are exhaustively listed by the law. Injury severity is determined through the opinion of the physician at the scene of the crash, or later in the hospital (within 24 hours of the crash). A serious injury is one considered to cause serious harm to health. At present, the severity value based on a score of three or more on the Maximum Abbreviated Injury Scale (MAIS3+) is not in general use in accident registration, and its future utilisation is yet to be decided.

Data collection

Crash data in the Czech Republic are collected by traffic police in 86 districts and transferred to the police headquarters. Data are checked both at district and central levels.

Crash reporting rates in the police database is relatively high due the legal obligation that all crashes with a death, injury or material damage over CZK 100 000 (since 2009) have to be reported to and registered by the police.

Most recent safety data

Road crashes in 2014 – final data

Based on final data for 2014, there were 688 road fatalities, an increase of 5.2% from 2013.

Road crashes in 2013

In 2013, there were 654 road fatalities, a 12% decrease from 2012. The number of injury crashes decreased by 1%.

Trends in traffic and road safety (1990-2014)

Traffic

Between 1990 and 2013, the number of motorised vehicles and the overall vehicle-kilometres driven increased by about 80%.

The traffic of heavy good vehicles increased gradually after 1990 with the development of the new market economy. During the economic recession, in 2007-08 stagnation was observed, and vehicle-kilometres dropped sharply in 2010 and in 2012.

Road safety

Crashes and casualties

The number of fatalities peaked in 1969 and steadily decreased until 1986. Between 1986 and 1994, there was a rapid deterioration of road safety, and road deaths increased by 82%. This corresponds to a period of important political changes in the Czech Republic and other Eastern European countries following the fall of the Soviet bloc. During this period, the number of motorised vehicles increased sharply in a context of a weak police control and less political attention to road safety.

Between 1994 and 2014, the number of road deaths decreased by 60%. These good results are the fruit of successive national strategic safety plans.

Rates

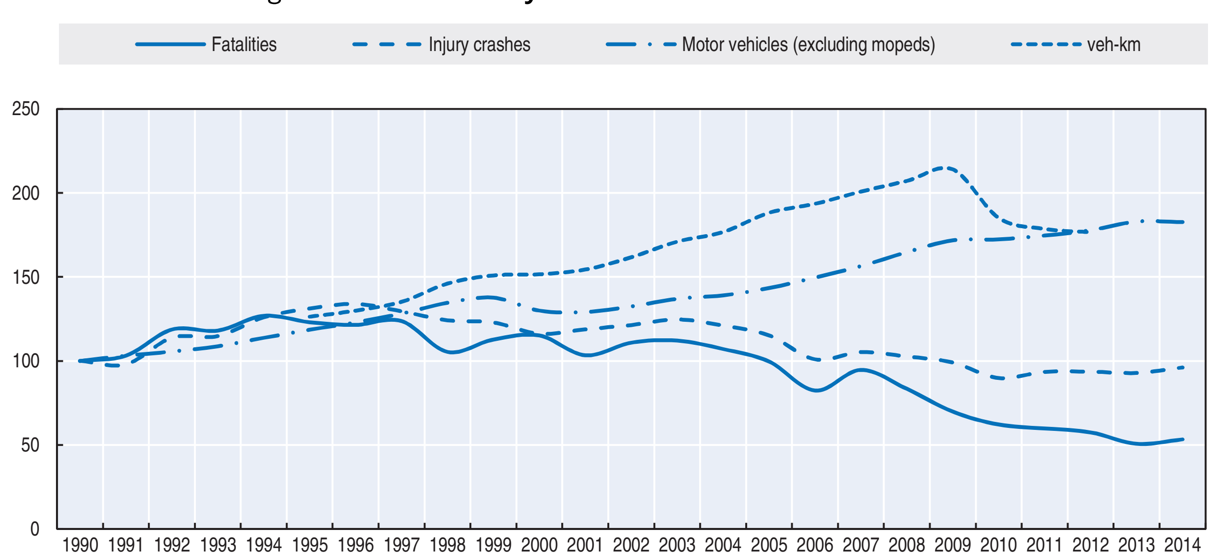
In 2013, there was a mortality rate of 6.2 road fatalities per 100 000 inhabitants.

Table 9.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	1 291	1 486	802	742	654	-11.9	-18.5	-56.0	-49.3
Injury crashes	21 910	25 445	19 676	20 504	20 342	-0.8	3.4	-20.1	-7.2
Deaths per 100 000 inhabitants	12.5	14.5	7.7	7.1	6.2	-12.3	-18.9	-57.0	-50.1
Deaths per 10 000 registered vehicles	4.0	3.6	1.4	1.3	1.1	-14.3	-23.2	-68.7	-72.3
Deaths per billion vehicle kilometres	48.3	36.7	16.2	15.7					
Traffic data									
Registered vehicles (thousands) [1]	3 219	4 182	5 548	5 724	5 888	2.9	6.1	40.8	82.9
Vehicle kilometres (millions)	26 710	40 480	49 434	47 174		-	-	-	-
Registered vehicles per 1 000 inhabitants	311	407	530	547	560	2.3	5.6	37.6	80.2

1. Registered vehicles excluding mopeds.

Figure 9.1. **Road safety and traffic data index 1990 = 100**



Road safety by user group

All user groups except motorcyclists have benefited from safety improvements since the end of the 1990s.The number of killed motorcyclists increased dramatically until 2007. However, important progress was made since 2007, with a halving of the number of motorcyclists killed. In 2013 alone, motorcycle deaths decreased by 27% compared with 2012. Strengthened enforcement and education within the national strategic safety plan contributed to these good results.

In 2013, there was nearly no improvement for pedestrians. The largest decrease in the number of fatalities was observed for motorcyclist (-27%), car occupants (-16%) and cyclists (-5%).

Table 9.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	135	151	80	78	74	-5.1	-7.5	-51.0	-45.2
Moped users	47	16	4	3	6	*+100*	*+75*	-62.5	-87.2
Motorcyclists	66	100	95	90	66	-26.7	-30.5	-34.0	0.0
Passenger car occupants	597	784	403	368	308	-16.3	-23.6	-60.7	-48.4
Pedestrians	359	362	168	163	162	-0.6	-3.6	-55.2	-54.9
Others	87	73	52	40	38	-5.0	-26.9	-47.9	-56.3
Total	***1 291***	***1 486***	***802***	***742***	***654***	***-11.9***	***-18.5***	***-56.0***	***-49.3***

Road safety by age group

Since 1990, the reduction in fatalities has benefited all age groups, with the highest reduction for children and young people.

Young people (18-24) and the elderly (65 and above) have a risk above average.

Table 9.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	16	13	7	4	7	75.0	-75.0	-46.2	-56.3
6-9	25	17	3	6	2	-66.7	-76.0	-88.2	-92.0
10-14	18	24	7	5	2	-60.0	-72.2	-91.7	-88.9
15-17	57	44	17	17	10	-41.2	-70.2	-77.3	-82.5
18-20	107	103	51	40	32	-20.0	-62.6	-68.9	-70.1
21-24	123	155	74	56	64	14.3	-54.5	-58.7	-48.0
25-64	668	881	471	455	378	-16.9	-31.9	-57.1	-43.4
≥ 65	270	243	164	157	155	-1.3	-41.9	-36.2	-42.6
Total	***1 291***	***1 486***	***802***	***742***	***654***	***-11.9***	***-42.5***	***-56.0***	***-49.3***

Road safety by road type

Since 1990, the greatest reduction in fatalities has occurred on urban roads (-64%), while improvement on rural roads has been less marked (-35%). 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 widespread introduction of traffic-calming measures. Since 2000, fatalities decreased by 61% on urban roads, and 53% on rural roads.

Figure 9.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

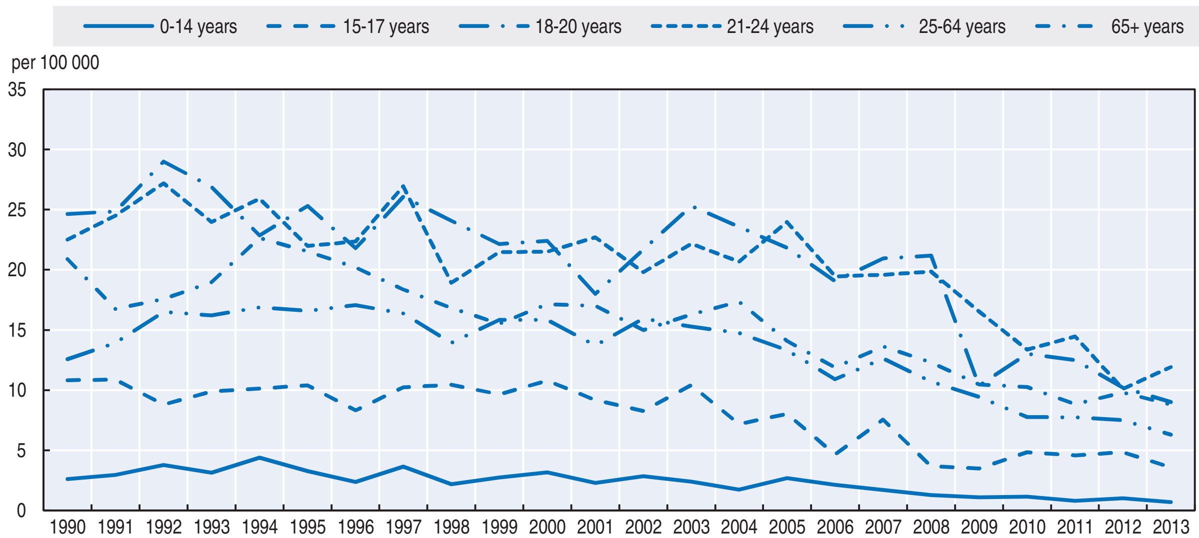
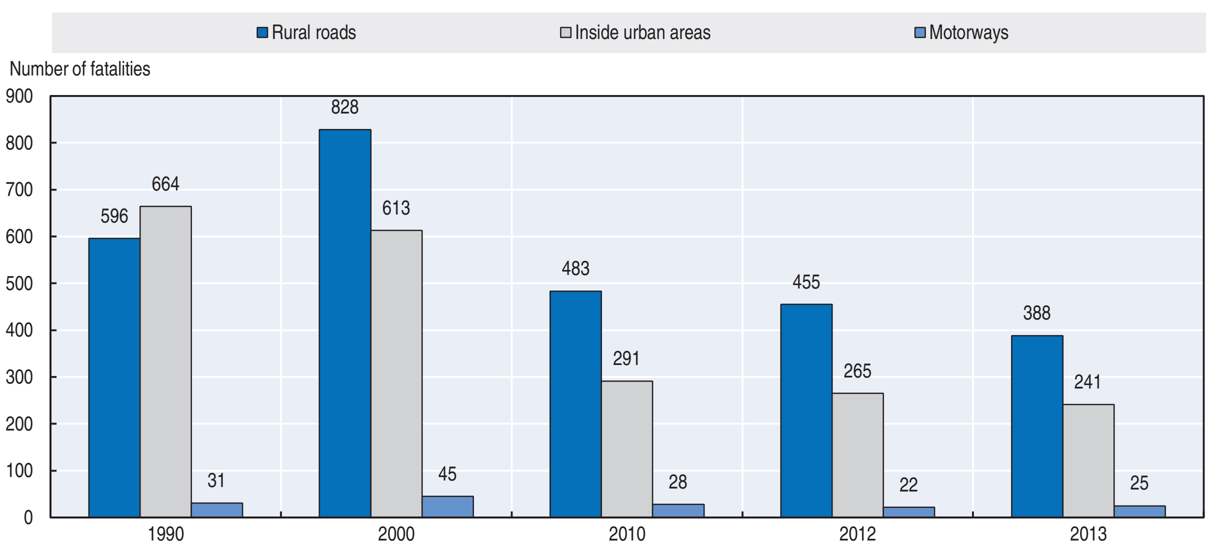


Figure 9.3. **Road fatalities by road type**



Economic costs of traffic crashes

Economic costs engendered by road crashes are evaluated by the human capital approach. They are composed of direct costs (chiefly medical care, rescue service, police and justice) and indirect costs (lost value of economic productivity due to ill health, disability, or premature mortality, and social expenses).

The economic costs of crashes for the Czech Republic are published every year. For 2013, they were estimated at EUR 2 billion, or 1.4% of Gross Domestic Product.

Table 9.4. **Costs of road crashes, 2013**

	Unit cost	Total
Fatalities	EUR 748 556	EUR 489.6 million
Hospitalised people	EUR 187 435	EUR 508.1 million
Slight injuries	EUR 16 673	EUR 376.4 million
Property/damage costs	EUR 10 293	EUR 659.3 million
Total		EUR 2.0 billion
Total as % of GDP		1.4%

Recent trends in road user behaviour

Impaired driving

Drink driving

There is a zero blood alcohol content (BAC) limit in the Czech Republic. When police arrive at the scene of a crash, all persons involved are checked for BAC. If the BAC level of anyone involved is positive, the crash is classified as alcohol-related.

In 2002, 11% of fatalities were due to alcohol related crashes. This proportion decreased to 3.4% in 2007, and then increased again to 14% in 2010 (probably due to a change in the investigation procedure). In 2013, it is estimated that 9% of road fatalities were in alcohol related crashes.

Drugs and driving

Drug influence is forbidden during driving. The share of fatal crashes due to a driver under the influence of drugs was estimated at 2.4% in 2013.

Distraction

In the Czech Republic, drivers are not allowed to drive while using a hand-held phone or other electronic devices such as Personal Digital Assistant. Hands-free devices are tolerated. In 2013, it was estimated that 2.7% of drivers were using a mobile phone while driving.

Fatigue

In 2013, it was estimated that about 1% crashes were due to fatigue.

Speed

Speeding is the main contributing factor in fatal crashes, although the number of drivers above the legal speed limit has decreased, especially in urban areas. The share of fatal crashes due to excessive speed was 33% in 1980, 40% in 2000 and 35% in 2013.

Average speed, 85th percentile speed and the percentage of drivers above the speed limit have been monitored regularly since 2005. The introduction of a demerit point system in 2006 resulted in a reduction in the number of drivers above the limit, but this share increased again in 2010.

The table below summarises the main speed limits in the Czech Republic.

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.

Table 9.5. **Passenger car speed limits by road type, 2014**

Urban roads	50 km/h
Rural roads	90 km/h
Motorways	130 km/h

Dedicated child restraints are compulsory for children between 0 and 3, and for children 4 and above who are below 150 cm in height or 36 kg in weight.

In 2012, 36% of car occupants killed were not wearing a seat belt when the crash occurred. It is estimated that 90 lives could have been saved if all car occupants had worn seat belts.

Table 9.6. **Seat belt wearing rate by car occupancy and road type**

%

	2000	2012
Front seat		
General	63	97
Urban roads	46	98
Rural roads	62	96
Motorways	81	
Rear seats		
Adults	7	66

Helmet-wearing is compulsory for all motorcycle and moped riders, and the wearing rate is nearly 100%. Safety helmets were made mandatory for cyclists up to the age of 15 in 2001 and up to 18 in 2006.

National road safety strategies and targets

Organisation of road safety

BESIP (*Bezpečnost silničního provozu*), an independent department of the Ministry of Transport, is the main co-ordination body for road traffic in the Czech Republic. BESIP is responsible for the National Safety Strategy for 2011-2020. The other key player is the Government Council of the Road Traffic Safety (composed of representatives of parliament, ministries, civil associations, professional organisations and the private sector). There are also 14 regional BESIP co-ordinators.

Road safety strategy for 2011-20

The National Strategic Safety Plan for years 2011-20 has as a target the reduction in the fatalities rate to that of the average rate for Europe.

Road safety targets

The main target is to decrease the fatality rate (deaths per 100 000 inhabitants) to the European average. This corresponds approximately to a 60% reduction in fatalities by 2020 compared to 2009. The second target is a reduction by 40% in the number of persons seriously injured.

Monitoring

Interim targets for the number of fatalities and persons seriously injured have been set for each year until 2020. Results are monitored annually by the BESIP for the Government Council of Road Traffic Safety at national and regional levels.

The interim target for 2013 was achieved, with 654 road deaths for an interim target of 669. The interim target for 2014 (fewer than 600 road fatalities) was not achieved as 688 people died.

Figure 9.4. **Trends in road fatalities towards national target**

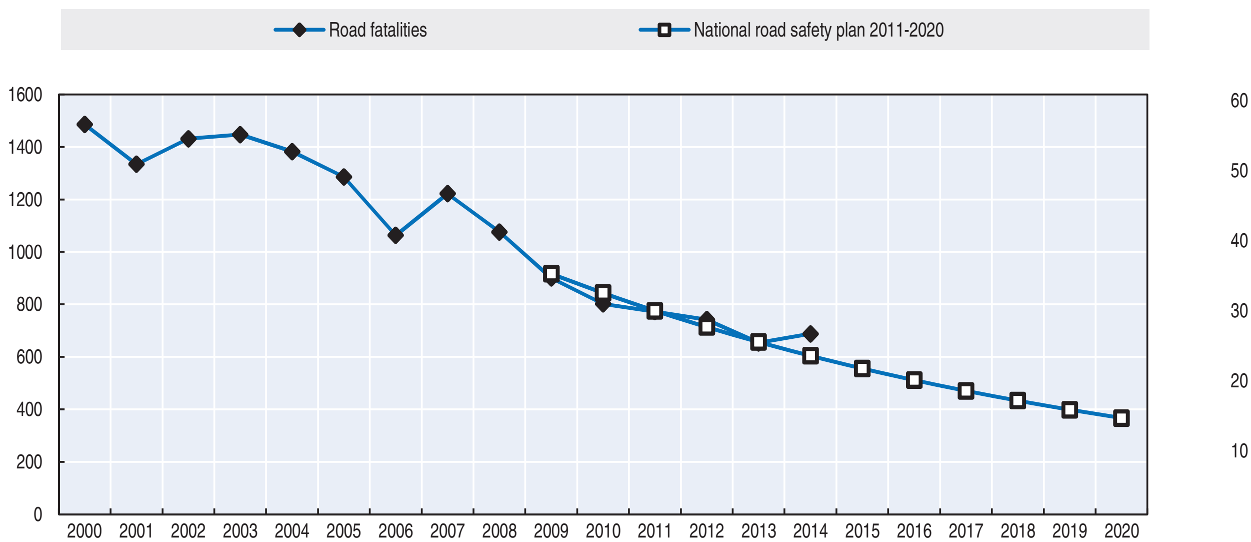
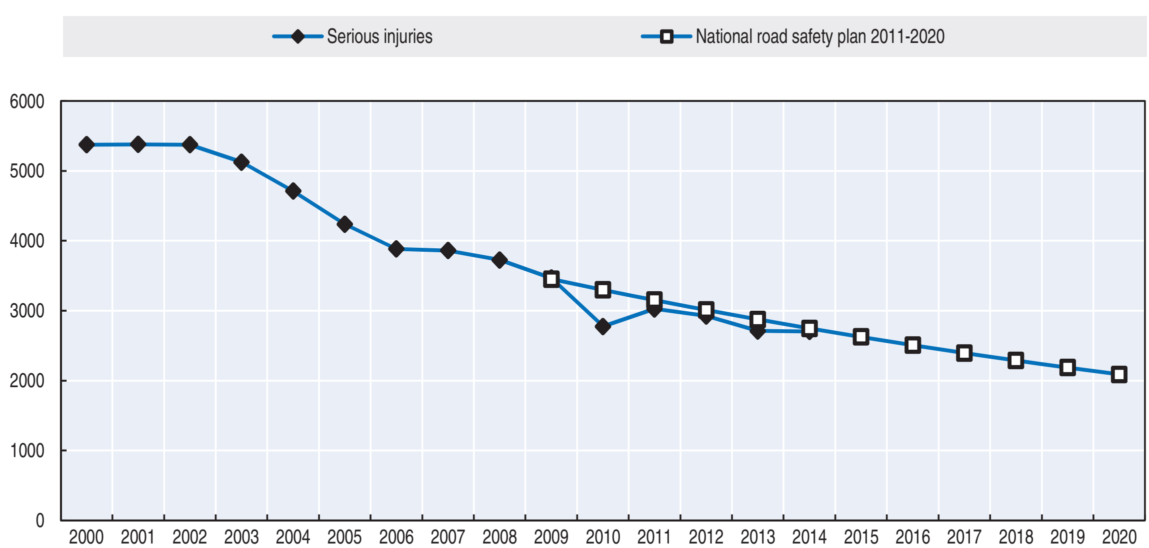


Figure 9.5. **Trends in seriously injured towards national target**



Evaluation of past road safety strategy

The national Strategic Safety Plan 2002-2010 set a target to reduce fatalities by 50%. This fatality target was not reached, although good progress was achieved, especially in the last part of the decade.

Websites

- CDV, Transport Research Centre: *www.cdv.cz*.
- Ministry of Transport: *www.mdcr.cz*.
- Police of the Czech Republic: *www.policie.cz*.
- Road safety observatory: *www.czrso.cz*.
- In-depth accidents analysis: *http://hadn.cdvinfo.cz*.
- Road traffic infrastructure improvement: *http://veobez.cdvinfo.cz*.
- Cyclostrategy (cycle transport development): *www.cyklostrategie.cz*.

Chapter 10

Denmark

*This chapter presents the most recent crash data for Denmark, as well as an update on the Danish road safety strategy and recently implemented safety measures.**

* All data stem from the Danish Road Directorate and IRTAD unless otherwise noted. For more information please contact: Stig R. Hemdorff, Traffic Safety Department, Road Directorate, srh@vd.dk.

The Danish Road Safety Commission set ambitious targets for 2020; no more than 120 deaths, 1 000 serious injuries and 1 000 minor injuries. Based on provisional data, in 2014 there were 183 road deaths, a decrease by 4.2% from 2013. Cyclists represent 17% of all fatalities, which is high when compared to other countries, but cycling is popular in Denmark. In 2013, there was a sharp increase in cyclist fatalities, but provisional data indicate that cyclist deaths declined again in 2014.

Road safety data collection

Definitions applied in Denmark

- Road fatality: Person who dies within 30 days as a result of a traffic crash.
- Seriously injured persons: Those included in the police report under bodily injury and any type of injury other than “minor injuries only”.
- Slightly injured persons: Persons suffering from minor injuries only.

Data collection

Traffic crash data are collected by the police using a common national system. Data are transferred to the Road Directorate every week. These data contain preliminary and final information. Final information about a crash should be sent within six weeks following the incident. This, however, is not always the case. In particular, information about alcohol level awaiting laboratory analysis might delay the process.

In the Danish system, there are more than 90 different parameters for crash data. Some may be subjective. For example, “speed driven before the crash” is filled in by the police officer on the basis of statements by witnesses. More accurate speed information is obtained when investigating fatal accidents or others chosen for in-depth study.

Serious injuries data are based solely on police reports, and the severity of injuries is based upon the judgement of the police officer. A hospital may be contacted to obtain additional information, but there is no systematic linkage with hospital data. For the time being, a linking procedure would not be possible, because the Danish hospital registration system does not include the Abbreviated Injury Scale score of patients; only diagnosis codes are included. Denmark is working on a process to convert diagnosis codes into AIS and Maximum Abbreviated Injury Scale score.

Details of traffic-related casualties are recorded in the national patient register. Information from the national patient register reveals that the real number of injury crashes is much higher than those recorded by the police. Injuries to vulnerable road users are particularly under-reported in the police records.

The weakness of the national patient register is that there is little information on the accident compared to police records. For example, there is little indication on the crash location and no information on vehicle occupancy.

Systematic nationwide use of Accident & Emergency (A&E) department data in addition to the more detailed information from the police would provide a better basis for making decisions. To achieve this, A&E departments would need to include details of the degree of injury in their records, which would allow the conversion of diagnosis codes into injury severity codes. This would require substantial additional resources in A&E departments for recording, training and quality assurance of the data.

Most recent safety data

Road crashes in 2014 – provisional data

Based on provisional data, in 2014 there were 183 road deaths, a decrease by 4.2% compared to 2013.

In 2014, there were positive developments in particular for pedestrians and cyclists.

Road crashes in 2013

In 2013, there were 191 road deaths a 14.4% increase when compared to 2012. The difference in the numbers of those killed occurred mainly in the second half of 2013. It only corresponds to several additional deaths each month with no significant explanation.

In 2013, there were fewer road deaths among 18-24 year olds and fewer fatal crashes in which distraction or high speed were factors.

Trends in traffic and road safety (1990-2014)

Traffic

Between 1990 and 2013, the number of motorised vehicles increased by 43% and the overall vehicle kilometres driven by around 25%.

In 2013, the overall number of motorised vehicles and traffic volume increased by about 1% from 2012.

Road safety

Crashes and casualties

The fewest road deaths in Denmark since registration started in the 1930s occurred in 2012, with 167 deaths. Between 1990 and 2012, the number of fatalities decreased by nearly 70%. In 2008-12, the reduction in fatalities accelerated, with a nearly 60% reduction. In 2009, there was a 25% decrease in the number of road deaths from 2008, which cannot be really explained.

Effective safety measures, tough winter conditions in 2010 and 2011, and possibly the economic downturn might explain this sharp decrease in fatalities. There are also indications that although mean speeds have decreased only slightly, the top speeds have reduced more significantly. This may be more related to saving fuel, which became more expensive. Finally, the penetration of new vehicles with advanced safety equipment in the fleet has also had a positive impact.

The year 2013 saw an increase in road deaths, but it is not expected to influence in the longer term the overall downward trend.

Rates

Since 2000, both the mortality rate (expressed in deaths per 100 000 inhabitants) and the fatality risk (expressed in deaths per billion vehicle-kilometres) have decreased by 64%.

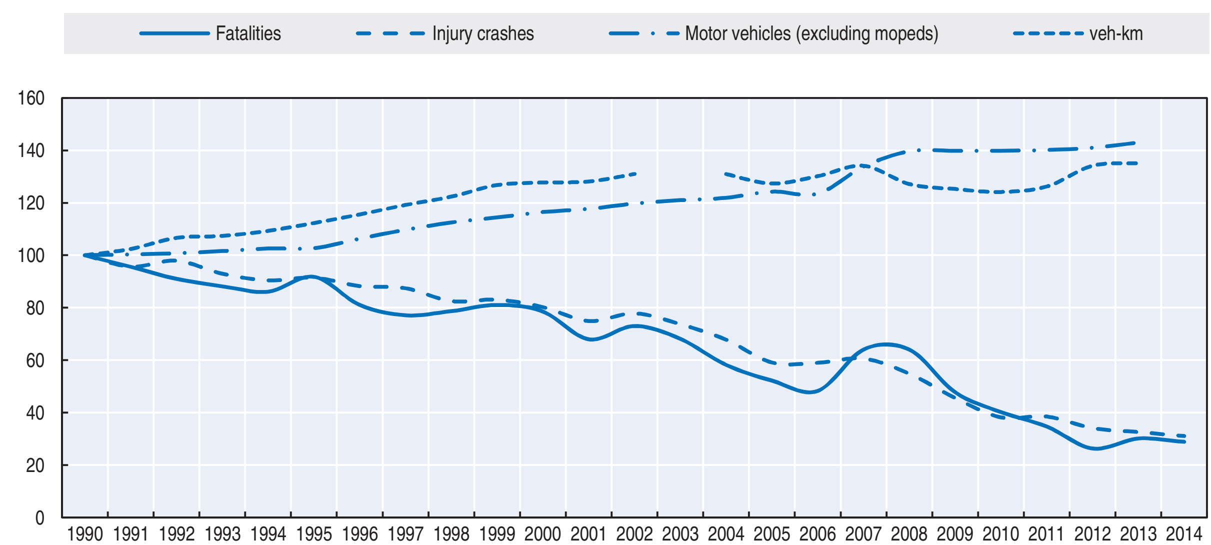
In 2012, Denmark had a mortality rate of 3.0 per 100 000 inhabitants, one of the lowest rates among countries in the Organisation for Economic Development and Co-operation (OECD). The rate slightly increased in 2013 but is expected to be below 3.0 in 2014.

Table 10.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	634	498	255	167	191	14.4	-25.1	-61.6	-69.9
Injury crashes	9 155	7 346	3 498	3 124	2 984	-4.5	-14.7	-59.4	-67.4
Injured persons hospitalised	5 347	4 366	2 068	1 809	1 736	-4.0	-16.1	-60.2	-67.5
Deaths per 100 000 inhabitants	12.3	9.3	4.6	3.0	3.4	13.9	-26.0	-63.5	-72.4
Deaths per 10 000 registered vehicles	3.1	2.1	0.9	0.6	0.6	12.8	-26.7	-68.8	-78.9
Deaths per billion vehicle kilometres	17.3	10.7	5.6	3.4	3.9	13.6	-31.6	-63.7	-77.7
Traffic data									
Registered vehicles[1] (thousands)	2 068	2 409	2 892	2 916	2 957	1.4	2.2	22.7	43.0
Vehicle kilometres (millions)	36 600	46 753	45 432	49 097	49 451	0.7	8.8	5.8	35.1
Registered vehicles per 1 000 inhabitants	403	452	523	523	528	1.0	1.0	16.8	31.1

1. Registered vehicles excluding mopeds.

Figure 10.1. **Road safety and traffic data index 1990 = 100**



Road safety by user group

All user groups have benefited from the important safety improvements introduced since 1990.

Since 2000, the user group benefiting most from safety progress is moped riders, mainly due to the declining popularity of this transport mode. Motorcyclists have the highest risk, 44 times higher than for a car occupant in relation to the distance travelled.

The largest number of deaths and injuries occurred in passenger cars, which reflects the fact that cars are the most common form of transport on Danish roads. Two out of every five road users killed or injured were vulnerable road users, i.e. pedestrians, cyclists or moped riders. Some 5% of those injured on the roads were motorcyclists, but if we look only at those killed, motorcyclists make up a much larger proportion. Injuries to motorcyclists are often very serious. Very few road users are killed or injured in trucks, buses and vans as they often escape injury thanks to the size and mass of their vehicles.

Cyclists represent 17% of all fatalities, which is high when compared to other countries. However, a very large proportion of travel is done on a bicycle in Denmark.

In 2013, there was a sharp increase in cyclist fatalities from 22 to 33. A similar trend was observed for cyclist injuries. Good weather conditions during summer and early spring might have contributed to these high numbers. Based on provisional data, the number of cyclists killed decreased in 2014.

Table 10.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	110	58	26	22	33	50.0	26.9	-43.1	-70.0
Moped users	44	47	11	14	11	-21.4	0.0	-76.6	-75.0
Motorcyclists	39	24	22	10	15	50.0	-31.8	-37.5	-61.5
Passenger car occupants	284	239	137	81	79	-2.5	-42.3	-66.9	-72.2
Pedestrians	118	99	44	31	34	9.7	-22.7	-65.7	-71.2
Others	39	31	15	9	19	111.1	26.7	-38.7	-51.3
Total	***634***	***498***	***255***	***167***	***191***	***14.4***	***-25.1***	***-61.6***	***-69.9***

Road safety by age group

Since 1990, all age groups have shared the reduction in fatalities.

Young people, especially those aged 18-20, are still a high-risk group in terms of road safety, with a fatality risk of more than twice the general population.

Elderly people are particularly vulnerable as pedestrians and cyclists, reflecting the fact that cycling is also a popular transport means among those who are 65 and over.

Table 10.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	9	8	0	2	6	Figures too small for meaningful % comparison		-25.0	-33.3
6-9	15	6	3	3	3			-50.0	-80.0
10-14	24	11	6	2	4			-63.6	-83.3
15-17	35	30	8	6	6			-80.0	-82.9
18-20	46	30	24	20	14	-30.0	-41.7	-53.3	-69.6
21-24	57	55	18	11	11	0.0	-38.9	-80.0	-80.7
25-64	257	224	129	79	94	19.0	-27.1	-58.0	-63.4
≥ 65	191	134	67	44	53	20.5	-20.9	-60.4	-72.3
Total	***634***	***498***	***255***	***167***	***191***	***14.4***	***-25.1***	***-61.6***	***-69.9***

Road safety by road type

In 2013, 63% of fatalities occurred on rural roads, 31% in urban areas and 6% on motorways. Since 2000, the greatest reduction in fatalities occurred on urban roads (-67%), which can be partly explained by a change in traffic patterns. Another explanation is that automatic speed controls were first introduced in urban areas. In addition, speeds are higher on rural roads, resulting in more severe injuries.

Figure 10.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

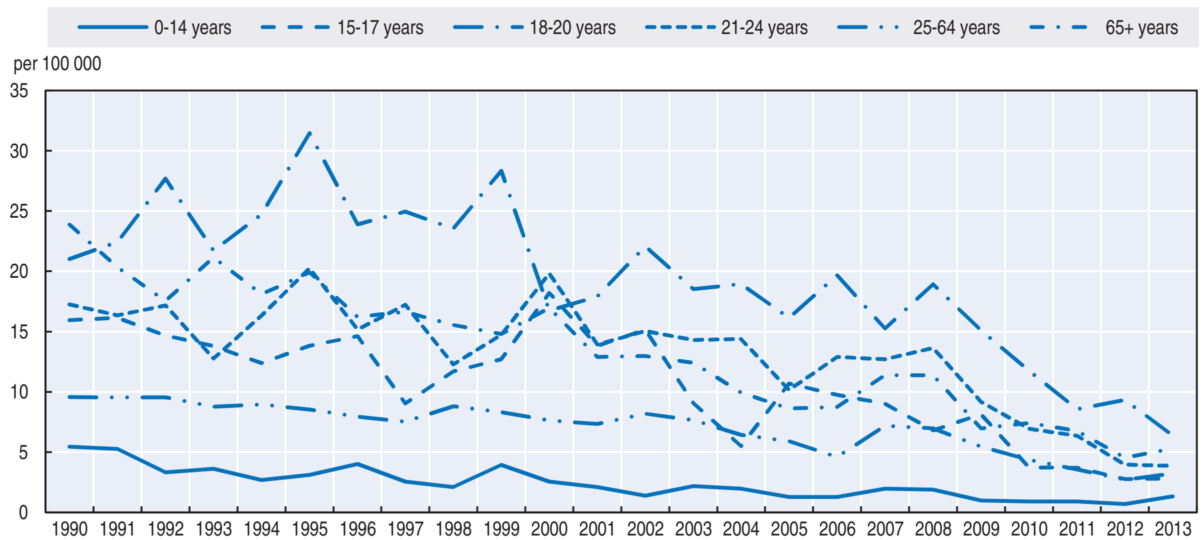
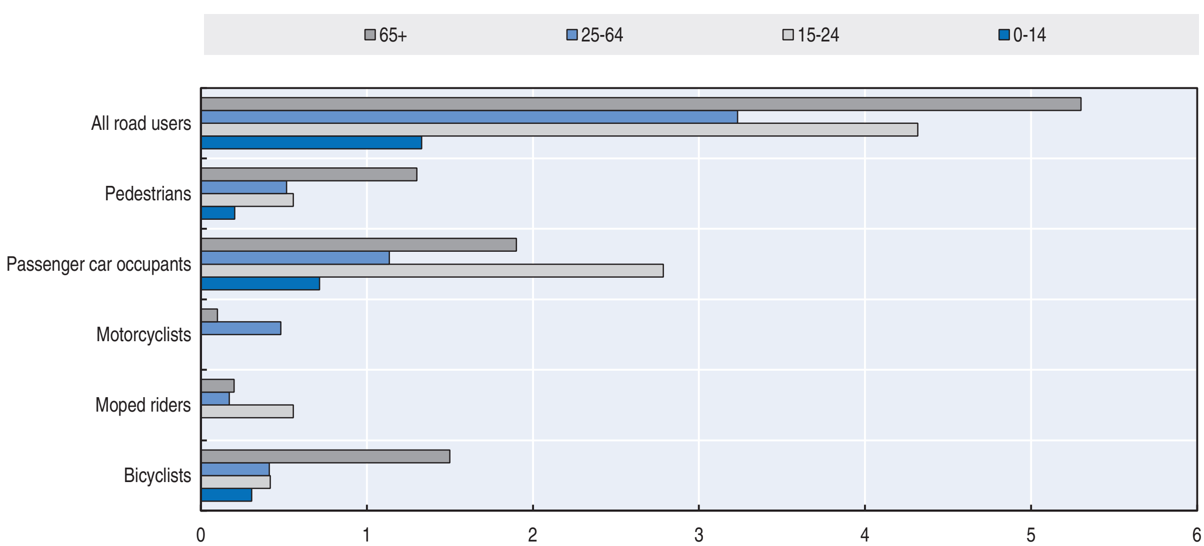


Figure 10.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants, 2013

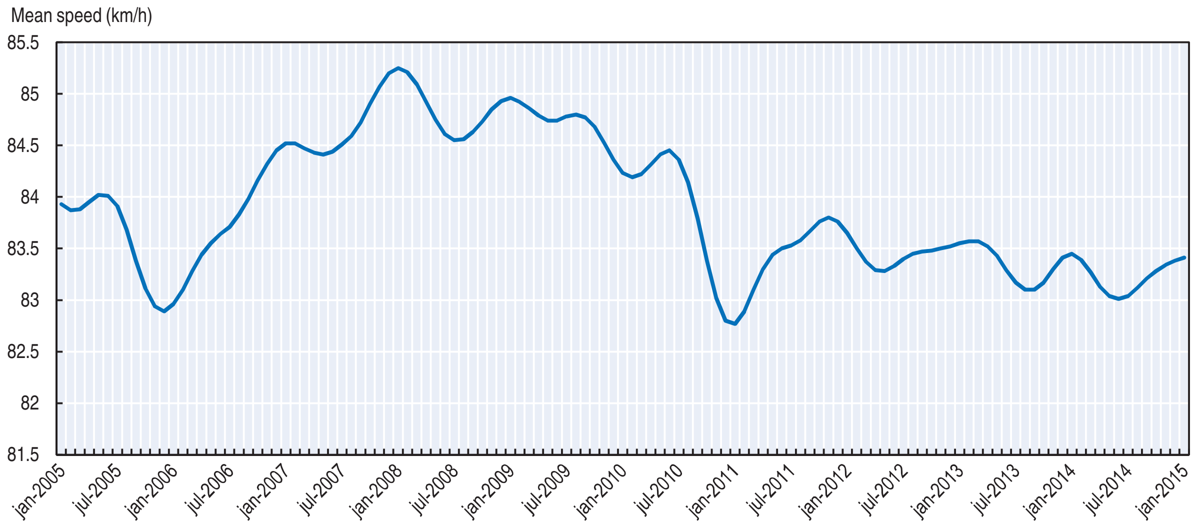


Economic costs of traffic crashes

The socioeconomic costs of road crashes are calculated using so-called transport economic unit prices. These are regularly calculated and updated by the Department of Transport at the Technical University of Denmark.

Unit prices for the socioeconomic costs of road crashes include not only directly measurable expenses – such as hospital and health care charges, the cost of police and emergency services, lost earnings and the costs of material damage – but also the so-called welfare loss, representing a valuation for lost lives and capacity. The welfare loss can be taken as an expression of what road users think it is "worth" to prevent road crashes over and above directly measurable costs (COWI, 2010).

Figure 10.4. **Road fatalities by road type**



Traffic crashes are estimated on the basis of unit costs for deaths, severely injured persons and slightly injured persons.

In 2010, the cost of traffic crashes was around EUR 1.5 billion.

Table 10.4. **Costs of road crashes, 2010**

	Unit cost	Total
Fatalities		EUR 600 million
Severely injured persons		EUR 800 million
Slight injuries		EUR 100 million
Property damage costs		Included in the above
Total		EUR 1.5 billion

Source: COWI (2010).

Recent trends in road user behaviour

Impaired driving

In 25% of fatal crashes, alcohol, drugs and/or medication are thought to have been contributing factors.

Drink driving

The maximum authorised blood alcohol content (BAC) is 0.5 g/l for drivers of any motorised vehicle requiring a driving licence (including professional drivers). There is no maximum authorised BAC for cyclists or pedestrians. The penalty is higher for novice drivers who have had their licence for fewer than three years.

Recent data shows a larger decline for alcohol related crashes compared to other crashes.

Drugs and driving

Since 1 July 2007, the Traffic Act includes a zero tolerance level for driving under the influence of drugs. Since then, there have been more drug-related crashes. This is because before 1 July 2007, police were responsible for proving that the use of drugs had influenced a crash. Police often did not delve further into a case or register it in the statistics as drug-related.

Distraction

Distraction is becoming an important factor to be analysed to explain crash circumstances. In 2013, inattention is thought to have been a contributing factor in 38% of fatal crashes.

The fatal accident investigations and in-depth investigations have shown that distraction is often an issue both inside and outside the vehicle. Therefore external distraction has become a special focus of the new Danish Traffic Safety Action Plan.

Driving while using a hand-held mobile phone is not allowed. The use of hands-free devices is legal.

Fatigue

There is no information available.

Speed

Speeding is thought to be a contributing factor in around 40% of fatal crashes.

The table below summarises the main speed limits in Denmark. There is no reduced speed limit for young drivers.

Table 10.5. **Passenger car speed limits by road type, 2015**

	General speed limit	Comments
Urban roads	50 km/h	For heavy vehicles 50 km/h shall be obeyed even if there is a higher local limit.
Rural roads	80 km/h	
Motorways	130 km/h	About half of the motorway network has a signed speed limit of 110 km /h especially around the cities.

The Road Directorate regularly publishes a speed barometer, where the speed development on different road types is monitored. Over time, there is a general decline in the mean speed. There are two specific low points which are due to heavy winter conditions.

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. Such cars account for a very low share of the Danish car fleet.

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

There is no mandatory helmet use law for cyclists.

National road safety strategies and targets

Organisation of road safety

There is no leading agency as such concerning traffic safety in Denmark. The responsibility is in the ministries of transport, justice, interior and health, associated

Figure 10.5. **Development in mean speed by month**

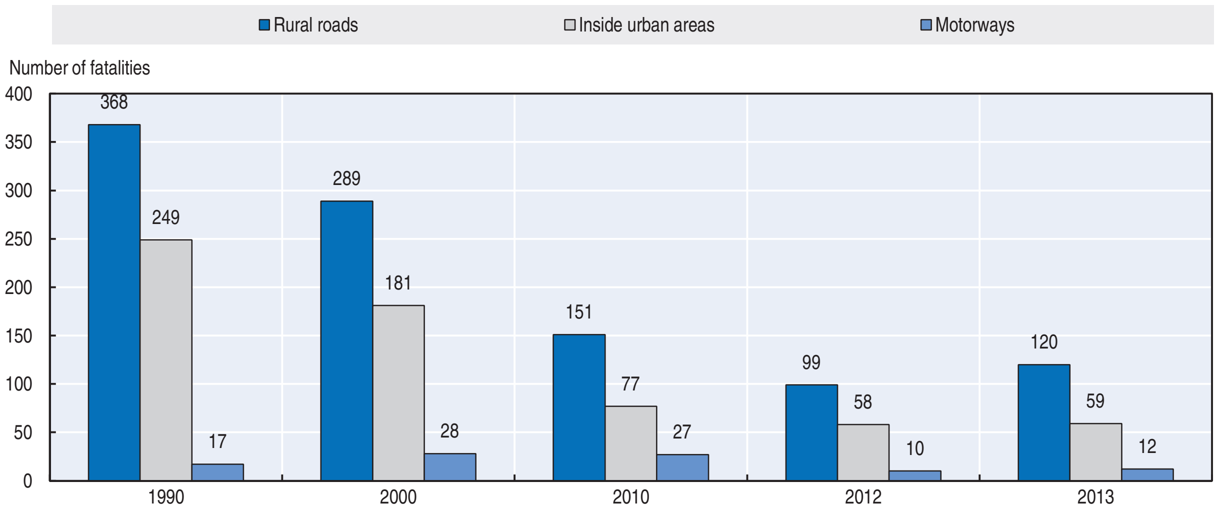


Table 10.6. **Seat belt wearing rate by car occupancy and road type**

%

	2010	2012
Front seat		
General	92	94
Urban roads (drivers)	90	94
Rural roads (drivers)	95	95
Rear seats		
Adults	76	81

agencies and in the municipalities. Overall, this organisation works well because stakeholders share the same goal and work in close co-operation with each other. The Danish Road Safety Commission is an advisory body working closely with the Danish Road Safety Council on road safety campaigns. It sets targets and areas for interaction. It does not manage a budget, so it is up to stakeholders to take up the recommendations.

Traffic safety work in Denmark is very locally based.

Road safety strategy for 2011-2020

In May 2013, the new Traffic Safety Action Plan was launched with the following slogan "Every accident is one too many – a shared responsibility". The Action Plan includes ten focus areas.

Road safety targets

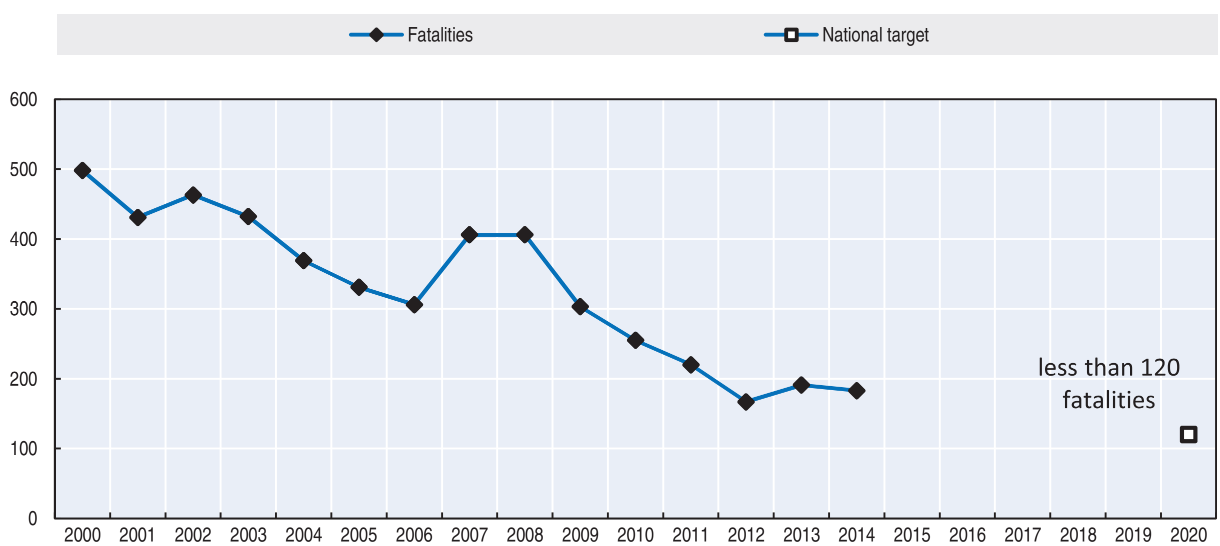
The Danish Road Safety Commission set ambitious targets for 2020: no more than 120 deaths, 1 000 serious injuries and 1 000 minor injuries by 2020. This follows the European Union objective to halve the number of fatalities by 2020 in comparison to 2010. This is a more ambitious target than in previous action plans, and the aim is to reach the objective in a shorter timeframe.

Monitoring

For each focus areas, a set of suggested measures has been proposed and a performance indicator defined. The 10 focus areas will be reviewed on a regular basis between now and 2020 by establishing measurement points as a basis for necessary actions.

Focus areas	Indicators
1. Speeding	Proportion of journeys exceeding the speed limit
2. Alcohol and drugs	Number of road users killed and injured in accidents where at least one driver of a motor vehicle has a blood alcohol level over 0.5 g/l
3. Inattention	Proportion of drivers who admit to engaging in distracting actions while driving:
4. Failure to wear seat belts and helmets	Proportion of drivers and passengers who wear seat belts: Proportion of adult cyclists wearing helmets
5. Pedestrians	Number of pedestrians killed and injured
6. Cyclists and moped riders	Number of cyclists and moped riders killed and injured
7. Young drivers under 24	Number of deaths and injuries in accidents involving at least one car driver under 24 years old
8. Accidents with oncoming traffic	Number of persons killed and injured in accidents with oncoming traffic
9. Single-vehicle accidents	Number of persons killed and injured in single-vehicle accidents
10. Accidents at rural junctions	Number of persons killed and injured in accidents at rural junctions

Figure 10.6. **Trends in road fatalities towards national target**



Evaluation of past road safety strategy

Denmark's 2000 Traffic Safety Action Plan set as its main target a 40% reduction in fatalities and serious injury crashes by 2012. Measures supporting the target included a particular focus on speeding, bicycle safety, young drivers and drink-driving.

As fatalities in 2006 were very close to the target of 300 for 2012, the Traffic Safety Commission revised the target in 2007 to 200 fatalities by 2012. The target was reached by the end of 2012, as there were 167 fatalities.

References

COWI (2010), *Værdisætning af transportens eksterne omkostninger* (in Danish). COWI and Transportministeriet, Copenhagen, available from *www.trm.dk*.

Websites

- Danish Road Directorate, *www.vejdirektoratet.dk*.
- Technical University of Denmark, *www.transport.dtu.dk*.
- Aalborg University, *www.aau.dk/*.
- The Danish Road Safety Commission National Action Plan 2013-2020, *www.faerdselssikkerhedskommissionen.dk/sites/kombelt.dev2.1508test.dk/files/filer/Danish%20National%20Action%20plan%202013-2020%20%E2%80%9CEvery%20Accident% 20is%20one%20too%20many%20%E2%80%93%20a%20shared%20responsibility.pdf*.

Chapter 11

Finland

*This chapter presents the most recent crash data for Finland, as well as an update on the country road safety strategy and the recently implemented safety measures.**

* All data stem from the Finnish Transport Safety Agency and IRTAD unless otherwise noted. For more information please contact: riikka.rajamaki@trafi.fi.

Based on provisional data, Finland recorded 226 road fatalities in 2014, 32 fewer than in 2013, and the mortality rate declined to 4.8 road deaths per 100 000 inhabitants. While the 18-20 age group had a mortality rate much higher than the other age groups, it was reduced by half in 2012, and the positive trend continued in 2013. The long-term target in Finland is to have fewer than 100 road fatalities by 2020.

Road safety data collection

Definitions applied in Finland

- Road fatality: A person who died immediately in a crash or within the next 30 days. Suicides and presumed suicides are not removed from the statistics.
- Seriously injured person: Person who suffers injuries with a score of three or above on the Abbreviated Injury Scale (MAIS3+).

Data on serious injuries will be provided as of December 2015, starting with data from 2014. Injury severity information will come from a national health care database. Based on a recent study, there were around 1 400 serious injuries in road traffic in 2010, of which 800 were included in official statistics (Airaksinen & Kokkonen 2014).

Data collection

Traffic crash data in Finland are collected through two different channels: The police and the insurance companies.

Statistics Finland receives data on road traffic crashes from the police. They are entered into the Patja information system of police affairs. Local police districts transfer the data to a central register, from which new data are processed and transferred to Statistics Finland three times a month. Statistics Finland checks them, makes further inquiries to the police districts and supplements the data, where necessary, with data from other registers.

Statistics Finland supplements its annual data with data on deaths derived from statistics on causes of death. The data are also supplemented with information on crash locations from the Finnish Transport Agency's Digiroad information system; data from the Rescue Services' PRONTO statistics on resources and crashes; data on coercive measures from Justice Statistics; and data on fatal drunk-driving crashes from the Road Crash Investigation Teams. Data on road traffic crashes are also supplemented annually with the Finnish Transport Safety Agency's data on driving licences and motor vehicles.

Statistical coverage of fatal crashes is 100%. The Road Crash Investigation Teams investigate all fatal road traffic crashes in Finland. The findings of the teams are assembled into annually published reports, and the data are also used for special studies. Reporting is controlled using death certificates. Due to the comprehensive coverage and severity, the number of traffic fatalities is a more reliable indicator of the trend in road safety than the figure for crashes. Coverage of injury crashes is about 20%. Coverage is the worst for cyclists injured in single crashes. Many of these crashes are not reported to police because, in a number of cases, the injuries are slight and compensation is settled between the parties involved.

In addition to statistics based on police reporting, the Traffic Safety Committee of Insurance Companies (VALT) compiles and publishes statistics on crashes for which insurance compensation has been paid. The data are primarily based on information reported by insured policyholders. The VALT statistics are most useful in the case of damage-only crashes, as many minor crashes are reported to the insurance company but not to the police.

Hospitals and health centres also compile statistics on cases of traffic crashes, but the data collected are mainly intended for health-care services and cannot be properly used for traffic safety purposes. These data can be used as supplementary material, as they contain information excluded from other statistics, such as injuries caused in pedestrian and bicycle traffic.

As mentioned above, Finland will start reporting on the number of serious injuries (MAIS3+) in 2015, with data from accidents in 2014, by combining hospital data with police-reported accidents.

Most recent safety data

Road crashes in 2014 – provisional data

Based on provisional data, there were 226 road fatalities in 2014, 32 fewer than in 2013, and the number of alcohol-related fatal crashes decreased considerably, by 45%. There was also positive development in motorcycle crashes, run-off-road crashes and crashes involving elderly people.

Road crashes in 2013

In 2013, 258 people were killed in traffic, three more than in 2012.

For young drivers, a positive safety trend continued in 2013. The number of fatal crashes involving heavy trucks decreased in 2013, after three years with bad records. The number of moped crashes has decreased by one-third since 2011, partly due to the introduction of mandatory training and a driving test.

Trends in traffic and road safety (1990-2014)

Traffic

In the last 10 years, distance travelled by cars and vans increased by 7%. In 2012 and 2013, it decreased slightly from the 2011 level, probably as a result of the economic downturn. In 2014, based on preliminary data, distance travelled increased slightly.

In the period 2004-13, kilometres travelled by trucks increased by 4% while the domestic transport volume (tonne-kilometres) decreased by 30%. One factor is that Finland's industrial structure has changed, and high technology products weigh less than forest industry products (Finnish Transport Safety Agency, 2014). In 2014, based on preliminary data, distance travelled by trucks decreased. The reason is the economic downturn and economic sanctions on Russia.

Road safety

Crashes and casualties

Between 1990 and 2013, the number of deaths decreased by 60%. In recent years (2000-13), deaths decreased by 35%. Pedestrian and cyclist fatalities and those in urban areas decreased more than fatalities for car occupants and in rural areas.

No single measure can be identified as the main reason for this positive road safety development. Between 2000 and 2013, a number of measures were implemented including:

- lower speed limits in most urban areas
- construction of pedestrian and bicycle paths
- construction of 250 km of motorways
- installation of automatic speed cameras on nearly 2 000 km of main roads
- reform of driver education
- renewal of the car fleet, with better safety performance and occupant protection than 15 years ago.

Rates

Since 1990, the death rate per 100 000 inhabitants has decreased by 64%. In 2013, the death rates per 100 000 inhabitants and per billion vehicle-kilometres were both at 4.8.

Table 11.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	649	396	272	255	258	1.2	-5.1	-34.8	-60.2
Injury crashes	10 175	6 633	6 072	5 725	5 334	-6.8	-12.2	-19.6	-47.6
Deaths per 100 000 inhabitants	13.0	7.7	5.1	4.7	4.8	0.7	-6.5	-37.9	-63.6
Deaths per 10 000 registered vehicles	2.9	1.6	0.8	0.7	0.7	-1.3	-13.3	-58.9	-77.4
Deaths per billion vehicle kilometres	16.3	8.5	5.1	4.7	4.8	1.3	-5.8	-43.8	-70.8
Traffic data									
Registered vehicles[1] (thousands)	2 235	2 483	3 595	3 837	3 933	2.5	9.4	58.4	76.0
Vehicle kilometres (millions)	39 750	46 710	53 815	54 235	54 170	-0.1	0.7	16.0	36.3
Registered vehicles per 1 000 inhabitants	449	480	672	710	725	2.0	7.9	50.9	61.3

1. Registered vehicles excluding mopeds.

Road safety by user group

All user groups have benefited from important safety improvements since the 1990s. Cyclist and pedestrian user groups benefited the most from the progress in safety. There has also been a sharp drop in fatalities among moped riders.

However, the safety situation for motorcyclists has deteriorated. There were 10 motorcyclists killed in 2000 and 24 in 2013. The amount of motorcycling has grown rapidly in the 2000s and the number of registered motorcycles increased by 75% in 10 years.

Injury crashes involving mopeds more than doubled between 2000 and 2008, probably due to the increase of the moped fleet. In 2012 and 2013, there were significantly fewer moped crashes, around 750 per year, because of new legislation requiring mandatory driving lessons and a driving test and because of a decrease in registration of new mopeds.

Figure 11.1. **Road safety and traffic data index 1990 = 100**

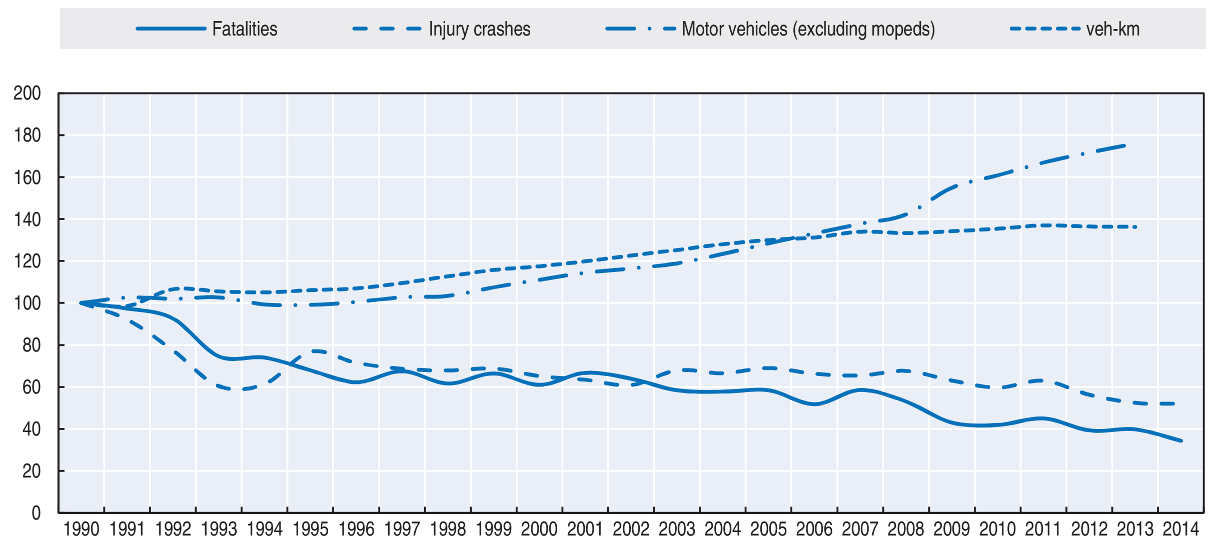


Table 11.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	101	53	26	19	20	5.3	-23.1	-62.3	-80.2
Moped users	27	9	9	7	5	-28.6	-44.4	-44.4	-81.5
Motorcyclists	28	10	16	21	24	14.3	50.0	140.0	-14.3
Passenger car occupants	343	224	159	147	152	3.4	-4.4	-32.1	-55.7
Pedestrians	105	62	35	29	34	17.2	-2.9	-45.2	-67.6
Others	45	38	27	32	23	-28.1	-14.8	-39.5	-48.9
Total	***649***	***396***	***272***	***255***	***258***	***1.2***	***-5.1***	***-34.8***	***-60.2***

Road safety by age group

Since 1990, 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 80%, from 45 in 1990 to 6 in 2012.

While the 18-20 age group had a mortality rate much higher than the other age groups, it was reduced by half in 2012, and the positive trend continued in 2013.

Child safety

There has been a remarkable decrease in the number of children killed in traffic since 1990. More recently, in 2012-14, an average of eight children were killed and 450 injured annually. Of children killed or injured, 40% were car occupants, 29% were cyclists and 15% were pedestrians.

Road safety by road type

In 2013, 75% of fatalities occurred on rural roads, 22% in urban areas and 3% on motorways. Since 1990, the reduction in deaths has been greater on urban roads.

Approximately one third of fatalities are due to frontal crashes, which typically occur on main roads outside built-up areas. Another third of fatalities are run-off-road crashes,

Table 11.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from 2012	2010	2000	1990
0 - 14	45	20	7	7	6	-14.3	-14.3	-70.0	-86.7
15-17	43	16	13	14	12	-14.3	-7.7	-25.0	-72.1
18-20	66	32	28	15	15	0.0	-46.4	-53.1	-77.3
21-24	63	19	20	26	21	-19.2	5.0	10.5	-66.7
25-64	274	203	140	135	131	-3.0	-6.4	-35.5	-52.2
≥ 65	158	106	64	58	73	25.9	14.1	-31.1	-53.8
Total	***649***	***396***	***272***	***255***	***258***	***1.2***	***-5.1***	***-34.8***	***-60.2***

Figure 11.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

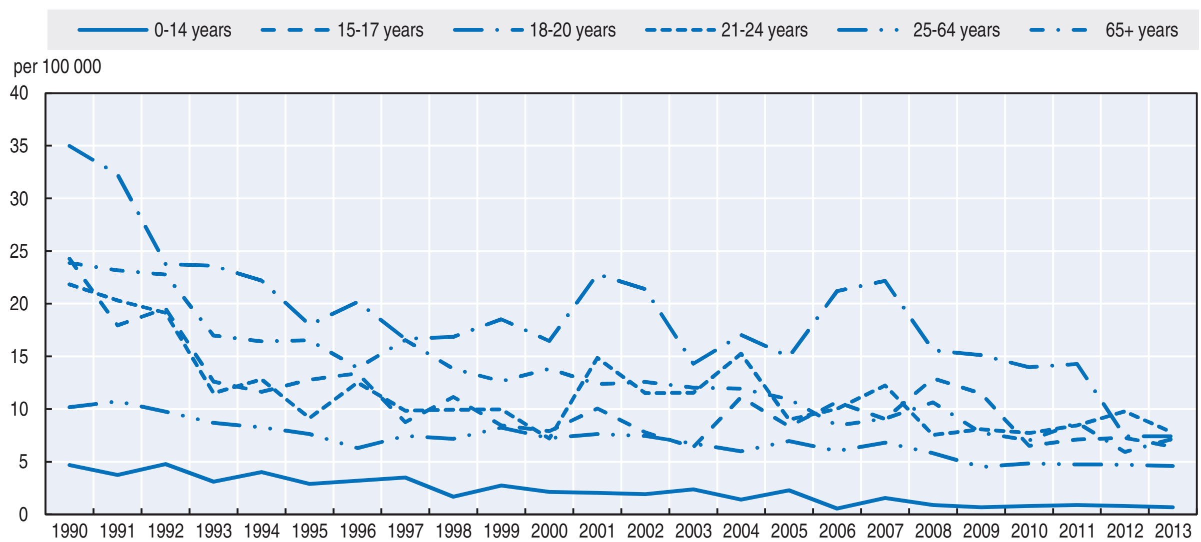
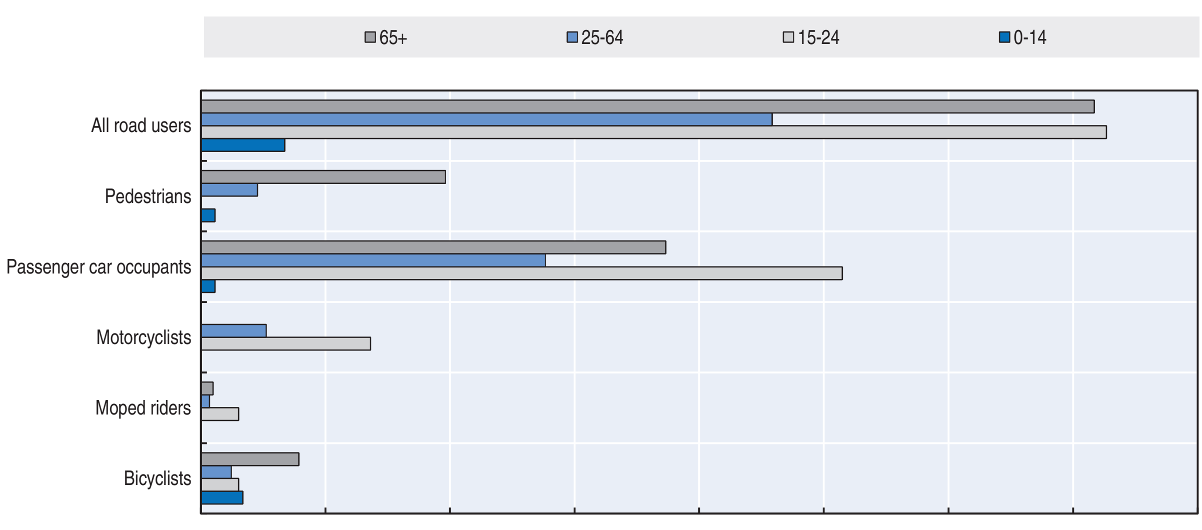
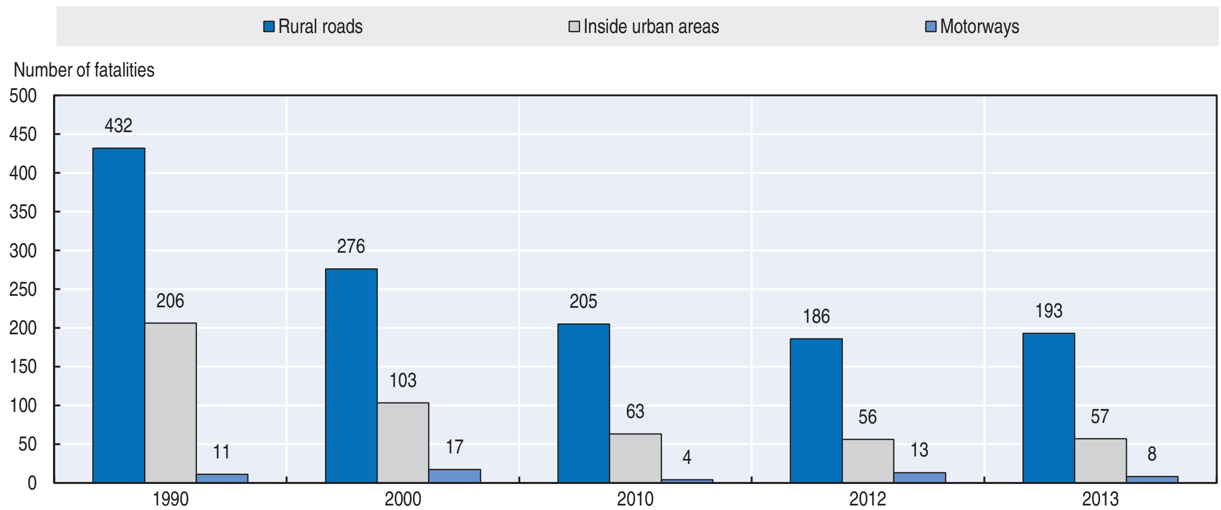


Figure 11.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants, 2013



typically on small country roads. Finland has only about 880 km of motorways, and they account for a minor share of crashes. High-risk roads are usually those with a single carriageway, no central fencing and 80 km/h or 100 km/h speed limits.

Figure 11.4. **Road fatalities by road type**



Economic costs of traffic crashes

The economic and social costs of road crashes is estimated based on actual medical and intervention costs (health care, police, fire brigade, etc.); loss of production calculated through an estimate of lost labour time; and loss of human well-being estimated on the basis of a willingness-to-pay method, using values from other Nordic countries.

Cost analysis is conducted and updated every five years. In the near future, health care information on crash severity will be integrated to improve the estimates of health costs.

In 2013, the cost of road crashes based on police reported crashes was EUR 2.3 billion. This does not include costs associated with non-reported crashes (in particular, a large proportion of bicycle crashes and property-damage-only crashes).

Table 11.4. **Costs of road crashes, 2013**

	Unit cost	Total
Fatalities	EUR 2 406 200	EUR 621 million
Injuries	EUR 309 100	EUR 2 065 million
Property damage only crashes	EUR 3 200	EUR 79 million
Total		EUR 2.8 billion
Total as % of GDP		**1.4 %**

Source: Finnish Transport Agency (2015).

Recent trends in road user behaviour

Impaired driving

Drink driving

The maximum authorised blood alcohol content (BAC) is 0.5 g/l for all drivers. In 2013, it was estimated that 22% of fatal crashes involved a driver with a BAC above the

0.5 g/l limit (this share was 24% in 2010, 25% in 2011 and 17 % in 2012). It is typical in alcohol-related fatal crashes that the driver is strongly intoxicated. In 2013, 88% of drivers responsible for a fatal crash exceeded 1.2 g/l, the limit of aggravated drunken driving.

Those who die in drunk-driving crashes are most often the drunken drivers themselves: in 2011-13, 73% of killed persons were drunken drivers, 18% were their passengers and 9% were others.

The percentage of drivers under the influence of alcohol in traffic has slowly decreased from 0.25% in 1990. In 2013 and 2014, 0.14% of drivers had a BAC above the legal limit (Löytty, 2015).

Drugs and driving

In 2013, 17 drivers involved in fatal crashes were suspected of driving under the influence of drugs (16 drivers in 2012). Six of them also had a BAC above the 0.5 g/l limit.

Distraction

In Finland, it is forbidden to drive with a hand-held mobile phone, while hands-free devices are tolerated. Around three fatal crashes every year are related to mobile phone use while driving (Jääskeläinen, 2014).

Fatigue

Road accident investigations teams have assessed that falling asleep or a decrease of alertness was the immediate risk factor in 18 fatal crashes in 2013. A total of 44 crashes involved background risks related to fatigue or decrease of alertness.

Speed

According to the report from the Road Crash Investigation Teams, speeding or inappropriate speed is a contributing factor in 42% of all motor vehicle fatal crashes.

There have not been any major changes in mean speed over the past 10 years. Reduction of the mean speed by 1-3 km/h has been observed on road sections where speed cameras have been installed. While a high proportion of drivers exceed the speed limit, especially during the winter months when speed limits are lowered, the percentage of drivers speeding 10 km/h above the limit is relatively low: In 2014, 12% of drivers exceeded the speed limits in summer and 14% in winter on main roads.

Speed cameras, implemented during the past decade, cover around 3 000 km of the main roads.

The table below summarises the main speed limits in Finland.

Table 11.5. **Passenger car speed limits by road type, 2015**

Urban roads	50 km/h	30, 40 or 60 km/h on a big share of streets
Rural main roads	100 km/h (summer) 80 km/h (winter)	60-80 km/h in intersections or with bad road geometry or high traffic volume
Motorways	120 km/h	100 km/h near cities. A large share of motorways have variable speed limits

Seat belts and helmets

Seat belt use has been compulsory for front seats since 1975 and for rear seats since 1987. There has been a significant increase in seat belt use by car drivers since 1980.

Based on monitoring by Liikenneturva the seat belt wearing rate is 94% on front seats on rural roads, 89% on front seats on urban roads, and 88% on rear seats.

According to the Road Crash Investigation Teams, 39% of car or van occupants killed did not wear a seat belt. It is estimated that a 100% seat belt use would have saved 30 lives in 2012.

Under Finnish law, children under 135 cm in height must wear a safety device determined by their weight when in a car.

Table 11.6. **Seat belt wearing rate by car occupancy and road type**

%

	1980	2000	2010	2013
Front seat				
General			82	95
Urban roads (driver)	22	80	91	87
Rural roads (driver)		89	94	95
Rear seats				
Adults			84	87
Children (child restraint use)	No information			

Helmet wearing is compulsory for all motorcycle and moped riders.

Although 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 and reached 44% in 2013. 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.

National road safety strategies and targets

Organisation of road safety

The Ministry of Transport and Communications is responsible for drafting legislation concerning road safety. The national road safety programme is drafted and monitored by the Consultative Committee on Road Safety, with representatives from ministries and expert organisations.

The Ministry's main agencies involved in road safety are:

- The Finnish Transport Agency, which is responsible for road design, construction and maintenance, and for road and traffic signs.
- The Finnish Transport Safety Agency, which is responsible for vehicle registration, supervision of driving schools and driving licence operations, and organisation of matters related to vehicle inspection. The agency's responsibilities also include campaigning for road and traffic safety.
- Liikenneturva (the road safety council) which implements campaigns for road and traffic safety, disseminates information, contributes to road safety education for various age groups and provides further training for drivers.

Road safety target and programme

The road safety programme for years 2012-14 ended. Preparations for a new programme have started.

Road safety targets

The target for 2020 is based on the target set by the European Commission to reduce by half the number of fatalities by 2020 compared to 2010 level. In addition, there is a target to reduce by 25% the number of persons seriously injured.

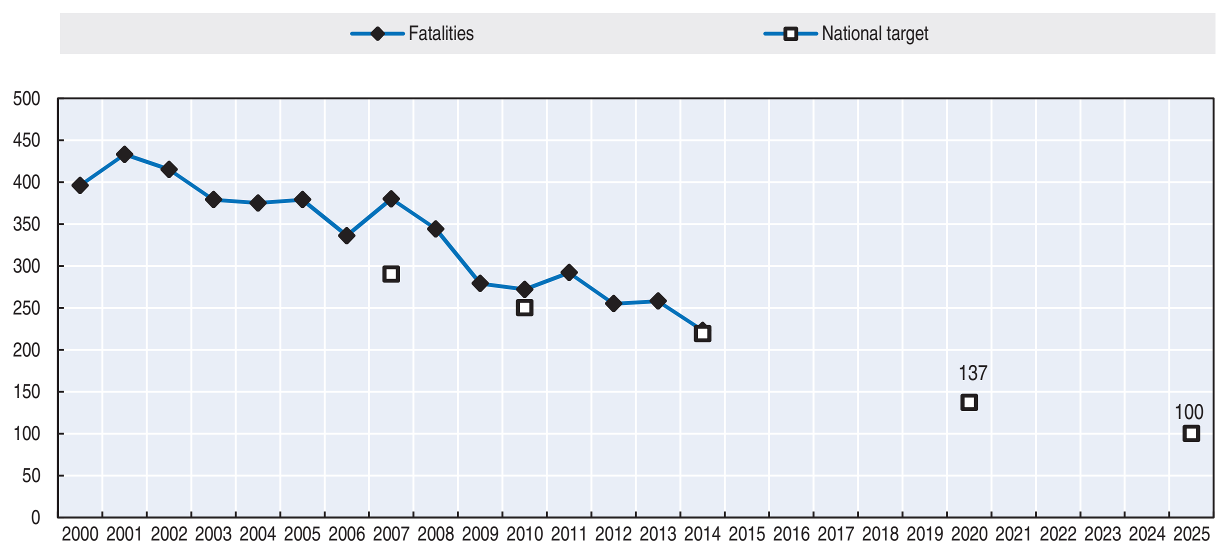
The corresponding numerical targets are:

- fewer than 219 fatalities (or 40 fatalities per million inhabitants) by 2014
- fewer than 137 fatalities (or 24 fatalities per million inhabitants) by 2020
- fewer than 5 750 injuries by 2020
- long-term target of fewer than 100 fatalities by 2025.

Monitoring

At the current pace, it is estimated that the 2020 target will be reached for injuries. The target set for 2014 was nearly met (226 was 7 fatalities above the target).

Figure 11.5. **Trends in road fatalities towards national target**



Evaluation of past road safety strategy

Implementation of the 2012-14 road safety programme was reviewed. Of about 80 road safety measures in the programme, nearly half were implemented well, about 40% were implemented partially, and six measures were not implemented. Campaigning, education, norms and studies were implemented well, while road improvements and increase of automatic traffic enforcement were implemented poorly. Road improvements were lacking money.

When this programme was planned, it was estimated that it would reduce the annual number of road fatalities by 30-40 in year 2014, if the implementation was extensive and efficient. However, it seems that only 14-18 fatalities were saved. The most important realised measures are the increased use of safety devices (helmets, seat belts, and reflectors), several campaigns and changes in winter maintenance and speed limits. The most important shortcomings in the implementation were low use of alcolocks, no increase in fixed automatic speed enforcement, slow penalty system development, far fewer roads with median barrier than planned.

In the future, road safety programmes should be better integrated with target setting and steering in various administrative sectors. Realisation of the programme should be followed better, and content of the programme should be modified if there are problems with fulfilment or changes in road safety.

Recent safety measures (2012-14)

Road safety management

Driving licence

- The new law on drivers' licences came into force on 19 January 2013, with changes concerning licences and education. Different licences are now required for light four-wheel vehicles (moped cars) and moped licences.

Enforcement

- Installation of plate-recognition devices in police cars started in 2014. As of April 2015 around 100 devices were in use.

High capacity vehicles

- Special permits for High Capacity Transport vehicle combinations have been granted since November 2013.

Infrastructure

- 42 km of motorway and 85 km of roads with median barrier were built in 2012-14.
- A new planning guide for moped traffic was published in 2013, which recommends that mopeds circulate on the roadway instead of bicycle paths, which was a common practice in most urban areas. This measure was pre-tested in some areas in Northern Finland, and especially in the Oulu region, where it resulted in a significant reduction in moped crashes.

Vehicles

Finland's vehicle fleet is one of the oldest in the European Union. The average age of passenger cars in traffic is 11 years. A trial incentive programme for car scrappage will start in July 2015 to promote the replacement of old vehicles with modern vehicles.

Recent and ongoing research

- Estimating the number of serious injuries in road traffic using the MAIS3+ definition will begin in 2015, following a 2014 study that tested a method for converting ICD-10 injury information to the Abbreviated Injury Scale. (Airaksinen and Kokkonen, 2014).
- The cost of serious injuries in road accidents will continue to be studied in 2015 and 2016 using health care database information on costs and length of treatments.
- A recent study assessed the impact of road traffic automation in Finland (Innamaa et al., 2015). With an automation level of SAE 2 or more, the safety effects are expected to be remarkable, but infrastructure investment and winter maintenance costs will grow.

- An important study on High Capacity Transport (HCT) vehicle combinations will start in 2015 and will focus on the effect of HCT vehicles on other road users' behaviour using video recording. Special permits for HCT vehicle combinations have been granted since November 2013. In these combinations, the mass exceeds 76 tonnes or the length exceeds 25.25 metres or there may be several trailers behind a single truck unit. The purpose of testing HCT combinations on predefined routes is to enable the development of logistics, environmental friendliness and traffic safety.
- A study was conducted in connection to the introduction of automatic number plate recognition (ANPR) in police vehicles. This equipment is used to recognise vehicles which are prohibited for some reason. In the region of Oulu in northern Finland, the testing of ANPR devices by the police was widely publicised and found to cut the number of these offences by more than 50% compared to an area in southern Finland where the devices were not used.

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- Statistics Finland: *www.stat.fi/index_en.html*.

Chapter 12

France

*This chapter presents the most recent crash data for France, as well as an update on the French road safety strategy and recently implemented safety measures.**

* All data stem from the Observatoire national interministériel de la sécurité routière (ONISR) and IRTAD unless otherwise noted. For more information please contact: onisr.dscr@interieur.gouv.fr.

Based on provisional data, France suffered 120 more fatalities in 2014 than the year before, as warm weather encouraged travel. While rain dampened the number of motorcycle trips in summer 2014, reducing seasonal motorcycle fatalities, motorcyclists still have a higher risk of fatality. While they account for less than 2% of distance travelled, motorcycles and mopeds represent 24% of total fatalities. The Minister of Interior announced on 26 January 2015 an action plan with 26 road safety measures to be implemented within a year.

Road safety data collection

Definitions applied in France

- Road fatality: Person who died within 30 days following a road crash. Before 2005, fatalities were counted within six days. For international comparisons, a correction factor of 1.069 is applied for years before 2005.
- Hospitalised: Non-fatal casualty who stayed longer than 24 hours in hospital. Before 2005, this category used a duration of hospital stay of more than 6 days.
- Slightly injured: Non-fatal casualty who received medical care but did not stay in hospital longer than 24 hours (or 6 days before 2005).
- Seriously injured: People who are injured with at least one injury ranking three or more on Maximum Abbreviated Injury Scale (MAIS3+), not including people who died within 30 days.

Data collection

French official road safety information comes from the National Road Traffic Accident (RTA) database and presents results for mainland France only, unless it is specifically specified that data from overseas areas are included.

Road traffic accidents leading to injury are recorded by the police forces onto their own software according to a dedicated format Injury Accident Analysis Bulletin (BAAC, *Bulletins d'analyse d'accident corporel*). These files are then gathered centrally into web-based software and constitute the National RTA database. This process is managed by the French Road Safety Observatory (ONISR, *Observatoire national interministériel de la sécurité routière*), with the assistance of technical teams from the French Research Centre on Risks, Environment, Mobility and Planning (CEREMA, *Centre d'études et d'expertise sur les risques, l'environnement, la mobilité et l'aménagement*) and the network of local Observatories to check and complement the information as necessary.

The latest version of the BAAC file dates from 2007. Proven suicides and intentional murders are not registered as a road traffic accident.

Monitoring the quality of data is also ensured partially by comparing with the Rhone registry, information gathered from hospitals of the Rhone County on all road traffic crash victims who went to hospitals for medical care. Information on the number of killed is very accurate, as are the records. Serious injury crashes are usually recorded accurately as well, except for single vehicle crashes of powered two-wheelers and cyclists. Moreover, there are some variations across the country about the way slight injury accidents are recorded or not. The French Institute of Science and Technology for Transport, Development and Networks (IFSTTAR) estimates that the number of injured people is significantly under-estimated and could be four times greater than the registered number.

As some expertise has been developed using both the Rhone registry and the National RTA database, IFSTTAR has been tasked with providing a national estimate for MAIS3+ victims to provide the relevant information requested by the European Commission for their 2014 baseline.

Most recent safety data

Road crashes in 2014 – provisional data

Based on provisional data, it is estimated that 120 more fatalities occurred in 2014 on French roads than in 2013, a 3.7% increase. This increase needs to take into account the favourable weather conditions in France in 2013, with a very cold and wet first semester.

There was a 15% decrease in fatalities between 2010 and 2014, a decrease similar to the period 2006 to 2010. However, while car occupant fatalities showed a slight increase compared to the significant drop the previous year, the situation was less favourable for cyclists and pedestrians, for whom fatalities increased dramatically in 2014 after failing to decrease significantly since 2008.

In 2014, temperatures were the warmest since 1900, enhancing personal mobility. However, the very rainy 2014 summer limited motorcycle outings and contributed to a significant decrease in the usual high number of summer motorcyclist fatalities.

Road crashes in 2013

In 2013, all safety indicators showed improvement. There were 3 268 reported road fatalities, representing a 10.5% decrease compared to 2012. This was the fourth largest decline since 1954, when digital statistics began.

Among the 3 268 road fatalities:

- Three quarters were male.
- 60% died on roads outside built-up areas.
- Nearly a quarter were less than 24 years old.
- Nearly a quarter died in a crash involving a driver with a licence not older than two years.
- A quarter were motorcyclists or moped users.

Trends in traffic and road safety (1990-2014)

Traffic

Between 1990 and 2013, the number of motorised vehicles increased by 39% and the overall vehicle kilometres driven by 35%. Over the past 10 years, including 2013, traffic has been more or less stable. Slight variations can be observed according to changes in fuel prices, and heavy goods vehicle (HGV) traffic trended downward with the economic downturn. The 2013 traffic level remained at the same level as 2012 for French trucks, which was rather low, but foreign traffic increased again slightly in 2013.

Road safety

Crashes and casualties

The number of road fatalities peaked in 1972 with about 18 000 fatalities. France had a fatality rate of 35 deaths per 100 000 inhabitants. Since then, the number of fatalities has followed a downward trend, with fluctuations from year to year. Between 1990 and 2013, the number of road fatalities decreased by more than 70%. Among the important events from **1990 to 2000**:

- In 1989 the publication of the White Paper on Road Safety paved the way for road safety policies on improving and enhancing enforcement that would come into effect 10 years later.
- The maximum speed limit in built-up areas was set at 50 km/h in 1990, and the maximum allowable blood alcohol content level (BAC) was lowered to 0.5 g/l.
- The demerit point system was introduced in 1992.
- Most motorway network construction was achieved during this period.
- Most vehicles were equipped with airbags.
- The educational continuum was implemented.

Despite these measures, fatalities only decreased by 20% in the decade, as traffic increased by 20%. In 2000, there were 15 people killed per billion vehicle kilometres driven and 14 per 100 000 inhabitants.

In July 2002, French President Jacques Chirac declared road safety to be one of his four main priorities. From **2000 to 2010**, important safety changes include:

- The first permanent automated speed cameras were introduced in 2003.
- A Road Safety National Council was installed for public and private stakeholders to meet and present action proposals to the government.
- Probationary licences were introduced in 2004.
- A driver caught exceeding the maximum blood alcohol concentration level would lose six demerit points out of 12 (or 6 out of 6 for drivers in their probation period).

These changes made it possible to break through the symbolic level of 5 000 fatalities per year in 2006. Fatalities fell by 51 % over the 10 year period. Experts attribute 75% of the improvement to a reduction in average speed and 11 % to improved vehicle safety. At the same time, traffic was up 7%.

Between **2010 and 2014**, fatalities decreased by 15%. The decrease was of 33% for moped riders, 21% for car occupants, 14% for HGV users and 11% for motorcyclists. Fatalities among the 18-24 year olds decreased by 30%. However, fatalities increased by 3% for pedestrians, and 9% for cyclists.

Rates

In 2013, the fatality rate expressed in terms of deaths per 100 000 inhabitants was 5.1 and the fatality risks, expressed in terms of deaths per billion vehicle-kilometres was 5.8. In 1990 the respective rates were 15.8 and 25.2, which means that the risk of dying on a French road was divided by about four between 1990 and 2013. During the same period, the number of vehicles per 1 000 inhabitants has increased by 24%.

Analysis of seriously injured data

IFSTTAR estimates the number of people in road traffic crashes with a MAIS3+ injury. Based on these estimates, 35 000 people were seriously injured in 2012; 43% used powered two-wheelers, 29% were car occupants, 14% cyclists and 11% pedestrians. This means that nearly 70% of the seriously injured are vulnerable road users.

These data also show a slower reduction in the number of people seriously injured compared to the number of fatalities, and wide variation for different road users. Between 2000 and 2012, the number of fatalities decreased by 55% while the number of seriously injured decreased by 43%. Between 2006 and 2012, the decrease was 22% for fatalities and 19% for MAIS3+. The table below show the reduction in fatalities and seriously injured for various road user groups.

Table 12.1. **Evolution in the number of killed and seriously injured (MAIS3+) 2006-12**

%

	Fatalities	Seriously injured (MAIS3+)
All road users	-22	-19
Car occupants	-41	-28
Powered two wheelers riders	-25	-17
Pedestrians	-9	-18
Cyclists	-9	-5

Source: ONISR, IFSTTAR.

Table 12.2. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	10 999	8 170	3 992	3 653	3 268	-10.5	-18.1	-60.0	-70.3
Injury crashes	162 573	121 223	67 288	60 437	56 812	-6.0	-15.6	-53.1	-65.1
Injured persons hospitalised			30 393	27 142	25 966	-4.3	-14.6		
Deaths per 100 000 inhabitants	19.8	13.7	6.4	5.8	5.1	-10.9	-19.3	-62.6	-74.1
Deaths per 10 000 registered vehicles	3.9	2.3	1.0	0.9	0.8	-9.8	-21.7	-65.9	-79.7
Deaths per billion vehicle kilometres	25.2	15.8	7.1	6.5	5.8	-11.2	-19.2	-63.5	-77.2
Traffic data									
Registered vehicles[1] (thousands)	29 606	35 452	40 816	41 256	41 204	-0.1	0.9	16.2	39.2
Vehicle kilometres (millions)	436 000	518 200	560 400	563 700	567 800	0.7	1.3	9.6	30.2
Registered vehicles per 1 000 inhabitants	523	602	650	651	647	-0.6	-0.5	7.5	23.7

1. Registered vehicles excluding mopeds.

Road safety by user group

The reduction in road deaths since 2000 did not benefit all categories of users in the same manner. The greatest reductions were observed for car occupants (-70%) and moped riders (-66%). The number of motorcyclists killed decreased by 33%.

The number of pedestrians and cyclists killed decreased respectively by 45% and 46%. These gains were achieved mainly in the first half of the period; and a stagnation was observed since 2007 for cyclists and since 2009 for pedestrians.

Powered two-wheelers (moped riders and motorcyclists) are overrepresented in road fatalities. While they account for less than 2% of distance travelled, they represent 24% of

Figure 12.1. **Road safety and traffic data index 1990 = 100**

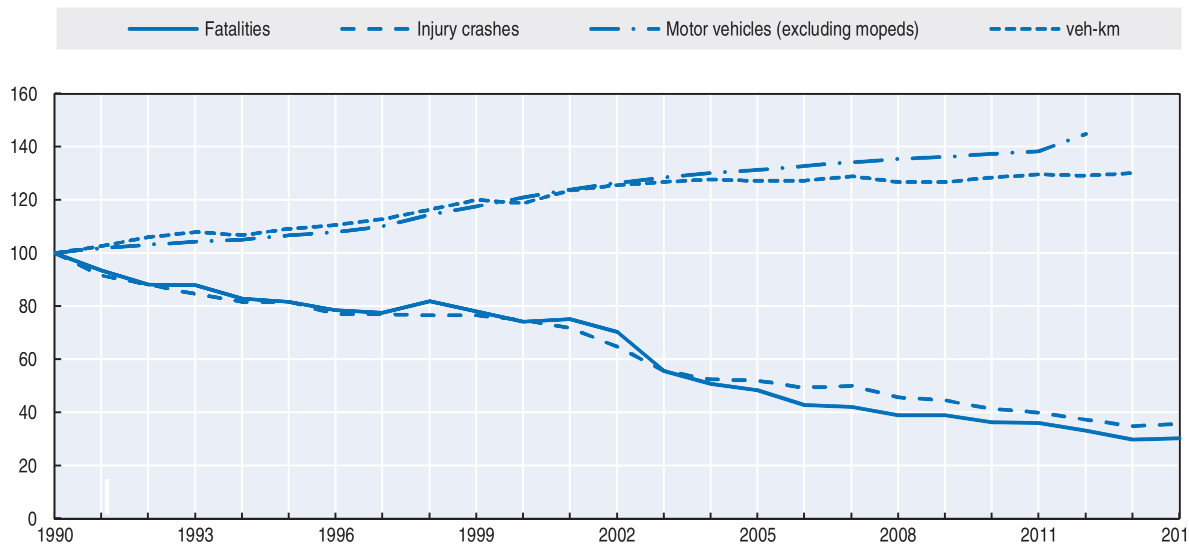


Table 12.3. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	429	273	147	164	147	-10.4	0.0	-46.2	-65.7
Moped users	702	461	248	179	159	-11.2	-35.9	-65.5	-77.4
Motorcyclists	1 011	947	704	664	631	-5.0	-10.4	-33.4	-37.6
Passenger car occupants	6 729	5 351	2 117	1 882	1 612	-14.3	-23.9	-69.9	-76.0
Pedestrians	496	848	485	489	465	-4.9	-4.1	-45.2	-6.3
Others	1 632	290	291	275	254	-7.6	-12.7	-12.5	-84.4
Total	**10 999**	**8 170**	***3 992***	***3 653***	***3 268***	***-10.5***	***-18.1***	***-60.0***	***-70.3***

total fatalities and 43% of the seriously injured. The risk of fatality per kilometre driven is 23 times higher for a motorcyclist than for a car occupant.

Road safety by age group

The 18-29 year olds are the most affected by road crashes, as young men are more often prone to risky behaviour (most of all driving at high speed), and most novice drivers are in this age group. The 20-24 group has a death rate twice as high as the 30-59 group. The 15-17 years old are also associated with a high number of injured hospitalised in the BAAC file, but their mortality is now moderate following a strong decrease in the number of moped riders in the 2000s.

Since 2000, the different age groups have followed different trends. This is the result of both an evolution in individual risk and demographic change. For the entire population, the death rate per 100 000 inhabitants (or individual risk) was reduced from 13.9 in 2000 to 5.1 in 2013, a decrease by 63%. The decrease was greater than the average for the 0-14 and 15-17 (respectively 75% and 71%) and lower than the average for the person 75 years old or more (-57%). People between 18 and 75 years have a fatality risk close to the average.

Regarding the impact of demographic changes, the population is increasing for the 45-64 age group (the baby boomers) and those 75 and above. As a consequence between

2000 and 2013, the number of fatalities among these age groups has declined more slowly than for the average population (respectively by 51% and 40%). Older people are particularly vulnerable as pedestrians.

Child safety

Children up to 14 years old represented 3% of fatalities in 2013 and 18% of the French population. Child fatalities decreased by 65% between 2000 and 2010, and by 25% between 2010 and 2013. Children have benefited from the decrease of car occupant fatalities and from the decrease in the use of mopeds.

Road safety measures that targeted this age group were:

- In 1992, the requirement to use child specific restraints for children under 10.
- In 1997, compulsory training leading to a diploma ("*Brevet de sécurité routière*") in order to be able to use a moped.
- In 2003, an increase in the severity of the penalty (number of demerit points) for not wearing a seat belt.
- In the 2000s, a strong increase in school public transport services, reducing the need to use a moped.

In 2013, a quarter of children killed and nearly half of those injured were pedestrians.

Table 12.4. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	204	125	45	41	44	7.3	-2.2	-64.8	-78.5
6-9	124	68	27	22	24	9.1	-11.1	-64.9	-80.6
10-14	207	173	58	52	29	-44.2	-50.0	-83.3	-86.0
15-17	463	354	161	131	102	-22.1	-36.6	-71.2	-78.0
18-20	1 131	867	370	334	253	-24.3	-31.6	-70.8	-77.6
21-24	1 563	879	461	419	383	-8.6	-16.9	-56.4	-75.5
25-64	5 672	4 204	2 105	1 909	1 745	-8.6	-17.1	-58.5	-69.2
≥ 65	1 607	1 358	764	745	688	-7.7	-9.9	-49.3	-57.2
Total	**10 999**	**8 170**	**3 992**	**3 653**	**3 268**	**-10.5**	**-18.1**	**-60.0**	**-70.3**

Road safety by road type

France has more than 1 million kilometres of roads, of which 80% is rural (not including interurban motorways). When fatalities per billion vehicle-kilometres travelled are broken down by type of road, the risk on country roads is much higher. Motorways are the safest network, since they absorb 25% of the traffic and account for 8% of fatalities.

In 2013, 64% of fatalities occurred on rural roads, 28% on urban roads and 8% on motorways. More than half of people killed die on a road with a 90 km/h speed limit outside built-up areas.

Since 2000, the decrease in the number of fatalities in built up areas and rural roads has been of the same magnitude, about 60%. On the motorway network, the number of fatalities decreased more than on the rest of the network up to 2008 but mortality has stagnated since.

Figure 12.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

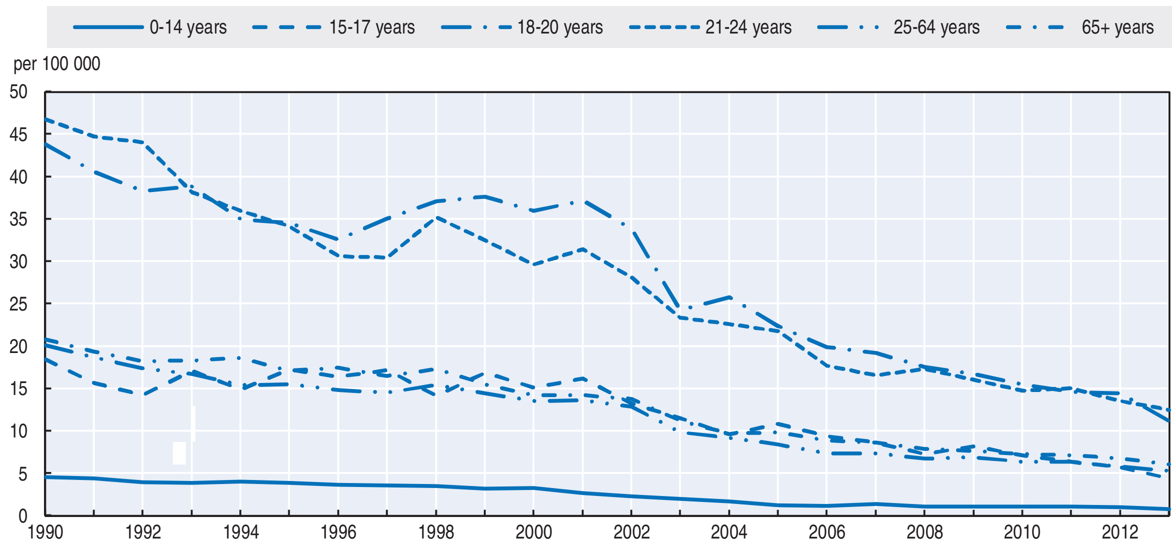
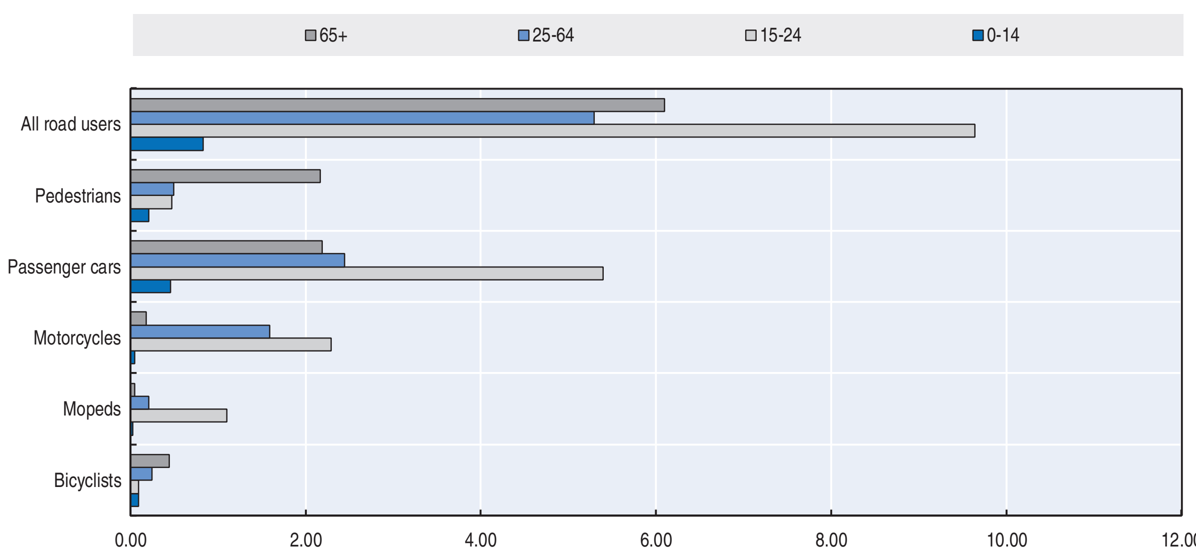


Figure 12.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants, 2013

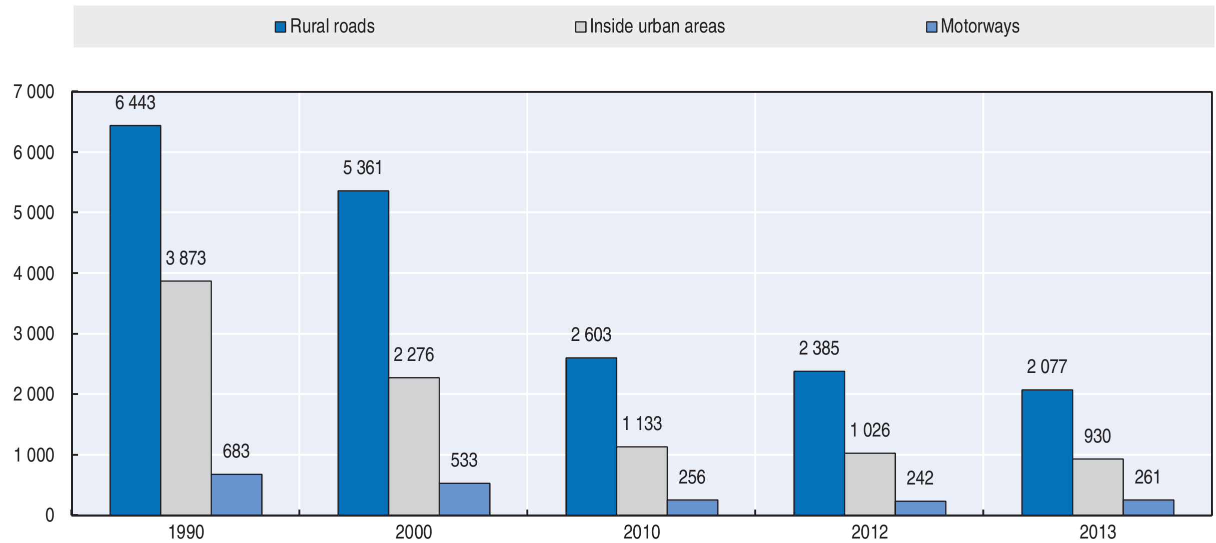


Economic costs of traffic crashes

Road traffic crashes represent a significant cost for society. Based on reported crashes, the cost was estimated in 2013 at about EUR 37.3 billion, or 1.7% of the gross domestic product. These costs cannot be directly compared to the costs published for previous years, as unit values for a road fatality, injured person and property damage have been rebased following a 2014 instruction on the socio economic evaluation of projects following recommendations from the OECD (CGSP, 2013).

Costs of road crashes take into account production losses, affective loss for the relatives, medical costs and the loss of quality of life. New values are set in Euros 2010 and are re-evaluated each year following GDP per capita. In 2014, the following values are applied:

Figure 12.4. **Road fatalities by road type**



- EUR 3 223 million for a road fatality (it was EUR 1 342 million before the 2014 revision)
- EUR 402 826 for a hospitalised person (it was EUR 143 787 before the 2014 revision)
- EUR 16 113 for a person slightly injured (it was EUR 5 752 before the 2014 revision)
- EUR 4 941 for property damage of each injury crash (it was EUR 6 778 before the 2014 revision).

Table 12.5. **Costs of road crashes, 2014**

	Unit cost	Total
Fatalities	EUR 3.223 million	EUR 10.5 billion
Hospitalised persons	EUR 402 826	EUR 10.5 billion
Slight injuries	EUR 16 113	EUR 0.7 billion
Property damage costs of injury crashes	EUR 4 941	EUR 0.3 billion
Property damage costs of non-injury crashes		EUR 15. 3 billion
Total		**EUR 37.3 billion**
Total as % of GDP		**1.7%**

The total costs could actually be much higher, when taking into account non-reported crashes. IFSTTAR estimates that the number of injured people could be four times greater than the registered number, and the number of hospitalised nearly twice as great. This could lead to an additional EUR 24 billion and a global total of EUR 50 billion, representing 2.3% of the GDP of France.

Recent trends in road user behaviour

Impaired driving

Drink driving

The maximum authorised BAC is 0.5 g/l for all drivers (including cyclists) and 0.2 g/l for bus drivers.

It is estimated that alcohol is the principal cause in 20% of fatal crashes. In 2013, 4 774 injury crashes and 762 fatalities were recorded in which a driver had a BAC equal to or above the legal limit. However, when taking into account fatal crashes for which the BAC has not been recorded, the estimated number of fatalities with alcohol as a factor is 952 for 2013 (i.e. 29% of all fatalities).

Drinking and driving involves all age groups.

Drugs and driving

In 2013, there were 19 700 reported prosecutions for drugs and driving; this is four times as many as in 2007 but represents a police effort to enforce this type of infringements rather than an increase in that type of risk.

A driver was controlled positive for illegal drugs in crashes involving 436 fatalities, but even more than for alcohol, results are not well registered in the national BAAC database. Therefore, when taking into account fatal crashes for which drug test results are not known, the estimated number of fatalities with illegal drugs as a factor is 686 for 2013, or 21% of all fatalities.

It is estimated that illegal drugs are the main cause of 4% of fatal crashes.

Half of the drivers testing positive in a drug test also have a BAC level above the legal limit.

A study among drivers estimated that 3% of crashes could be attributed to the consumption of medical drugs.

Distraction

Some studies show that between 25% and 50% of injury crashes are due to a lack of attention, but these incidents are difficult to report. In police files, the factor “distracted attention” was mentioned for 273 fatal cases in 2013 (8.7% of fatalities), 240 due to drivers’ lack of attention and 33 due to pedestrians’ lack of attention.

It is forbidden to drive with a hand-held mobile phone, but the use of hands-free mobile phones is tolerated. A study undertaken in 2010 estimated that 10% of injury crashes could be attributed to phone use while driving.

While phoning while driving is a growing concern, the concern is even bigger as the number of communication functions offered by a smartphone is expanding. A survey by AXA prevention in 2014 (TNS Sofres, 2015) showed that:

- 22% of car drivers use their smartphone for its GPS navigation function.
- 19% of car drivers read or send a text message while driving.
- 3% of car drivers send or read an email.
- 1% read the news or watch a video.

Sleepiness and fatigue

Among contributing factors to a crash, police files include sickness and fatigue.According to these files, sickness/fatigue is a contributing factor in 8.3% of fatal crashes. Its prevalence is more important on motorways, where it is reported as a contributing factor in 18% of fatal crashes.

Speed

In 2013, inappropriate or excessive speed was the main cause in 25% of fatal crashes.

Since 2000, average speeds during daytime have decreased by 10 km/h or more on all non-urban networks. Car speeds decreased the most, as cars were the first targeted by automatic speed cameras. HGV speeds started decreasing later in the period and in a more moderate way. Motorcycle average speeds have also decreased, but they remain nearly 10% higher than car average speeds.

The table below summarises the main speed limits in France.

Table 12.6. **Passenger car speed limits by road type, 2015**

	General speed limit	Comments
Urban roads	50 km/h	
Rural roads	90 km/h	80 km/h in wet weather or for novice drivers
Dual carriageways	110 km/h	100 km/h in wet weather or for novice drivers
Motorways	130 km/h	110 km/h in wet weather or for novice drivers

Seat belts and helmets

Seat belt wearing has been compulsory in front seats in urban areas by night and urban motorways since 1975 and all the time since 1979. They are compulsory in rear seats since 1990. Children under 10 must be seated in a rear seat and be adequately restrained, taking into account their weight and height.

The seat belt wearing rate is among the highest in OECD countries; however, there is still room for improvement, especially for the rear seats. In 2013, 20% of car occupants killed and 38% of utilitarian vehicle occupants killed were not wearing a seat belt or the seat belt was not well buckled when the crash occurred. It is estimated that 150 lives could have been saved if all vehicle occupants had worn their seat belt.

Table 12.7. **Seat belt wearing rate by car occupancy and road type**

%

	2005	2012
Front seat		
Urban roads	94.2	95.8
Motorways	98.3	98.6
Rear seats		
Adults – Urban roads	66	71
Adults – Motorways	73	84
Children (use of child restraint) – Urban roads	85	89
Children (use of child restraint)– Motorways	82	94

Wearing a helmet was made compulsory in 1973 for motorcyclists with engines over 125 cc, for moped riders and for motorcyclists with engines of 50cc to 125cc in rural areas. This obligation was extended to urban areas in 1975. Helmet-wearing rate of powered two-wheelers (it is difficult to discriminate between mopeds and motorcycles during observations) is almost 100% during week days but only 90% during the weekend. In 2012, 23 motorcyclists killed (3.6%) and 19 moped riders killed (11.9%) did not wear a helmet.

There is no mandatory helmet use law for cyclists. However, recent research by IFSTTAR has demonstrated that the risk of severe injury was considerably reduced when wearing a helmet. In particular the chance of a severe head injury (MAIS3+) was reduced by 66% in urban areas and by 97% outside urban areas.

National road safety strategies and targets

Organisation of road safety

Since the change of government in 2012, the lead agency for road safety (Road Safety Inter-ministerial Directorate) reports to the Minister of the Interior. The Minister of the Interior chairs the Inter-ministerial Road Safety Committee, an assembly of ministries' representatives in which decisions are taken. The ONISR observatory reports to the road safety director and is in charge of managing the road traffic accident database, analysing road safety performance and organizing research to prepare for new measures. It is also in charge of assisting the National Road Safety Council, composed of 50 members from public service, enterprises, victims and road users' representatives, in presenting road safety action proposals to the government.

Road safety strategy for 2011-20

In order to reduce the number of road deaths by half over the period 2011-20, which would mean fewer than 2 000 persons killed on French roads at the end of the decade, the government has tasked the National Road Safety Counsel to work on new road safety measures. In the meantime, the Ministry of Interior works with other ministries on more technical measures that are required and assesses the feasibility and implementation of what the National Road Safety Counsel proposes.

The key priorities identified by the government are to:

- reduce fatalities among young people and novice drivers
- reduce fatalities among motorised two-wheelers
- combat the main crash-contributing factors of speed and impaired (alcohol/drug) driving.

The Minister of Interior announced on 26 January 2015 an action plan with 26 road safety measures to be implemented within a year. The 26 measures aim at all issues dealing with road safety, in particular to reduce injuries to vulnerable road users as they represent 70% of the seriously injured.

Road safety targets

The current target of the French government is to reduce the number of road fatalities below 2 000 by 2020, which is in line with the European Commission goal to reduce by half the number of fatalities by 2020.

Monitoring

Since 2013, national indicators were calculated for each region over a three-year period, and progress on the overall fatality numbers are benchmarked against the 2010 baseline. In 2015, dashboards with these indicators will be issued on a quarterly basis to all county executives to assist them in the way they manage their local road safety action plans.

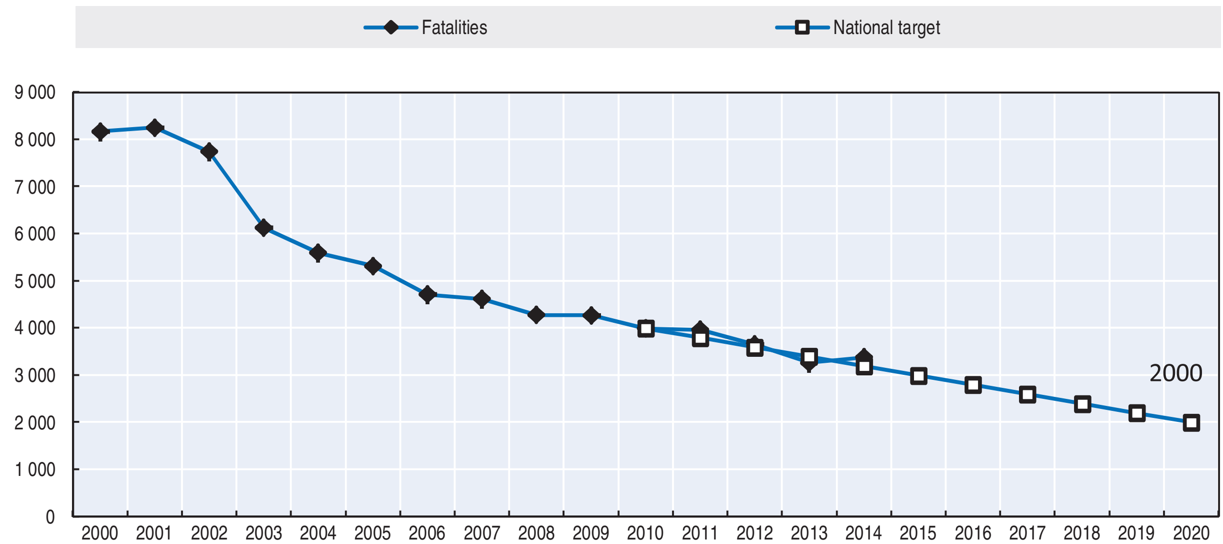
At the end of 2014, France is estimated to be one year behind to achieve the 2020 target.

Recent safety measures (2012-14)

Road safety management

- The expert committee advising the National Road Safety Counsel produced a first report in 2013 advising on measures to reduce the number of fatalities, including a reduced

Figure 12.5. **Trends in road fatalities towards national target**



speed limit on single carriageways, the use of alcolocks, a reduced number of road side obstacles and strengthened road safety management. A specific report on road users with a higher risk (cyclists, motorcyclists, young people and seniors) was finalised in 2014.

- The National Road Safety Counsel issued 17 recommendations to the government. Some of them have already been implemented (e.g. signs to announce fixed speed cameras, communication rather than enforcement around the use of self-alcohol testing, promoting accompanied driver education). Others were among the 26 measures announced in January 2015 by the Minister of Interior (e.g. regulations for motorcyclists driving between two lanes, forbidding the use of ear pieces and audio head sets, standardising powered two wheelers number plates, defining auditing methods for local road networks to deal with road side obstacles, experimenting with some reduction in speed limits on single carriageways).
- Working groups with ministries on specific topics will continue to provide new measures. This method was preferred to the organisation of a one-off Inter-ministerial National Committee. Main ministries involved currently are Ecology/Transport (auditing road networks and decreasing speed in relation to pollution and global warming), Justice (securing enforcement and implementing alcolock) and Health (alcohol BAC level and more efficient drugs testing).

Road users

Driving license

- As a result of a European Directive, since January 2013 new driving licence categories were created to implement progressive access to more powerful motorised two-wheelers: AM for mopeds and A2 for motorcycles of average power.
- Since 1 November 2014, accompanied driving practice is possible from the age of 15 (instead of 16 before). Those young people will be able to take the driving license examination at 17½, although they will not be driving on their own before they turn 18.

Speed management

- At the end of 2013, there were 2 473 fixed speed cameras, 867 mobile speed cameras and 712 traffic light radars. Fixed speed cameras are spread across all networks: 15% on motorways, 27% on trunk roads, 55% on county roads and 5% on local roads. Traffic light radars are spread even (a third each) across major cities (more than 500 000 inhabitants), middle cities (between 100 000 and 500 000 inhabitants) and minor cities (fewer than 100 000 inhabitants). The current objective is to modernise the cameras in place and to stabilise the total number of cameras to 4 200 devices (both for speed and traffic).
- In 2014, the speed camera fleet was strengthened with new automated speed cameras including control of average speeds across highway sections. Other new automated cameras enforce stops at train crossings and traffic lights. In 2015 France is experimenting with fixed speed cameras that catch excess speed in both directions, speed cameras that take pictures of both the front and rear of the vehicle, and traffic light radars to determine if they can be adapted to capturing excessive speed as well.

Protective equipment for motorcyclists

- A guide was released in 2012 to promote the benefits of individual protective equipment. In 2014 and 2015, a partnership with insurance companies, protective equipment providers and bikers' associations set up an incentive scheme for users of motorised two-wheelers to purchase personal protective equipment as a package deal (gloves, boots, clothing and possibly an airbag suit).

Education and awareness

- In 2013, a new communication campaign was launched on the dangers of excessive or inappropriate speed: "The faster you drive, the more irreversible the consequences". It was complemented in 2014 by another campaign, "We regret speeding only when it is too late".
- National advertising campaigns to combat alcohol and drug consumption when driving were widely disseminated (with the well-known character "SAM, the guy who drives and does not drink").
- A new initiative took place concerning text messaging ("When you look at your smartphone while driving, who looks at the road?").
- Important advertising campaigns for motorised two-wheeler users are conducted each year. In order to make motorcyclists aware of crash circumstances, the slogan was: "With motorcycles, the danger is in thinking that there is none!" The film won an award at the 2013 Global Road Safety Festival.

Infrastructure

- New motorways are being equipped with rumble strips on the edges of road markings to prevent crashes due to drowsiness.
- As one of the 26 priority measures of January 2015, it will be possible to set additional yellow "no entry" signs on exit slip roads to warn people about accessing the motorway the wrong way.

Vehicles

- In order to better know the mechanisms of crashes, the French government supports the European initiative to look into the feasibility of standardising CAN bus data in vehicles and making them available for research purposes.

Recent and ongoing research

Some research projects are presented below.

- Road Safety and Education in secondary schools – Assessment of the actions (PERLE)

The results of the survey between 2012 and 2013 show that every year 50% of secondary schools hold a road safety event. To be effective, the actions have to target a main topic (seat belt for example). The assessment of the actions conducted in schools indicates that the results obtained are specific to each action and each school (Cestac et al., 2013).

- Prevention and risks assessment (PREVER)

The aim of the research undertaken by IFSTTAR is to strengthen the knowledge in accidentology and risk exposure; developing knowledge in the field of naturalistic driving; studying specificities of motorised two-wheelers; assessing measures in the treatment of the risks. *http://actions-incitatives.ifsttar.fr/orsi-mobilites/encours/prever/*.

- Saving lives by return of analysis on accidents (SVRAI)

The research points out the contribution of crash analysis to road infrastructure and diagnosis of driver behaviour. *www.ouest.cerema.fr/IMG/pdf/2011-10-11_Projet_SVRAI.pdf*.

- Safety of powered two-wheelers in urban areas

The study analysed different crash scenarios of scooters and maxi scooters, which are involved in approximately 40% of injury crashes involving motorised two-wheelers. (Van Elslande et al., 2014).

- In-depth investigations of crashes involving light goods vehicles (EDAVUL)

The aim of this research project is to identify parameters having a leading role in various types of crashes involving light good vehicles.

- Estimation of the real number of seriously injured people in road crashes

This project is based on the linkage of the BAAC and the Rhone County hospital files to assess the real number of people seriously injured. Results are then extrapolated to estimate the number of people injured on the whole territory of France.

- "Health and driving"

This website gathers information from the latest news and scientific papers on ability to drive. *http://medecins.inserr.org/*.

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Websites

- Road safety Department: *www.securite-routiere.gouv.fr*.
- IFSTTAR – The French institute of science and technology for transport, development and networks: *www.ifsttar.fr/*.
- CEREMA – The French research centre on risks, environment, mobility and planning *www.cerema.fr*.

Chapter 13

Germany

*This chapter presents the most recent crash data for Germany, as well as an update on the German road safety strategies and recent safety measures which have been implemented.**

* All data stem from BASt, the Federal Highway Research Institute of Germany, and IRTAD unless otherwise noted. For more information please contact: schoenebeck@bast.de.

Germany, the largest country in Europe with 80.5 million residents, is one of the world's most highly motorised countries, and motor vehicle occupants account for the large majority of traffic fatalities. Road deaths have been reduced by 77% since 1991, after German unification, and the 3 339 fatalities in 2013 was a 7% reduction from 2012, making the rate of road deaths 4.1 per 100 000 inhabitants. However, 2014 saw a slight increase in fatalities, which is attributed to mild winter weather that encouraged people to drive more, when a year earlier the winter was severe, tending to make drivers more prudent.

Road safety data collection

Definitions

Data in this report correspond to the consolidated set of police data.

- Road fatality: Road death which occurs within 30 days of a road crash.
- Injury crash: Road crash resulting in at least one injured or killed person.
- Injured persons are subdivided into seriously injured and slightly injured. Seriously injured are persons who were immediately taken to hospital for inpatient treatment (of at least 24 hours). Slightly injured are all other injured persons. It is planned to estimate for 2014 the share of critically injured persons, defined as those with injuries rated as Maximum Abbreviated Injury Scale of 3 or more (MAIS3+).

Data collection

In Germany, crash data are collected by the police agencies of the different federal states (*Bundesländer*) and then consolidated at federal level.

As the crash data is collected by the police, only accidents which are known to the police are registered. For fatalities, the reporting rate is suspected to be nearly 100%. No information is available on the percentage of crash injuries that are reported.

Most recent safety data

Road crashes in 2014 – provisional data

In 2014, 3 368 people died on roads in Germany representing an increase of less than 1% compared to the previous year. The number of injured road users increased by 3.9% to 392 388. The number of crashes involving personal injury increased by 3.8% to about 302 000.

While other factors play an important role for the long-term development of fatality and crash figures, the relatively mild winter and warm and early spring is likely to have increased the number of users on the road, in particular cyclists, motorcyclists and pedestrians.

Road crashes in 2013

The number of fatalities decreased by more than 7% compared with 2012. Especially the first two months of 2013 show strong decreases by 21% in January and 29% in February.

This short-term development in both winter months results mainly from different weather conditions. The winter 2012/2013 was characterised by a continuing freeze. In general bad weather periods cause a decrease of traffic and a more careful behaviour in traffic. Weather conditions can be considered accountable for the strong decrease of fatality numbers in the beginning of the year. Mild weather at the end of the year, however, led to an increase of fatality figures by 22% in December.

There are decreases for all users of vehicles, especially passenger cars (-11%) and cyclists (-13%). The number of fatally injured pedestrians on the other hand, increased by 7% compared to 2012. In 2013 there was an 8% decrease in fatalities on urban roads and a 10% decrease on rural roads, but motorways recorded an increase of 11%.

The development of fatality figures by age group show reductions in every age group except for the elderly. Eye-catching is the strong decrease within the group of young people (<18 years: -21% and 21-24 years: -29%) on the one hand and the relatively low increase within the age group 65+ (+0.5%) on the other hand.

Trends in traffic and road safety (1991-2014)

Traffic

Between 1991, the first year following German reunification, and 2013, the number of motorised vehicles increased by 21% and vehicle kilometres driven rose by 26%.

Provisional figures for 2014 indicate that the overall traffic volume slightly increased by 1.3%, from 726 billion veh-km in 2013 to about 735 billion veh-km in 2014.

Road safety

Crashes and casualties

Between 1991 and 2013, the number of fatalities decreased by 70%, whereas the number of injury crashes fell by only 24%. In recent years (2000-13), the number of fatalities decreased by 55%, while the number of seriously injured decreased only by 37%.

The decrease in the number of crashes and fatalities is due to various changes in all fields of road safety: traffic safety-related behaviour and education as well as infrastructure and vehicle safety. The improvements in road safety are due to several measures taken and regulations introduced in the past 10 years. Some highlights include:

- road safety education in schools
- accompanied driving programme and alcohol prohibition for novice drivers
- road safety audits
- treatment of accident black spots
- improvements in passive and active vehicle safety
- identifying special fields of road safety and finding solutions, such as requiring child restraint systems, protecting trees on the roadside and adding underrun protection for guard rails to prevent serious motorcycle accidents.

Rates

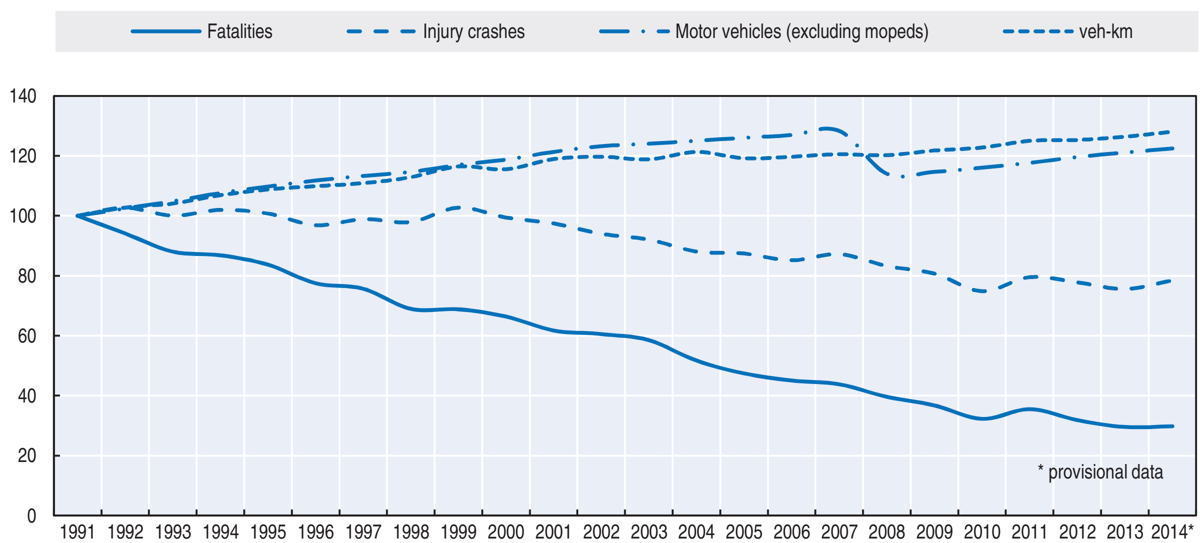
Since 1991, the death rate per 100 000 inhabitants has decreased by more than 70%, while the number of vehicles registered per 1 000 inhabitants has increased by more than 20%.

Table 13.1. **Road safety and traffic data**

	1991	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1991
Reported safety data									
Fatalities	11 300	7 503	3 648	3 600	3 339	-7.3	-8.5	-55.5	-70.5
Injury crashes	385 147	382 949	288 297	299 637	291 105	-2.8	1.0	-24.0	-24.4
Injured persons hospitalised	131 093	102 416	62 620	66 279	64 057	-3.4	2.3	-37.5	-51.1
Deaths per 100 000 inhabitants	14.2	9.1	4.5	4.4	4.1	-7.4	-8.7	-55.4	-71.3
Deaths per 10 000 registered vehicles	2.6	1.5	0.7	0.7	0.6	-8.4	-12.3	-56.4	-75.6
Deaths per billion vehicle kilometres	19.7	11.3	5.2	5.0	4.6	-8.1	-11.1	-59.3	-76.6
Traffic data									
Registered vehicles[1] (thousands)	43 313	51 365	50 184	51 735	52 391	1.3	4.4	2.0	21.1
Vehicle kilometres (millions)	574 100	663 302	704 800	719 300	725 700	0.9	3.0	9.4	26.4
Registered vehicles per 1 000 inhabitants	539	625	614	645	651	0.9	6.0	4.1	20.7

1. Registered vehicles excluding mopeds. From 2008, registered vehicles exclude temporarily decommissioned vehicles in Germany.

Figure 13.1. **Road safety and traffic data index 1991 = 100**



* Provisional data for 2014. From 2008, registered vehicles exclude temporarily decommissioned vehicles in Germany.

Road safety by user group

Germany is one of the world's most highly motorised countries. Motor vehicle occupants account for the large majority of traffic fatalities that occur each year on German roads. Fatalities among motor vehicle occupants and pedestrians have gradually decreased since 1991, with the reduction being strongest for passenger car occupants (-77%).

The decreases in the number of fatalities in 2013 can be seen in all groups of road users, with the exception of pedestrians (7%).

Moped users accounted for the biggest decrease by 21% after an increase in 2012. It should be noted that the absolute numbers of fatally injured moped users is rather small.

Table 13.2. **Road fatalities by road user group**

	1991	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1991
Cyclists	925	659	381	406	354	-12.8	-7.1	-46.3	-61.7
Moped riders	243	157	74	93	73	-21.5	-1.4	-53.5	-70.0
Motorcyclists	992	945	635	586	568	-3.1	-10.6	-39.9	-42.7
Passenger car occupants	6 801	4 396	1 840	1 791	1 588	-11.3	-13.7	-63.9	-76.7
Pedestrians	1 918	993	476	520	557	7.1	17.0	-43.9	-71.0
Others	421	353	242	204	199	-2.5	-17.8	-43.6	-52.7
Total	***11 300***	***7 503***	***3 648***	***3 600***	***3 339***	***-7.3***	***-8.5***	***-55.5***	***-70.5***

Road safety by age group

In 2013, there was a decrease in fatalities for nearly all age groups. The largest decrease (-35%) was recorded in the 6-9 year age group, followed by the 21-24 year olds, with a decrease of 29%.

The 18-20 age group is the most at risk in Germany, followed by the 21-24 group. The 18-20 year olds have a mortality rate more than double that of the general population.

In terms of road deaths among the 18-24 year olds, motor vehicle occupant fatalities are the principal problem. Graduated licensing and accompanied driving programmes are important measures to counter driver inexperience, particularly among those aged 18 to 20 years.

Since 2000, the number of fatalities decreased in all age groups. But while the number of fatalities decreased by 50% and more for the age groups less than 65 years, the 24% reduction for the elderly is the smallest. This is largely attributed to demographic change, as the elderly population is growing quickly.

Child safety

The number of children (under 15 years) killed in road traffic crashes in Germany has been reduced by more than 70% since 2000. In 2013, there were 58 children killed: 25 were car occupants, 22 were pedestrians and 8 were cyclists.

Table 13.3. **Road fatalities by age group**

Age	1991	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1991
0-5	201	58	39	21	19	-9.5	-51.3	-67.2	-90.5
6-9	140	63	21	20	13	-35.0	-38.1	-79.4	-90.7
10-14	170	119	44	32	26	-18.8	-40.9	-78.2	-84.7
15-17	415	336	101	113	89	-21.2	-11.9	-73.5	-78.6
18-20	1 204	933	327	262	246	-6.1	-24.8	-73.6	-79.6
21-24	1 545	803	363	349	247	-29.2	-32.0	-69.2	-84.0
25-64	5 754	3 876	1 842	1 809	1 698	-6.1	-7.8	-56.2	-70.5
≥ 65	1 853	1 311	910	994	999	0.5	9.8	-23.8	-46.1
Total	***11 300***	***7 503***	***3 648***	***3 600***	***3 339***	***-7.3***	***-8.5***	***-55.5***	***-70.5***

Road safety by road type

In 2013, there was a decrease in fatalities on roads inside urban areas (-8%) and on rural roads (-10%), while there was an increase on motorways (+10%).

Figure 13.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1991-2013

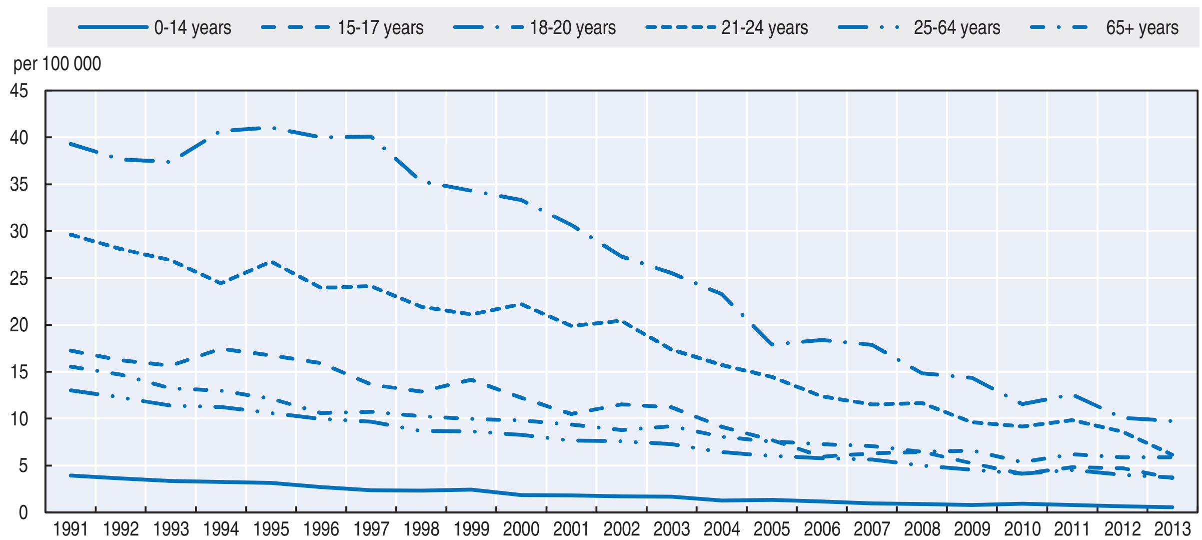
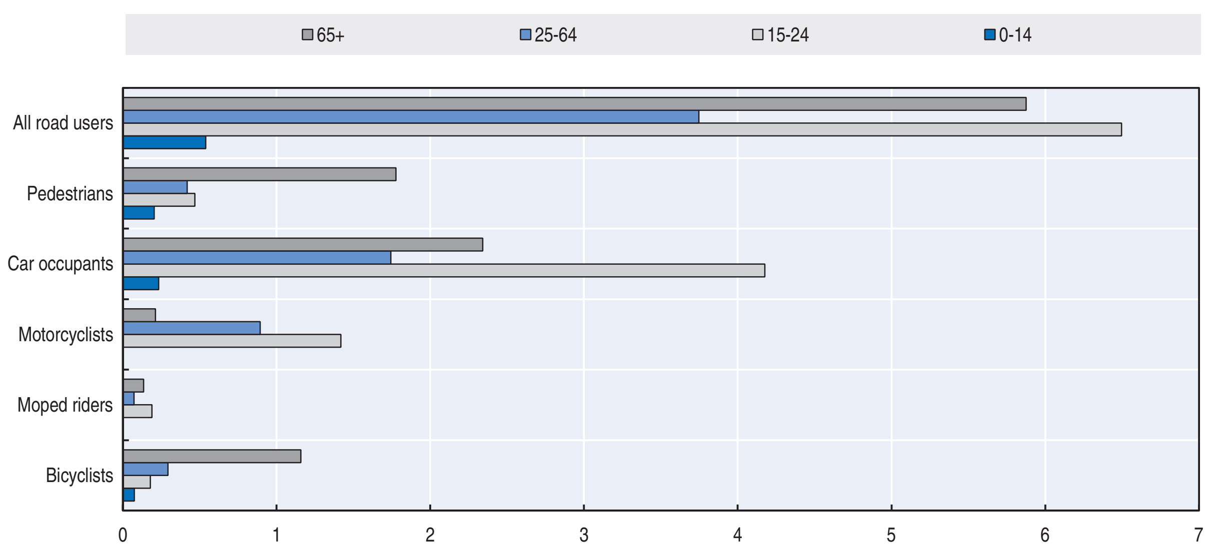


Figure 13.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants, 2013

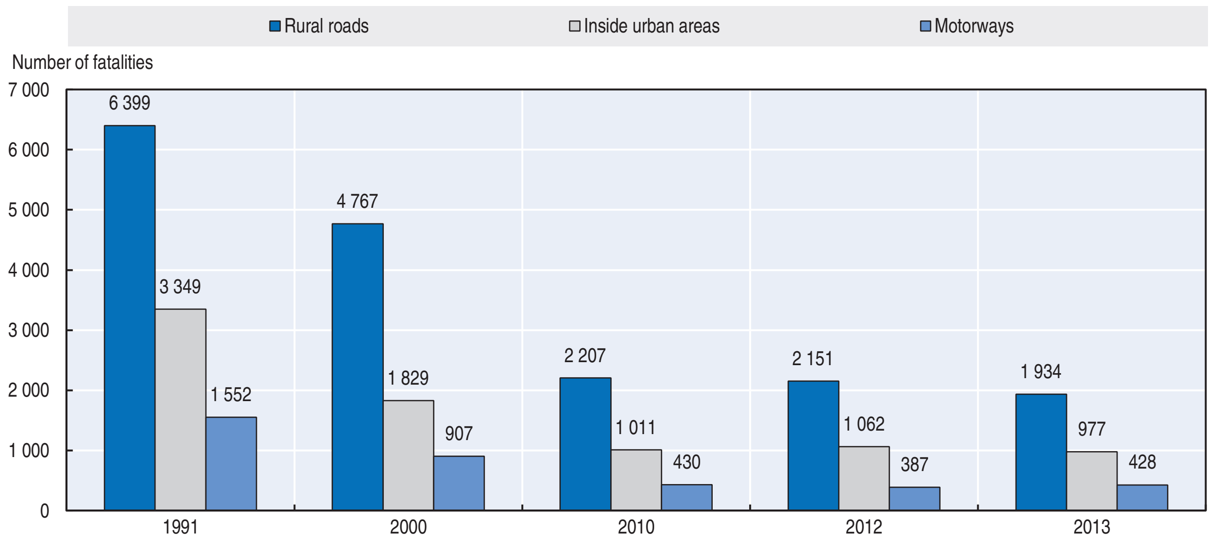


Rural roads are still the most dangerous for road users, as nearly 60% of fatalities occur on this network. However, many improvements have been realised since the 1990s, such as construction of roundabouts to manage intersections and underrun protection for guard rails to prevent serious injuries of motorcyclists.

Economic costs of traffic crashes

The Federal Highway Research Institute (BASt, Bundesanstalt für Straßenwesen) calculates the cost of road crashes on an annual basis. The cost of road traffic crashes to Germany's national economy is based on the capital approach, encompassing costs for personal injuries and damage to goods. Calculated costs include:

Figure 13.4. **Road fatalities by road type**



- direct costs (medical treatment, vehicle repair/replacement)
- indirect costs (police services, legal system, insurance administration, replacement of employees)
- lost potential growth (including the shadow economy);
- lost added value of housework and voluntary work
- humanitarian costs
- costs of travel time lost due to accidents on motorways.

Traffic crashes represent a significant cost for society, estimated in 2013 at around EUR 33 billion, or 1.2% of Germany's Gross Domestic Product. It is estimated that since 2005 crash costs have increased by 3%.

The most recent information on costs for road accidents in Germany can be downloaded from the website of the Federal Highway Research Institute (*www.bast.de*).

Table 13.4. **Costs of road crashes in 2013**

	Unit cost	Total
Fatalities	EUR 1 182 126	EUR 3.95 billion
Hospitalised people	EUR 121 776	EUR 7.83 billion
Slight injuries	EUR 4 982	EUR 1.65 billion
Property damage costs	n.a.	EUR 19.08 billion
Total		EUR 32.51 billion
Total as % of GDP		**1.2%**

Recent trends in road user behaviour

Impaired driving

Drink driving

In Germany, driving with blood alcohol content (BAC) over 0.5 g/l is punishable by a fine, licence suspension and possibly jail. In addition, drivers with a BAC between 0.3 g/l and 0.5 g/l can have their licence suspended if their driving ability is impaired. Since 2007, as part of Germany's graduated licensing programme, zero BAC is required of drivers under 21 and those in their probationary period.

In 2013, alcohol use was cited as a contributing factor in 9.4% of all fatal crashes, defined as those where a driver had any alcohol in the blood.

Drugs and driving

Driving under the influence of drugs is considered an offence. A driver is considered "under the influence" if drug can be found in his blood – irrespective of the amount or concentration. This regulation refers to a selected list of drugs. Drugs used as medication and administered as intended are exempted.

In 2013 there were 1 388 drug related crashes in Germany causing 35 fatalities and 1 878 injuries. The figures have risen from the 2000 level of 1 080, both from possible increased drug use as well as better education in the police to detect the influence of drugs.

Distraction

Using a hand-held mobile phone is prohibited when driving a motor vehicle or riding a bicycle. Motor vehicle violators are fined EUR 40 and 1 demerit point; cyclists are fined EUR 25. In 2011, 450 000 vehicle users violated this law, of whom 27% were female and 73% male.

Fatigue

It is difficult for police to identify fatigue as a cause of an accident, and 0.6% of injury crashes are attributed to fatigue.

Speed

The table below summarises the main speed limits in Germany.

Table 13.5. **Passenger car and truck speed limits by road type, 2014**

	General speed limit Passenger cars	General speed limit trucks > 3.5 t
Urban roads	50 km/h	50 km/h
Rural roads	100 km/h	60 km/h
Motorways	130 km/h (recommended)	80 km/h

Inappropriate speed was a factor in nearly 35% of fatal crashes and about 17% of injury crashes in 2013. Speed is often cited as a factor in combination with other high-risk behaviours, 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. In recent years the seat belt wearing rates of adult car occupants are continuously high at 97%.

Children under the age of 12 years and less than 150 cm tall must be restrained in motor vehicles by an approved system suitable for the child's height and weight. While the seat belt wearing rate for children is still high at 98%, use of specific child restraint systems declined. For children aged six and more, 81% were in child restraints on rural roads (2012: 89%) and 73% in built-up areas (2012: 73%). For children five and under, 89% used an appropriate restraint system on rural roads and 90% in built-up areas (2012: 91% on each road type).

Table 13.6. **Seat belt wearing rate by car occupancy and road type**

%

	2000	2013
Front seat passengers (excluding driver)	95	98
Driver-Urban roads	90	97
Driver-Rural roads	95	97
Driver-Motorways	98	98
Rear seat passengers	82	97
Adults	94	97
Children (seat belt or child restraint)	94	98

All riders of motorised two-wheelers are required to wear helmets. Helmets are not mandatory for cyclists. Helmet wearing by riders of motorised two-wheelers is high at 99%.

National road safety strategies and targets

Organisation of road safety

The Federal Ministry of Transport, Building and Urban Affairs is responsible for transport policy and road safety at the national level. It develops the national road safety strategy, including the national road safety action programme, and sets and monitors national targets.

Each of the 16 federal states has its own Ministry of Transport. These ministries can formulate road safety programmes on their own and are usually responsible for improvements in road infrastructure in their states. Police forces are organised at the state level, and enforcement of traffic laws is the responsibility of each federal state.

Road safety strategy for 2011-20

The 2011-2020 road safety programme was launched in autumn 2011. The principal aim of the programme is to enable safe, ecologically sensitive and sustainable mobility for all road users in Germany. It has a wide range of road safety measures addressing users, vehicles and the infrastructure.

The programme addresses new challenges, such as demographic change and mobility of elderly, and it aims at safeguarding the efficiency of the road network. It reflects recent technological developments in vehicles such as driver assistance systems, co-operative vehicle systems and new engine concepts. In these latter areas, the main focus lies on ensuring that the development of vehicle technology does not induce safety risks. Activities also focus on rural roads and on reducing the number of serious injuries as well as fatalities.

Road safety targets

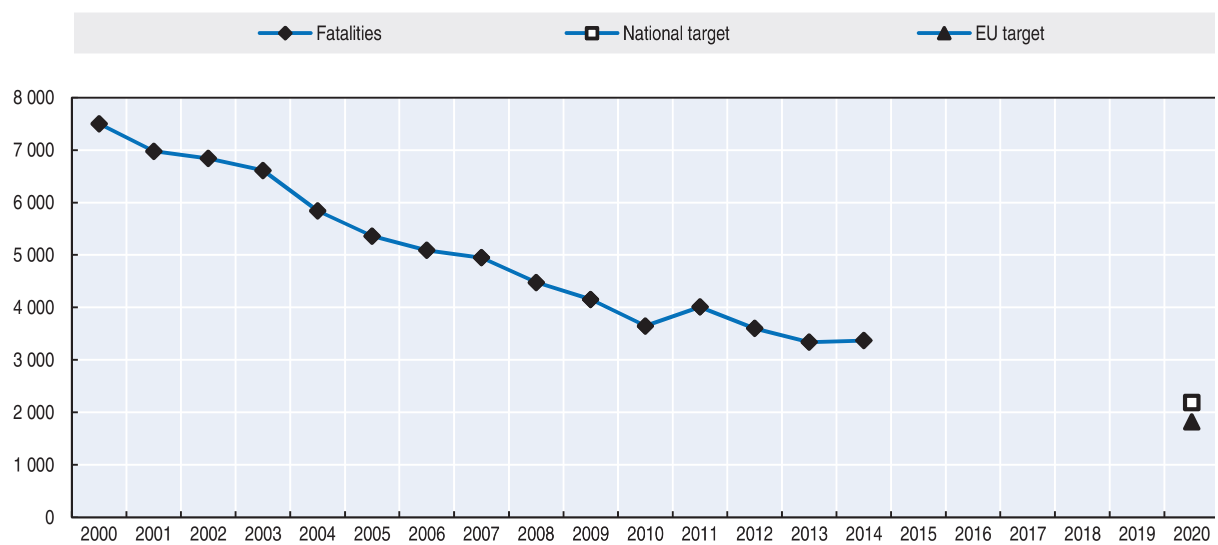
The quantitative target for 2020 is a reduction by 40% of the number of fatalities. The target was defined on the basis of research regarding the expected development of road safety until the year 2020 (Maier. R. et al., 2012).

A model was developed to predict the number of crashes and casualties in Germany in the years 2015-20 for the different road types (motorways, rural and urban roads). The risks of crashes and injuries were subdivided for each mode of traffic and age of road user. The time series model assumes that efforts to improve road safety continue as they have in the past. The forecast, based on the model and an estimation of future traffic conditions in Germany, shows a considerable decrease (-30%) in the number of casualties.

Monitoring

Monitoring and assessment of road safety measures and progress toward the target is done with the Road Accident Prevention Report, which is prepared every two years and submitted to the German Bundestag. The report discusses the general development of road safety and contains a comprehensive collection of measures implemented in the two years since the last report, as well as major on-going and concluded research, and planned projects and measures. The most recent report was published in autumn 2014.

Figure 13.5. **Trends in road fatalities towards national and EU[1] target**



1. In 2010, the European Commission adopted the target of halving road deaths by 2020, compared to 2010 levels. 2014 data is provisional.

Recent safety measures (2012-14)

Road safety management

National Cycling Plan 2020

- In September 2012, the German cabinet agreed on the National Cycling Plan 2020, which represents the Federal Government's commitment towards the promotion of cycling as part of its sustainable transport framework. It sets out principles for the promotion of cycling in Germany over the coming years. The key pillars of the plan are:
  - more promotional activities to support cycling
  - raised awareness of cycling as a mode of transport in rural areas
  - improvement of cycling traffic safety.
- A new German demerit point system began 1 May 2014. It was designed to increase the acceptability of the system and decrease bureaucracy. Demerit points are focused on

traffic offences which impact road safety, the higher the impact, the more demerit points, up to three. When a driver has eight points, the driving licence will be withdrawn. Under some conditions, demerit points can be reduced if the driver completes a voluntary seminar aimed at improving knowledge on road safety regulations and increasing their acceptance.

- An exchangeable number plate was introduced 1 July 2012 that can be used for two vehicles of the same class and can be switched manually from one vehicle to the other.

Road users

- The longstanding campaign "*Runter vom Gas*" (Stop speeding!) has different modules, such as a brochure for motorcyclists, a campaign regarding agricultural tractors on rural roads and a prize competition for YouTube videos.
- A communication campaign to enhance the traffic climate for cyclists was started in May 2013.
- On 1 April 2013 several changes to the German Road Traffic Act came into effect. The number and complexity of traffic signs was reduced. Safety of cyclists will be improved by such changes as making the speed limit 30 km/h for all vehicles on roads with priority for cyclists.

Infrastructure

- The toll for Heavy Goods Vehicles (HGV) with a permissible gross weight of 12 tonnes or over has been in force on German motorways since 2005. On 1 August 2012, the HGV toll was expanded to selected national roads. This adds about 1 135 kilometres of road to the existing regime. Additional revenues of EUR 100 million are expected. The revenues must be used for the preservation and extension of road infrastructure in Germany.

Vehicles

- Since July 2014, a high visibility vest must be available in all cars, goods vehicles and buses in Germany. Motorcycles are exempt.

Post crash measures

- Since January 2013, digital rescue data sheets detailing specific information about vehicles (such as airbag locations, fuel type) are available to all emergency rescue personnel, improving the rescue chain in terms of efficiency and speed. Rescue personnel use an online license plate look-up service to call up the pertinent rescue data sheet for a vehicle that has been involved in an accident. As many rescue data sheets are already available in multiple languages, the system can be easily transferred to other countries around the globe. Moreover, the relevant software (DAT FRS: *Deutsche Automobil Treuhand / Feuerwehr Rettungsdaterblatt System* [Fire Rescue System data sheet]) was designed to allow for integration of the rescue sheets in the future European automatic emergency call system eCall.

Recent and ongoing research

- Auerbach, K. (2014) *Psychological consequences of road accidents* (Berichte der Bundesanstalt für Straßenwesen, Mensch und Sicherheit Heft M 245, Bergisch Gladbach) *http://bast.opus.hbz-nrw.de/frontdoor.php?source_opus=783&la=de*.

- Von Below, A. and H. Hardy (2014), *Psychological aspects of the risk of accidents for motorcyclists* (Berichte der Bundesanstalt für Straßenwesen, Mensch und Sicherheit Heft M 247, Bergisch Gladbach), *http://bast.opus.hbz-nrw.de/frontdoor.php?source_opus=820&la=de*.
- Weitzel, A. et al. (2015) *Approval strategies for advanced driving assistance systems* (Berichte der Bundesanstalt für Straßenwesen, Mensch und Sicherheit Heft F 98, Bergisch Gladbach), *http://bast.opus.hbz-nrw.de/frontdoor.php?source_opus=836&la=de*.
- Baier, R. et al. (2014) *Mini roundabouts – derivation of application areas and application limitations* (Berichte der Bundesanstalt für Straßenwesen, Mensch und Sicherheit Heft V 240, Bergisch Gladbach), *http://bast.opus.hbz-nrw.de/frontdoor.php?source_opus=822&la=de*.
- Maier, R. et al. (2013) *Evaluation model for traffic safety on rural roads* (Berichte der Bundesanstalt für Straßenwesen, Mensch und Sicherheit Heft V 226, Bergisch Gladbach), *http://bast.opus.hbz-nrw.de/frontdoor.php?source_opus=696&la=de*.
- Bergerhausen, U. et al. (2013) *Test results and evaluation of safety of containment level H4b on bridges* (Berichte der Bundesanstalt für Straßenwesen, Mensch und Sicherheit Heft V 226, Bergisch Gladbach), *http://bast.opus.hbz-nrw.de/frontdoor.php?source_opus=710&la=de*.

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Websites

- Federal Ministry of Transport, Building and Urban Affairs: *www.bmvi.de/DE/Home/home_node.html*; Road safety programme 2011-2020: *www.unece.org/fileadmin/DAM/trans/doc/2012/wp1/NatDev-2012_road-safety-programme-2011.pdf*.
- Federal Highway Research Institute (BASt): *www.bast.de/EN/Home/home_node.html*; Research reports: *www.bast.de/EN/Publications/Reports/Reports_node.html*; Electronic BASt-archive: *http://bast.opus.hbz-nrw.de/*.
- German Federal Statistical Office's accident statistic reports: *www.destatis.de/DE/ZahlenFakten/Wirtschaftsbereiche/TransportVerkehr/Verkehrsunfaelle/Verkehrsunfaelle.html*.
- German Road Safety Council e.V.: *www.dvr.de/*.
- National cycling plan: *www.nationaler-radverkehrsplan.de*.
- German In-Depth Accident Study (GIDAS): *www.gidas.org*.

Chapter 14

Greece

*This chapter presents the most recent crash data for Greece, as well as an update on the Greek road safety strategy and recently implemented safety measures.**

* All data stem from the National Technical University of Athens and IRTAD unless otherwise noted. For more information please contact: geyannis@central.ntua.gr.

Data for 2013 show a 13% decrease in fatalities compared to 2012. This contributes to the 46% reduction in road fatalities since 2009. As in the four preceding years, the decrease is mainly attributed to the joint effect of more systematic initiatives from the relevant authorities and the deep economic crisis, which resulted in fewer vehicle-kilometres travelled, less speeding and less aggressive driving behaviours. The strategic plan adopts the European target of reducing the number of road fatalities by 50% between 2010 and 2020. The current challenge for road safety is to benefit from the major structural changes taking place in the public administration due to the economic crisis.

Road safety data collection

Definitions applied in Greece

- Injury crash: Any crash involving at least one road motor vehicle in motion on a public road or square to which the public has access (excluding yards, industrial sites or vehicle depot of public transport enterprises), resulting in at least one injured or killed person. Property damage only crashes are not included.
- Road fatality: Any person killed immediately or dying within 30 days as a result of an injury crash. (This national definition has applied since 1996. For the years before 1996 a conversion factor is applied to the fatality data in the *International Road Traffic and Accident Database*.)
- Seriously injured person: Any person who sustained an injury as result of an injury crash, such as brain damage, mutilation or other injuries that may result in lack of awareness or which are life-threatening.

Data collection

From the early 1960s, the Hellenic Statistical Authority (EL.STAT) has maintained the official road crash database of Greece. This contains disaggregated road crash data and detailed information concerning drivers, road crash casualties and vehicles involved. Data is coded on the basis of the Road Accident Data Collection Form, which is filled in by traffic police for every road crash with casualties.

Traffic Police respond to all crashes with casualties. Officers are responsible for filling in the Road Accident Data Collection Form and for finalising information concerning casualties 30 days after the crash. Data are forwarded to EL.STAT and also stored in the traffic police database. The EL.STAT database includes reliable and detailed information on the road crashes, persons and vehicles as well as additional elements such as causes and conditions of the vehicles.

The Ministry of Infrastructure, Transport and Networks is responsible for vehicle registration and driver licensing. It maintains databases of registered vehicles and of licensed drivers. The registered vehicles database includes disaggregate information on vehicle characteristics, such as vehicle type and use, year of first registration, length, weight, engine size, fuel type, manufacturer, etc. This database does not include mopeds.

Scrapped vehicles are systematically removed from the database. The driver license database includes disaggregate information on driver characteristics, such as license type and year, the related vehicle type, license renewal or modification, age, gender, etc. However, deceased drivers are not systematically removed from the database.

Data on the severity of injuries are not systematically collected by hospitals; only road fatalities are properly reported. Consequently, it is not currently possible to have data on serious injuries according to the definitions of the Maximum Abbreviated Injury Scale.

Most recent safety data

Road crashes in 2014 – provisional data

Estimates based on accumulated provisional data indicate a 10% decrease in road fatalities in 2014 compared to 2013. The data suggests there was a decrease of 3% in the number of road crashes, 17% fewer serious injuries and 1% fewer slight injuries.

Road crashes in 2013

Final crash data for 2013 show a 11% decrease in fatalities compared to 2012. This impressive result contributes to the 46% reduction in road fatalities since 2009 and for the first time brings the fatality rate for Greece (7.9 deaths per 100 000 inhabitants) closer to the EU average than to the least performing EU countries. As in the four preceding years, the decrease is mainly attributed to the joint effect of:

- more systematic initiatives from the relevant authorities, including intensification of enforcement, construction and upgrade of 2 500 km of motorways, urban mobility plans, educational campaigns, training and monitoring
- the deep economic crisis, which resulted in fewer vehicle-kilometres travelled, less speeding and less aggressive driving behaviours.

No studies are available yet to assess the relative contribution of these factors.

Trends in traffic and road safety (1990-2014)

Traffic

Since 1990, the number of motor vehicles has nearly tripled in Greece. During the decade 2000-09 an annual increase of about 5% was observed. Since 2009, the annual increase in the vehicle fleet is less than 1%, although the number of motorcycles is increasing about 2% annually.

Between 2009 and 2012, traffic volume decreased by 15% on urban roads and 30% on toll motorways.

Road safety

Crashes and casualties

The number of fatalities reached a peak in 1995 with 2 411 road deaths. Fatalities fell by 47% between 2006 and 2013, and the 879 deaths in 2013 are 64% below the 1995 peak.

During the last decade, an important improvement was observed in road fatalities for young people, as well as in fatalities outside urban areas and in the number of people killed in crashes involving heavy goods vehicles. There was less improvement on motorways or for elderly road users, motorcyclists, foreign drivers and female drivers.

In recent years (2010-13), the number of fatalities decreased by about 30%. Since mid-2008, there have been some road safety developments such as the new Highway Code and new motorways, but the economic crisis has been the most important factor bringing a further significant decrease in road fatalities.

Rates

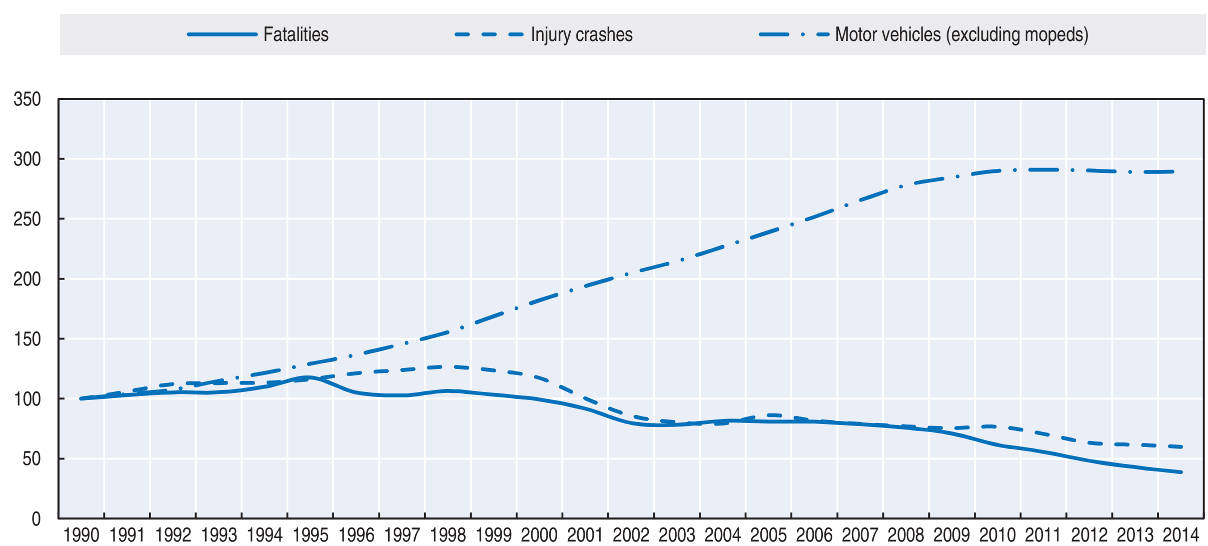
In 2013, Greece had a mortality rate of 7.9 road deaths per 100 000 inhabitants, less than half the level of 2000.

Table 14.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change over			
						2012	2010	2000	1990
Reported safety data									
Fatalities	2.050	2.037	1.258	988	879	-11.0	-30.1	-56.8	-57.1
Injury crashes	19 609	23 001	15 032	12 398	12 072	-2.6	-19.7	-47.5	-38.4
Deaths per 100 000 inhabitants	20.3	18.7	11.2	8.9	7.9	-11.1	-29.8	-57.7	-61.0
Deaths per 10 000 registered vehicles[1]	7.4	4.0	1.6	1.2	1.1	-10.6	-29.9	-72.8	-85.2
Traffic data									
Registered vehicles[1] (thousands)	2 780	5 061	8 062	8 070	8 035	-0.4	-0.3	58.8	189.0
Registered vehicles per 1 000 inhabitants	275	464	721	726	726	0.1	0.8	56.5	164.4

1. Registered vehicles excluding mopeds.

Figure 14.1. **Road safety and traffic data index 1990 = 100**



Road safety by user group

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

Between 1990 and 2013, the number of moped riders killed decreased by 87%, whereas the number of motorcyclists killed decreased by only 1%. Pedestrian fatalities decreased by 71%.

Table 14.2. **Road fatalities by road user group**

Road users	1990	2000	2010	2011	2012	2013	2013 % change over			
							2012	2010	2000	1990
Bicyclists	26	22	23	13	21	15	-28.6	-34.8	-31.8	-42.3
Moped riders	192	90	36	34	35	25	-28.6	-30.6	-72.2	-87.0
Motorcyclists	274	412	372	305	286	271	-5.2	-27.2	-34.2	-1.1
Passenger car occupants	712	891	542	474	380	347	-8.7	-36.0	-61.1	-51.3
Pedestrians	524	375	179	223	170	151	-11.2	-15.6	-59.7	-71.2
Others incl. unknown	322	247	106	92	96	70	-27.1	-34.0	-71.7	-78.3
Total	2 050	2 037	1 258	1 141	988	879	-11.0	-30.1	-56.8	-57.1

Road safety by age group

Since the peak in 1995, all age groups have benefited from a drop in fatalities, with best achievements for the 6-9 and 15-20 age groups.

Between 2000 and 2013, the 18-20 age group showed the highest decrease in the number of fatalities (-79%) followed by the 6-9 age group (-78%). The large decrease for 18-20 year old drivers could be attributed to the economic crisis, which might affect the distances driven by younger drivers more significantly than for older drivers.

Young people still have a much higher risk than other age groups and the overall population.

Table 14.3. **Road fatalities by age group**

Age	1990	2000	2010	2011	2012	2013	2013 % change over			
							2012	2010	2000	1990
0-5	22	16	12	5	9	5	-44.4	-58.3	-68.8	-77.3
6-9	40	9	6	7	5	2	-60.0	-66.7	-77.8	-95.0
10-14	33	15	12	10	7	10	42.9	-16.7	-33.3	-69.7
15-17	76	60	39	28	21	27	28.6	-30.8	-55.0	-64.5
18-20	183	156	73	55	57	33	-42.1	-54.8	-78.8	-82.0
21-24	249	219	113	108	86	79	-8.1	-30.1	-63.9	-68.3
25-64	1 051	1 107	711	643	536	468	-12.7	-34.2	-57.7	-55.5
> 65	392	428	268	260	248	234	-5.6	-12.7	-45.3	-40.3
Total incl. unknown	***2 050***	***2 037***	***1 258***	***1 141***	***988***	***879***	***-11.0***	***-30.1***	***-56.8***	***-57.1***

Road safety by road type

In 2013, 53% of fatal crashes occurred in urban areas (mainly due to the increased motorcycle and pedestrian traffic), 38% on rural roads and 9% on motorways.

Since 2000, there was a 25% decrease in road deaths on the rural network, as almost 1 200 km of the national interurban network were upgraded to motorways.

Economic costs of traffic crashes

Traffic crashes represent a significant cost for society, estimated in 2011 at around EUR 3.41 billion, representing almost 1.5% of the gross domestic product of Greece (Hellenic Institute of Transportation Engineers, 2012). This calculation uses a combination of the lost production methodology and the willingness to pay methodology.

Figure 14.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

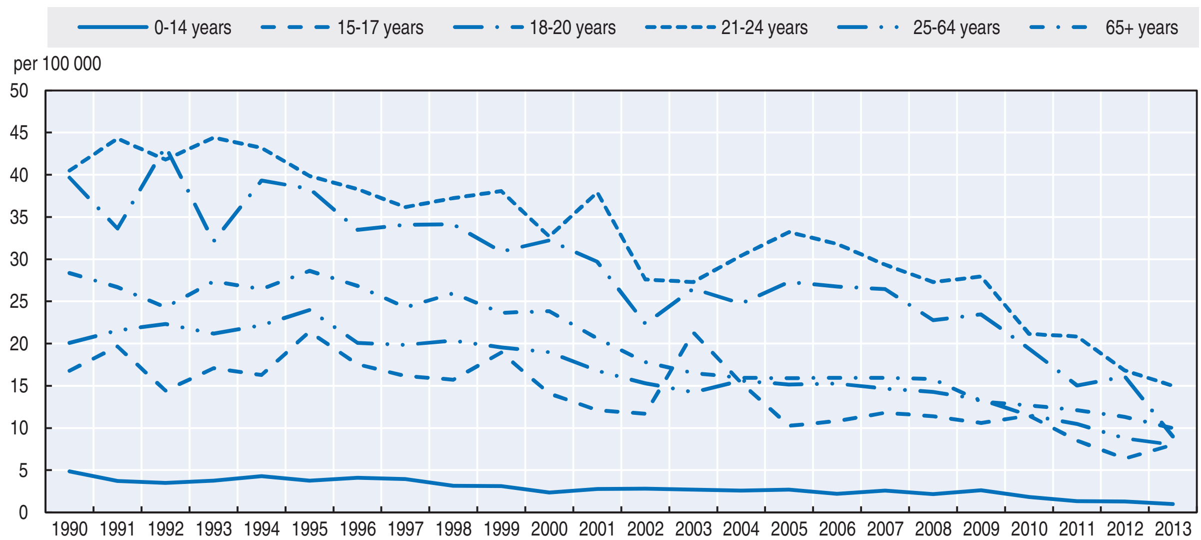
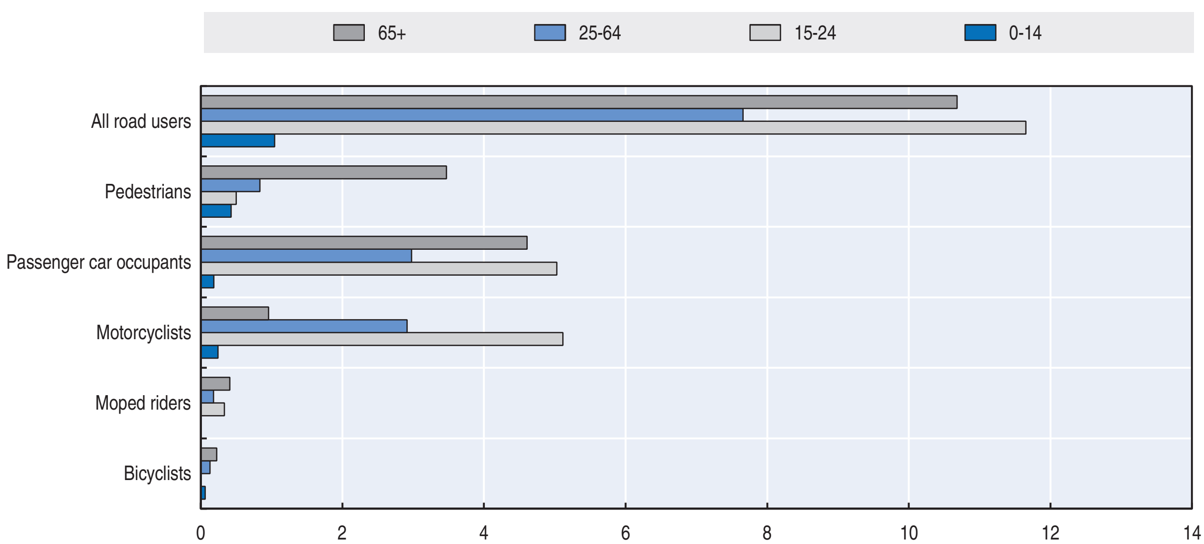


Figure 14.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants, 2013



The cost is almost tripled if the real numbers of injuries and of "material damage only" crashes are taken into account.

Figure 14.4. **Road fatalities by road type**

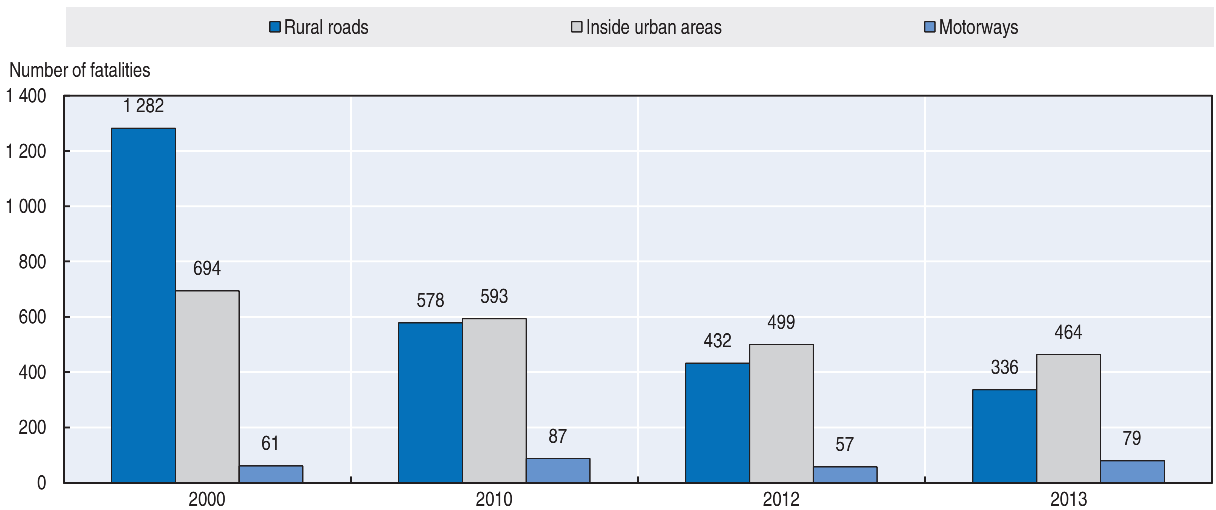


Table 14.4. **Costs of road crashes, 2011**

	Unit cost	Total in (billion €)
Fatalities		2.32
Injury and disability		1.09
Property/damage costs		
Total		3.41
Total as % of GDP		**1.45%**

Source: Hellenic Institute of Transportation Engineers, 2012.

Recent trends in road user behaviour

Impaired driving

Drink driving

According to the Greek Road Code, the maximum permissible blood alcohol content (BAC) is 0.5 g/l when 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, studies demonstrate that drivers in Greece over the legal limit are seven times more likely to be involved in a road crash.

Drugs and driving

According to the Greek Road Code, driving under the influence of drugs is prohibited. No data are available for drug related crashes.

Distraction

In Greece, it is forbidden to use a hand-held phone or headphones while driving. Only wireless, hands-free devices are allowed.

According to an observational study by the National Technical University of Athens (NTUA) in 2009, 9% of passenger-car drivers use mobile phones during driving, and 2% of powered two-wheeler riders use mobile phones while driving.

The mobile phone use rate increases inside built-up areas and for young drivers (16-24), especially for young female drivers of passenger cars (16%) and powered two-wheelers (12%).

Fatigue

No studies on the effect of fatigue on road safety were carried out in Greece.

Speed

Speeding is perhaps the most critical factor for road crashes in Greece. Speeding enforcement varied during the last decade, with a direct impact on the progress of road safety trends. The recent important decline of road fatalities and speeding may be a result of the economic crisis encouraging more ecological driving.

The table below summarises the main speed limits in Greece.

Table 14.5. **Passenger car speed limits by road type, 2015**

Urban roads	50 km/h	
Rural roads	90 km/h	110 km/h on highways
Motorways	130 km/h	Variable speed limits are implemented when variable Message signs are available

Seat belts and helmets

The use of seat belts has been compulsory since 1987 in front seats and since 2003 in rear seats. According to 2009 data, the rate of seat belt use is 77% for the driver, 74% for a front seat passenger and 23% in rear seat. The percentage of seatbelt use by the driver was, in 2009, 72% in urban areas, 78% on rural roads and 95% on motorways.

All riders of motorised two-wheelers are required to wear helmets. The helmet-wearing rate is 75% for drivers and 46% for passengers. Helmet use by the driver is 73% in urban areas, 85% on rural roads and 98% on motorways. There is no mandatory helmet use law for cyclists.

National road safety strategies and targets

Organisation of road safety

The co-ordination of all the ministries involved in road safety management is ensured by the Inter-Ministry Committee on Road Safety, chaired by the Minister of Citizen Protection. However, his role remains limited, as the corresponding co-ordination secretariat has never been properly operational. Some stakeholder consultation takes place at the National Road Safety Council. Regional and local authorities implement road safety activities, mainly on road infrastructure and vehicle control; however, there is no process to integrate national and regional activities and there is no reporting from the regional to the national level.

Despite the three Strategic Plans adopted during the last decade, mobilisation of the authorities and of society remained limited and road safety is still not a recognised policy area. There is no identifiable budget for road safety.

Quite a few Non-Government Organisations are strong advocates for road safety. Road safety problems and solutions are well known in Greece through research studies; however, implementation of measures is limited. Furthermore, there is no official monitoring of road safety actions, no benchmarking and little evaluation of the road safety interventions.

Road safety strategy for 2011-20

The third National Road Safety Strategic Plan, developed by the NTUA, was approved by the Ministry of Infrastructure, Transport and Networks in September 2011. The aim of this strategic plan is the development of a strong road safety culture. The plan foresees a national road safety management structure comprising the Inter-Ministry Committee, the Parliamentary Committee, the National Advisory Committee as well as a framework for efficient implementation, monitoring and evaluation of road safety level and measures. The strategic plan is composed of six pillars: road safety education, road safety enforcement, safe road users, safe road infrastructure, safe vehicles and post-crash management.

Road safety targets

The strategic plan adopts the European target of reducing the number of road fatalities by 50% between 2010 and 2020. Intermediate targets include a reduction by 80 road fatalities per year between 2010 and 2015, which has been achieved partly due to the economic crisis, and a reduction of 50 road fatalities per year between 2016 and 2020.

Specific actions by the central and regional governments have been identified as necessary to reach the target. A prerequisite is a strong political will and support at the highest political level. The Inter-Ministry Committee, re-established twice (in 2010 and in 2014 under the chairmanship of the Prime Minister), is expected to play a critical role. The current challenge for road safety is to benefit from the major structural changes taking place in the public administration due to the economic crisis.

Monitoring

A significant reduction in road fatalities since 2010, attributed in part to the deep economic crisis in Greece, has brought the country near to its goals for road safety.

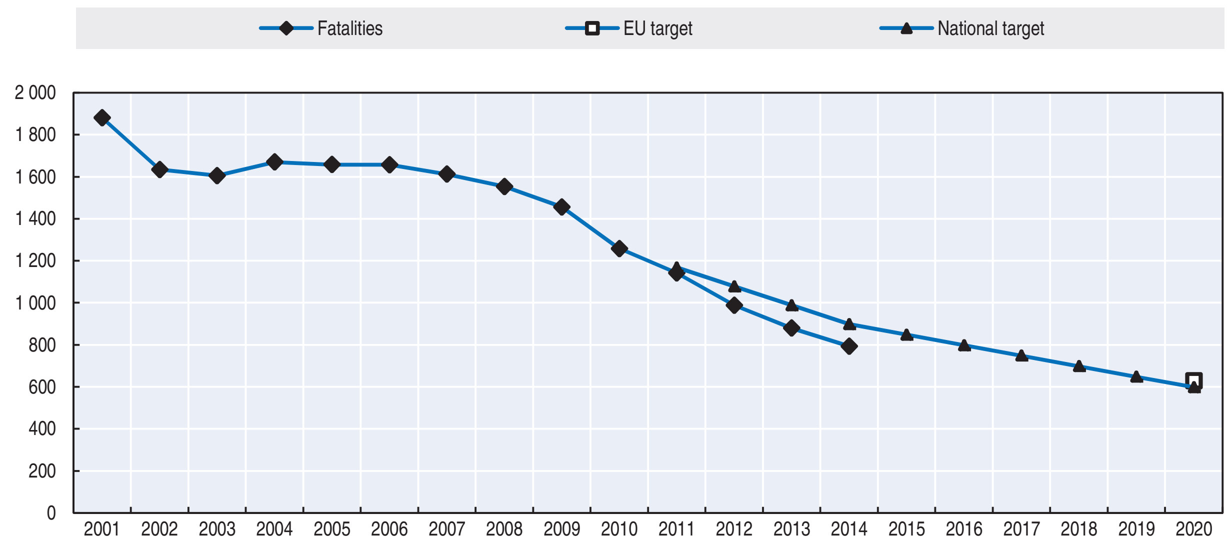
Even though the strategy has defined clearly the targets, the programmes and the implementation framework, some important barriers remain, such as the lack of systematic implementation of the measures and a lack of co-ordination and monitoring. The co-ordination instruments to support the Inter-Ministry Committee were never fully operational and the necessary resources were never allocated to the related road safety actions.

Recent safety measures (2012-14)

The unprecedented economic crisis during the last three years resulted in limited budgets for road safety actions in Greece.

Some road safety measures are being implemented with a focus on road safety police enforcement (on speeding, drinking and driving and use of seat belts and helmets), or

Figure 14.5. **Trends in road fatalities towards national and EU target**[1]



1. In 2010, the European Commission adopted the target of halving road deaths by 2020, compared to 2010 levels.

through road safety education and information campaigns conducted mainly by private companies such as motorway concessionaires and NGOs. Greek universities and research institutes carry out many road safety research projects, thus supporting road safety actions in Greece.

Road safety management

- Following a new law the Inter-Ministry Committee on Road Safety was re-established a first time in 2010 and a second time in 2014, this time under the chairmanship of the Prime Minister. However, this Inter-Ministry Committee has not met for the last two years.
- Road safety management is the responsibility of both national and regional authorities. During the last decade, more and more regional and local authorities have established and implemented regional road safety plans, sometimes within the urban mobility plans, which are starting to bring results.

Speed management

- The update of the Road Code is under discussion and includes consideration of speed limit reviews for both traffic safety and efficiency reasons. Higher gas prices due to the crisis had a direct impact on average speed reduction and consequently to traffic safety improvement.

Road users

- National, regional and local authorities regularly conduct campaigns and training on user behaviours like speeding, impaired driving, seat belt and helmet misuse, etc. However the impact of these efforts on traffic safety is unknown because no monitoring programme exists.
- The road traffic police continue a programme for systematic road safety enforcement.

Infrastructure

- Due to the difficult economic conditions, the budget for road maintenance and safety intervention was significantly reduced. Nevertheless, the major motorway development programme totalling 2 500 km of toll motorways (including the construction of 1 300 km of new motorways) restarted in 2013 and will deliver the motorway sections between 2015 and 2018.

Vehicles

- All European Union rules on vehicles are properly transposed into Greek legislation, resulting in higher safety standards for all new vehicles entering into circulation in Greece. Improved passive and active safety is one of the reasons for the significant reduction of persons killed and seriously injured in traffic crashes.

Post crash measures

- Extensive reforms of the Greek public administration and national health system include restructuring of, and possible improvements to, the post-crash care system.

Recent and ongoing research

NTUA and the Hellenic Institute of Transport (HIT/CERTh) are two main road safety research organisations in Greece. Current research involves road crash analysis, road safety management, vehicle safety, driver behaviour and intelligent transportation systems.

References

Hellenic Institute of Transportation Engineers (2014), *HITE position on Road Safety in Greece*, HITE, 2014.

Hellenic Institute of Transportation Engineers (2012), *HITE position on Road Safety in Greece*, HITE, 2012.

Websites

- Hellenic Statistical Authority: *www.statistics.gr*.
- Ministry of Infrastructure, Transport and Networks: *www.yme.gr*.
- Road Safety Observatory of the National Technical University of Athens: *www.nrso.ntua.gr*.
- Road Safety Institute Panos Mylonas: *www.ioas.gr*.
- Road Safety Resources in Greece: *www.nrso.ntua.gr/links*.

Chapter 15

Hungary

*This chapter presents the most recent crash data for Hungary, as well as an update on the Hungarian road safety strategy and the recently implemented safety measures.**

* All data stem from KTI - Institute for Transport Science and IRTAD unless otherwise noted. For more information please contact: Prof. Dr Péter Holló, hollo.peter@kti.hu.

In 2013, Hungary had 591 road deaths, a 20% decrease from 2010 and a rate of 6.0 per 100 000 inhabitants. The number of road fatalities was as low as that of 50 years earlier. Improvement in passive safety of vehicles is considered to be an important factor contributing to these positive results. However, after seven consecutive years of decline, road fatalities increased by 5.9% in 2014.

Road safety data collection

Definitions applied in Hungary

- Road fatality: Person who dies within 30 days as a result of a traffic crash.
- Seriously injured person: Any person who, due to the crash, sustained an injury which meets one of the following criteria:
  - Necessitates hospitalisation for more than 48 hours within seven days after occurrence.
  - Caused a fracture (except for finger, toe, nose fractures).
  - Caused cuts that resulted in serious bleeding or nerve, muscle or tendon injuries.
  - Caused injury of inner organs.
  - Caused a burn of second or third degree or a burn affecting more than 5% of body surface.

Data collection

Data of personal injury crashes are collected by the police and form the basis of the official Hungarian road crash statistics.

In Hungary, the provision of road traffic accident data is governed by the government decree on the National Statistical Data Collection Programme, in line with the Act on Statistics. It takes into account Council Decision 93/704/ EC, which stipulates that the member states provide their safety data to the European Commission for the elaboration of a European community database ("CARE"). The Hungarian national data collection system has been adjusted to be compatible with the Common Accident Data Set (CADaS) structure. Variables are divided into four categories: Accident, Road, Traffic Unit, and Person.

The European Commission and the *International Road Traffic and Accident Database* (IRTAD) have recommended that Hungary collect data on serious injuries based on the Maximum Abbreviated Injury Scale of 3 or more (MAIS3+). Experts are working on options to translate codes of the International Classification of Diseases, which are used in hospitals to define the nature and severity of injuries, into codes on the Abbreviated Injury Scale. In the short run, translation seems to be the main realistic option to collect MAIS3+ data.

Most recent safety data

Road crashes in 2014 – final data

In 2014, there were 626 road fatalities, a 5.9% increase when compared to 2013.

Road crashes in 2013

In 2013, there were 591 road fatalities, a 2.3% decrease when compared to 2012. The year 2013 was the seventh consecutive year in which the number of fatalities decreased.

Trends in traffic and road safety (1990-2014)

Traffic

The annual distance travelled (vehicle-kilometres) on the state road network decreased by 10% between 2008 and 2012. The decrease concerned both light and heavy vehicles. In 2013, on the basis of preliminary fuel consumption data, it is estimated that traffic increased by less than one percent.

Road safety

Crashes and casualties

According to Prof. Dr Péter Holló, the history of Hungarian road safety can be divided into the following periods:

- 1976-86: Relatively stable period. The 30-day definition for road accident fatalities was introduced in 1976.
- 1987-90: Strong deterioration, similar to all countries where the political, social and economic systems changed following the collapse of the Soviet bloc. This political change was accompanied by negative side effects for road safety, due to weak police control, less political attention to road safety, a false interpretation of freedom, explosion in the size and changes in the structure of the vehicle fleet, etc. The worst year for Hungarian road safety was in 1990, with nearly 2 500 people killed.
- 1991-2000: Important improvements and major initiatives:
  - 1993: Adoption of the first Hungarian National Road Safety Programme with a quantitative target. Road safety measures were implemented: Lower speed limits in built-up areas, mandatory daytime running lights and rear seat safety belt use outside built-up areas, intensified police control and road safety campaigns, more severe sanctions, etc.
  - 2000 was the most successful year until 2008, with a reduction of more than 50% in the number of people killed (1 200) compared to 1990. Some demographic and economic factors contributed to the positive trend: A decrease in the number of novice drivers and an increase in vehicle operating 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 was insufficient, as was the organisation and funding of road safety activities.
- 2007-2013: After several years of increasing road fatalities, the 2007 performance was back to that of 2000. In 2008, there was a remarkable decrease in fatalities – less than 1 000. In 2013 the number of road fatalities was as low as that of 50 years earlier. The improvement in the passive safety of vehicles is considered to be an important factor contributing to these positive results.

  In 2014, however, there was a 5.9% increase in the number of fatalities.

Rates

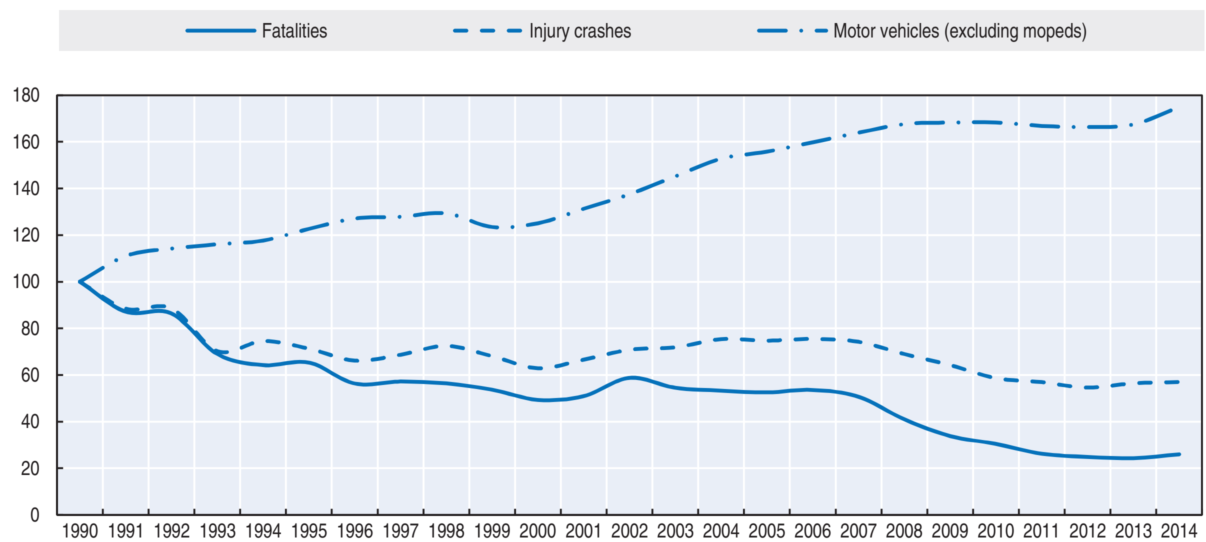
In 2013 Hungary recorded 6.0 fatalities per 100 000 inhabitants, a rate four times lower than the maximum in the 1990s.

Table 15.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	2 432	1 200	740	605	591	-2.3	-20.1	-50.8	-75.7
Injury crashes	27 801	17 493	16 308	15 174	15 691	3.4	-3.8	-10.3	-43.6
Deaths per 100 000 inhabitants	23.4	11.7	7.4	6.1	6.0	-2.1	-19.3	-49.2	-74.6
Deaths per 10 000 registered vehicles	11.2	4.4	2.0	1.7	1.6	-3.0	-19.7	-63.2	-85.5
Traffic data									
Registered vehicles[1] (thousands)	2 163	2 706	3 640	3 598	3 622	0.7	-0.5	33.9	67.5
Registered vehicles per 1 000 inhabitants	208	265	363	362	366	0.9	0.6	38.1	75.3

1. Registered vehicles excluding mopeds.

Figure 15.1. **Road safety and traffic data index 1990 = 100**



Road safety by user group

All user groups have benefited from important safety improvements since 1990, with the largest benefits for pedestrians (-82%).

In 2013, safety improvement was unevenly shared among road user groups: the number of motorcyclists killed increased by 49%, while the situation considerably improved for cyclists with a 19% decrease in fatalities.

Road safety by age group

Since 1990, the reduction in fatalities has benefitted all age groups.

In 2013, there was a marked improvement among the 18-20 age group (-39%), while a marked deterioration (+63%) was observed for the 21-24 group.

When examining traffic-related deaths on the basis of population, unlike other countries, there is no marked difference between the fatality risk of different age groups. Young people even have a very low rate of fatalities (3 per 100 000 inhabitants) compared to other countries (Figure 15.2).

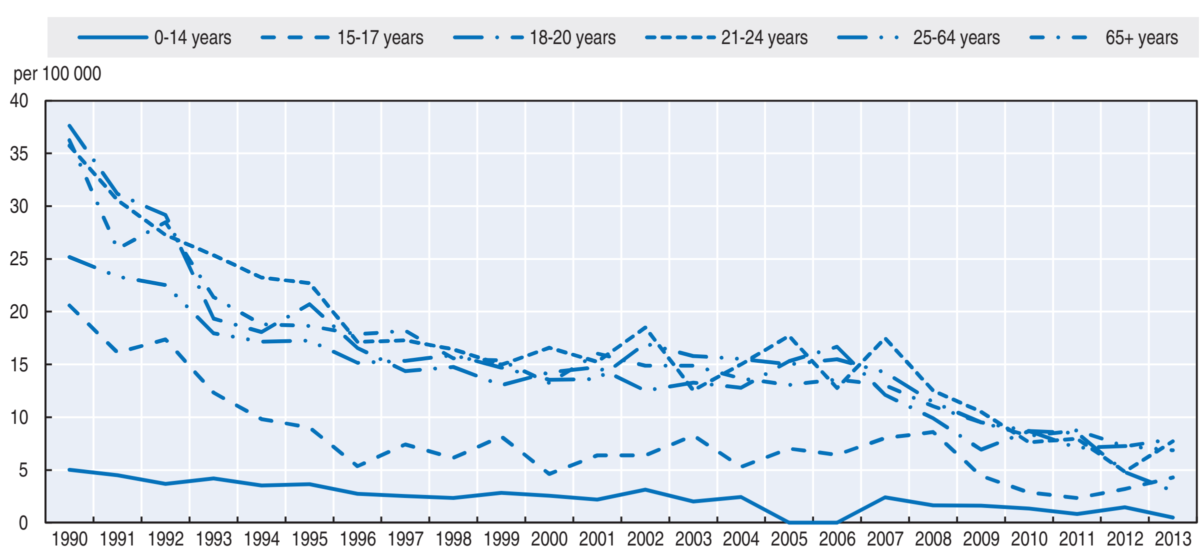
Table 15.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from 2012	2010	2000	1990
Bicyclists	313	182	92	84	68	-19.0	-26.1	-62.6	-78.3
Moped users	95	33	19	25	24	-4.0	26.3	-27.3	-74.7
Motorcyclists	143	52	49	39	58	48.7	18.4	11.5	-59.4
Passenger car occupants	974	500	330	253	254	0.4	-23.0	-49.2	-73.9
Pedestrians	803	346	192	156	147	-5.8	-23.4	-57.5	-81.7
Others	104	87	58	48	40	-16.7	-31.0	-54.0	-61.5
Total	***2 432***	***1 200***	***740***	***605***	***591***	***-2.3***	***-20.1***	***-50.8***	***-75.7***

Table 15.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from 2012	2010	2000	1990
0-5	28	17	6	5	1	n.a.	n.d.	-94.1%	-96.4%
6-9	39	9	3	6	3	n.d.	n.d.	n.d.	n.d.
10-14	40	18	11	10	3	n.d.	n.d.	n.d.	n.d.
15-17	99	18	10	11	14	27.3	40.0	-22.2	-85.9
18-20	162	64	33	18	11	-38.9	-66.7	-82.8	-93.2
21-24	191	114	40	24	39	62.5	-2.5	-65.8	-79.6
25-64	1 365	736	488	407	383	-5.9	-21.5	-48.0	-71.9
≥ 65	498	203	137	121	134	11.6	-1.5	-33.5	-72.9
Total	***2 432***	***1 200***	***740***	***605***	***591***	***-2.3***	***-20.1***	***-50.8***	***-75.7***

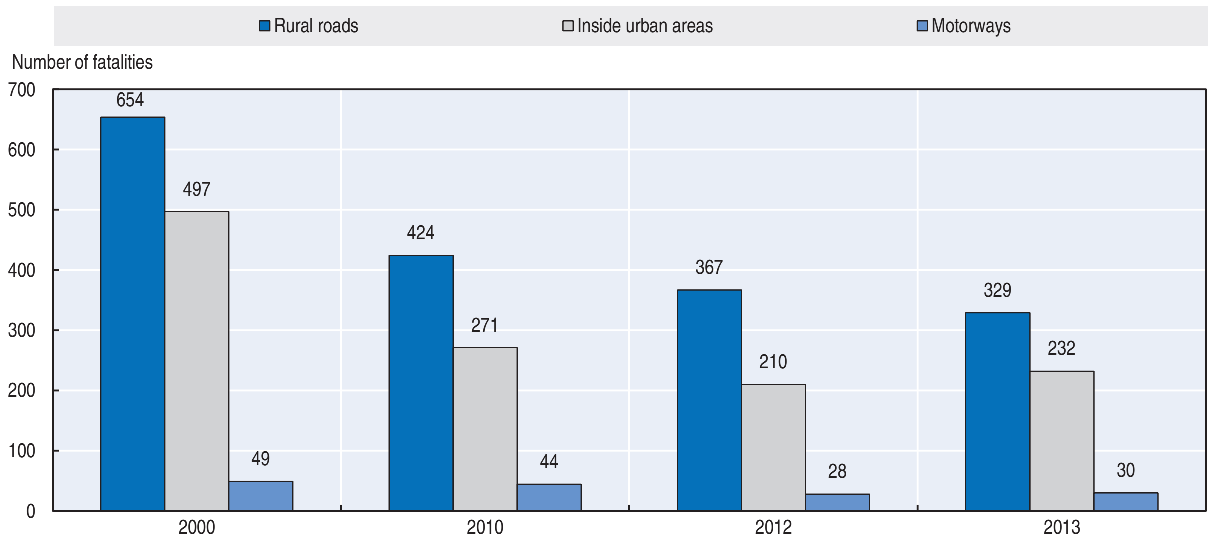
Figure 15.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013



Road safety by road type

In 2013, 56% of road fatalities died on a rural road. Since 2000, the whole road network has benefited to the same extent to safety improvements.

Figure 15.3. **Road fatalities by road type**



Economic costs of traffic crashes

Traffic crashes represent a significant cost for society, estimated in 2012 at around HUF 650-700 billion (about EUR 2.15-2.30 billion), i.e. 2.5% of Hungary's gross domestic product (GDP). These costs are calculated using both a willingness to pay and a "human capital" approach (Hollo, 2013).

For 2013, as it is very costly to undertake in-depth assessment of traffic crash costs based on a "willingness to pay" methodology, Hungary's Institute for Transport Sciences *Közlekedéstudományi Intézet* (KTI) estimates the costs of traffic crashes based on the method of McMahon and Dahdah (2008). Because GDP per capita has decreased, the values for 2013 are lower than for 2012.

Table 15.4. **Costs of road crashes, 2013**

	Unit cost USD	Total
Fatalities	885 640	
Hospitalised people	221 410	
Slight injuries	3 933	
Property/damage costs		
Total		EUR 1.88 billion
Total as % of GDP		**1.5%**

Source: Hollo (2013).

Recent trends in road user behaviour

Impaired driving

Drink driving

In the Hungarian statistical system data are registered about the alcohol consumption of the person who caused a crash. There are no data about the alcohol consumption of innocent participants. A crash is recorded as alcohol related when the person responsible is under the influence of alcohol.

In Hungary, drivers are forbidden to drive under the influence of alcohol. The theoretical maximum blood alcohol content (BAC) is 0.0 g/l. In practice, drivers are convicted only if their BAC is above 0.2 g/l. However, the law was softened in July 2011, and the driving licence can be withdrawn on the spot only when the driver is "seriously" under the influence of alcohol.

In 2013, 1 662 personal injury crashes, or 11% of all injury crashes, were caused by a driver under the influence of alcohol, a 2.1% decrease compared to 2012.

Distraction

Hungary identifies distracted driving in fatal and injury crashes. Mobile phone use or texting while driving are not identified specifically in the category of distracted behaviour.

The use of hand-held mobile phones while driving is not authorised. The penalty for using a hand-held mobile phone while driving is HUF 10 000 inside built-up areas, HUF 15 000 outside built-up areas, and HUF 20 000 on motorways.

Speed

According to on-site police investigations speeding is a contributing factor in about 40% of fatal crashes caused by the driver. Automatic speed cameras are being introduced. The table below summarises the main speed limits in Hungary.

Table 15.5. **Passenger car and truck speed limits by road type, 2015**

Urban roads	50 km/h
Rural roads	90 km/h
Motorways	130 km/h 110 km/h on motor roads

Seat belts and helmets

Seat belt use has been compulsory in front seats since 1976. Outside urban areas they have been compulsory in rear seats since 1993 and in urban areas since 2001.

Dedicated child restraints use is compulsory for children of 150 cm or less.

In 2013, 87% of front-seat occupants and 57% of adult rear-seat occupants wore a seat belt, which is low in comparison to best performing countries.

The use of child restraint systems has significantly increased in the past decade. In 2013 almost 90% of child occupants were restrained with a dedicated device.

In 2013, 63% of killed car occupants did not wear a seat belt when the crash occurred. It is important to emphasise that this percentage is not characteristic for the whole car occupant population, but only for the so-called "high risk group" involved in crash. Prof. Dr Péter Holló (Hollo, 2014) estimates that 54 fatalities and 180 serious injuries could have been prevented if the average seat belt wearing rate were 95%.

Helmet wearing has been compulsory since 1965 for motorcyclists, since 1997 for moped riders outside built-up areas, and since 1998 for moped riders inside built-up areas. The compliance rate by motorcyclists is nearly 100%.

There is no mandatory helmet use law for cyclists.

Table 15.6. **Seat-belt wearing rate by car occupancy**

%

	2013
Front seat	87
Rear seats	
Adults	57
Children (child restraint)	90

National road safety strategies and targets

Organisation of road safety

In Hungary, the Ministry of the Interior and the Ministry of National Development are responsible for road safety. The person in charge of road safety in the government is the deputy state secretary of the Ministry of National Development. There is also an interministerial Road Safety Committee.

Road safety strategy for 2003-15

The primary aim of the road safety action programme for 2014-16 is to improve road users' behaviours, increase the level of compliance with traffic rules, develop individual responsibility and establish partnership in road traffic.

Road safety targets

The 2003-15 Hungarian transport strategy set a target of halving the number of fatalities by 2015 compared to 2001. In addition to its national target, Hungary adopted the EC target to reduce by 50% the number of road fatalities by 2020, in comparison with 2010 level, i.e. to have less than 370 fatalities by 2020.

Monitoring

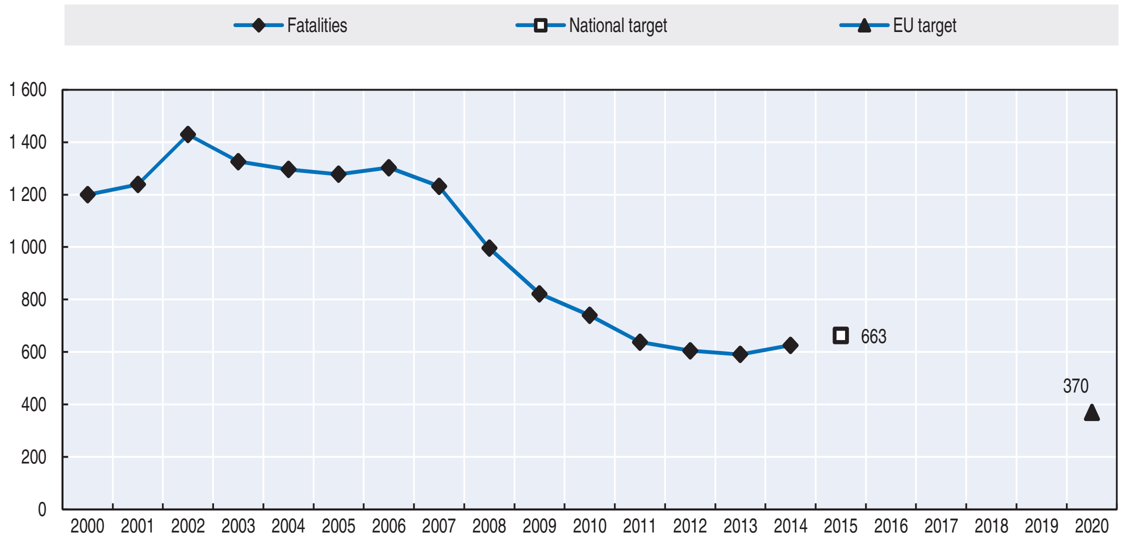
KTI continuously monitors the road safety situation. It prepares detailed evaluations yearly, and conducts regular surveillance. The methodology includes not only absolute and relative numbers, but also such safety performance indicators as the use of safety belts, child restraints, daylight running lights, etc. KTI believes it is necessary to add speed measurements and other measures to the system of performance indicators. Based on evaluation of the previous programme, KTI recommends pushing for further improvements in use of safety belts and child seats, installing more speed cameras and making more efforts to better protect vulnerable road users.

Recent safety measures (2012-14)

Road safety management

- As of 1 September 2014 the Highway Code was modified:
  - Drivers are forbidden to overtake buses transporting children at stops where children get on and off.
  - Application rules for child restraints in the front seats of passenger cars are more precise.
  - Reduced speed limits around educational institutes only apply during school hours.

Figure 15.4. **Trends in road fatalities towards national and EU[1] target**



1. In 2010, the European Commission adopted the target of halving road deaths by 2020, compared to 2010 levels.

Road users

Speed management

- The number of automatic speed cameras is increasing progressively.

Recent and ongoing research

KTI is conducting a number of road safety research projects. More information can be found at: *www.kti.hu*.

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McMahon, K. and S. Dahdah (2008), *The true cost of road crashes, Valuing life and the cost of a serious injury*, the World Bank, Washington, DC.

Websites

- KTI – Institute for Transport Science: *www.kti.hu*.
- Road safety in South East European Regions (ROSEE): *www.rosee-project.eu*.
- South East Neighbourhood Safe Routes (SENSOR): *www.sensorproject.eu*.

Road Safety Annual Report 2015

Chapter 16

Iceland

*This chapter presents the most recent crash data for Iceland, as well as an update on the country's road safety strategy and recently implemented safety measures.**

* All data stem from the Icelandic Road and Coastal Administration and IRTAD unless otherwise noted. For more information please contact: audur.th.arnadottir@vegagerdin.is.

Iceland is heavily motorised with more than 800 vehicles per 1 000 inhabitants, but with its small population and road network it has relatively few road fatalities: just four in 2014 and an average of 12 per year in the period 2008-13. Iceland's goals for 2022 are to be among the best countries in the world in terms of fatality rate (it was 4.7 per 100 000 in 2013) and to reduce the number of killed and seriously injured people to 109 or fewer.

Road safety data collection

Definitions applied in Iceland

- Road fatality: Person who dies within 30 days as a result of a traffic crash.
- Serious injuries are defined by an old European definition: "Fractures, concussion, internal lesions, crushing, severe cuts and laceration, severe general shock requiring medical treatment and any other serious lesions entailing detention in hospital."

Iceland is working towards using the Maximum Abbreviated Injury Scale of three or more (MAIS3+) to define a serious injury. A central accident database including non-traffic accidents is being developed for the healthcare system in which a MAIS score for each accident will be found.

Data collection

Crash data is based on police reports. Reports are made by police at the scene and sent to the Icelandic Transport Authority. Information on the cause and type of crash is added to the files along with detailed information on location, vehicles and other factors.

All fatal crashes are recorded in the database. An in-depth study is undertaken for each fatal crash. By law, every injury crash must be reported to the police and therefore it will be included in the database. In practice, some injury crashes are not reported and others may be misreported.

From 1999, crash forms are transferred electronically, which has led to a much better reporting rate. Comparing recent injury crash data with that from years before 2000 is not recommended.

The Icelandic Transport Safety Board studies all fatal crashes.

As the number of fatalities in Iceland is low, fatality data is not compared between single years, but between series of five consecutive years.

Most recent safety data

Road crashes in 2014 – provisional data

In 2014, four persons were killed and 177 were seriously injured. In 2013, 15 persons were killed and 177 were seriously injured.

Road crashes in 2013

In 2013, 15 people were killed in road traffic, six more than in 2012. In 2013, eight women were killed and seven men. This is the first time since 1989 that more women than men are killed in traffic in Iceland.

The five-year average for 2009-13 was 12 killed per year, while 20 were killed per year for the previous five-year period (2004-08), thus reflecting a significant reduction in the number of people killed on the road.

In 2013, 177 people were seriously injured compared to 136 in 2012 and 154 in 2011.

Trends in traffic and road safety (1990-2014)

Traffic

Road traffic measured in vehicle-kilometres is increasing as the economy recovers from the financial crisis.

The current transport plan promotes the use of alternatives to using cars, such as public transport, cycling and walking. In recent years, Iceland has been improving the infrastructure for cyclists within the capital area and has been providing special lanes for buses.

Road safety

Crashes and casualties

The peak in road fatalities in Iceland was 37, in 1977. Since then fatalities have been declining while motorisation has significantly increased.

Between 1990 and 2014, the number of fatalities overall followed a decreasing trend, fluctuating as high as 32 in 2000 and as low as four in 2014.

Between 1990 and 2013, the number of injury crashes increased by 43%. The reason for this apparent sizeable increase is largely explained by better reporting. Until 1998/99, crash reports were sent by paper; since then reports have been sent electronically, leading to a much better reporting rate. Comparing injury data for the years prior to 2000 is not recommended.

Rates

In 2013, the mortality rate (expressed in terms of deaths per 100 000 inhabitants) was 4.7.

Road safety by user group

In Iceland, most traffic casualties are passenger car occupants.

Road safety by age group

The table below shows a breakdown of fatalities by age group.

Child safety

One of the traffic safety goals in Iceland is to have no fatalities or serious injuries among children 0-14 years old by 2022. In the last decade (2005-14), six children were killed in traffic. There were several years with no child fatalities, but 10-20 children have been seriously injured each year recently; therefore eliminating serious injuries among children is quite a challenge. A lot is being done in Iceland to teach children about traffic and traffic safety, but more needs to be done to eliminate serious crashes involving children.

Table 16.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from 2012	2010	2000	1990
Reported safety data						Figures too small for meaningful comparisons			
Fatalities	24	32	8	9	15				
Injury crashes	564	979	876	733	808	10.2	-7.8	-17.5	43.3
Deaths per 100 000 inhabitants	9.5	11.5	2.5	2.8	4.7	65.5	85.0	-59.4	-50.7
Deaths per 10 000 registered vehicles	1.7	1.8	0.3	0.3	0.6	64.2	80.5	-69.6	-67.7
Deaths per billion vehicle kilometres	14.9	13.8	2.5	2.9	4.7	62.7	86.1	-66.0	-68.4
Traffic data									
Registered vehicles[1] (thousands)	138	173	257	263	267	1.5	3.9	54.3	93.5
Vehicle kilometres (millions)	1 612	2 316	3 168	3 116	3 185	2.2	0.5	37.5	97.6
Registered vehicles per 1 000 inhabitants)	544	620	809	823	830	0.8	2.5	33.8	52.6

1. Registered vehicles excluding mopeds.

Figure 16.1. **Road safety and traffic data index 1990 = 100**

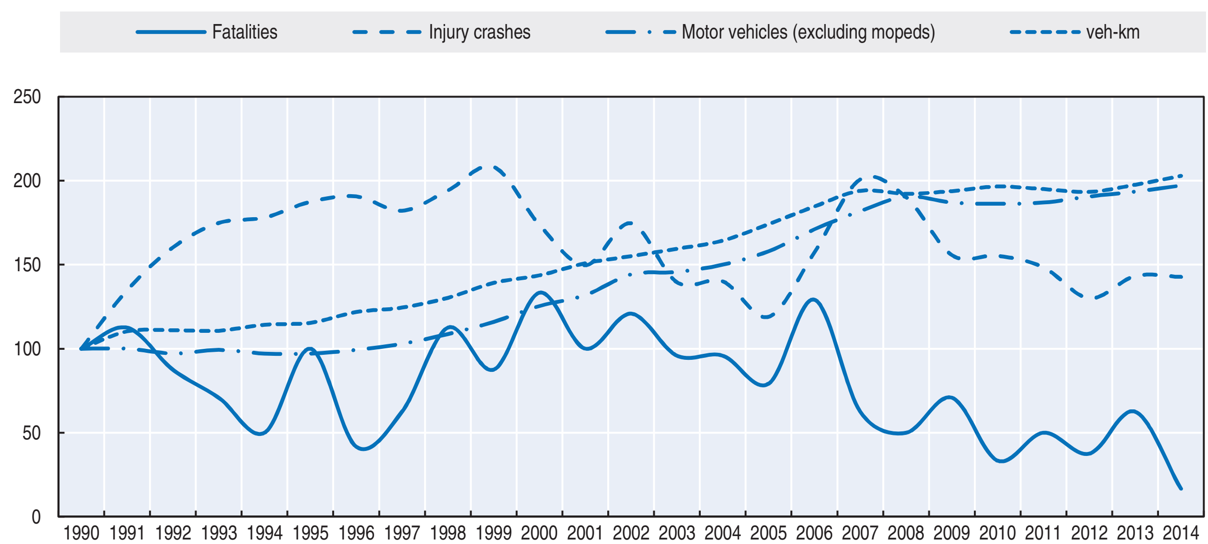


Table 16.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from 2012	2010	2000	1990
Cyclists	0	0	0	0	0				
Moped users	0	0	0	0	0				
Motorcyclists	3	1	1	0	1				
Passenger car occupants	15	25	4	6	11	Figures too small for meaningful comparisons			
Pedestrians	6	1	2	2	1				
Others	0	5	1	1	2				
Total	***24***	***32***	***8***	***9***	***15***				

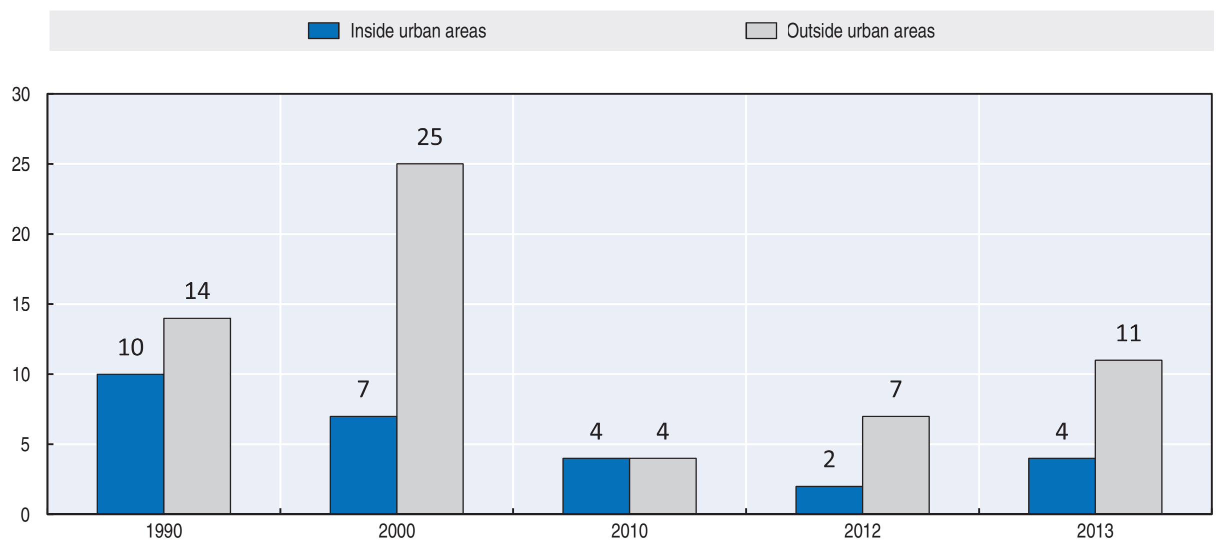
Road safety by road type

In 2013, four people were killed on roads inside urban areas and 11 on roads outside urban areas.

Table 16.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	1	0	0	0	1				
6-9	1	0	0	0	0				
10-14	1	0	0	0	1				
15-17	2	5	0	0	3				
18-20	4	4	2	0	0	Figures too small for meaningful comparisons			
21-24	3	1	1	2	2				
25-64	9	16	3	3	6				
> 65	3	6	2	4	2				
Total	***24***	***32***	***8***	***9***	***15***				

Figure 16.2. **Road fatalities by road type**



Economic costs of traffic crashes

A new report (Sigthorsson and Hilmarsson, 2014) on economic costs of traffic crashes in Iceland reviews the history of traffic crash cost estimation in Iceland and offers an overview of methodologies used in other countries.

In 2013, it was estimated that road crash costs amounted to EUR 254 million, or 2% of the gross domestic product of Iceland.

Table 16.4. **Costs of road crashes, 2013**

	Unit cost EUR	Total in EUR
Injury or fatal crashes	252 667	207 692 274
Property damage only crashes	9 333	46 767 663
Total		254 459 937
Total as % of GDP		**2%**

Source: Sigthorsson and Hilmarsson (2014).

Recent trends in road user behaviour

Impaired driving

Drink driving

The maximum authorised blood alcohol content is 0.5 g/l. During 2010-14, on average, 21% of those killed and 7% of those seriously injured were involved in road crashes where one of the drivers had been drinking alcohol or using drugs.

Drugs and driving

The Traffic Law of Iceland states that it is illegal to drive a vehicle while under the influence of illegal narcotic substances. The penalties are the suspension of a driver's licence for 3-24 months for a first offence and 2-5 years for a repeated offence.

During the period 2010-14, 6-7% of fatal crashes and 3-4% of serious injury crashes involved a driver under the influence of drugs.

Distraction

According to the law, it is illegal to drive with a hand-held mobile phone. The use of hands-free devices is authorised.

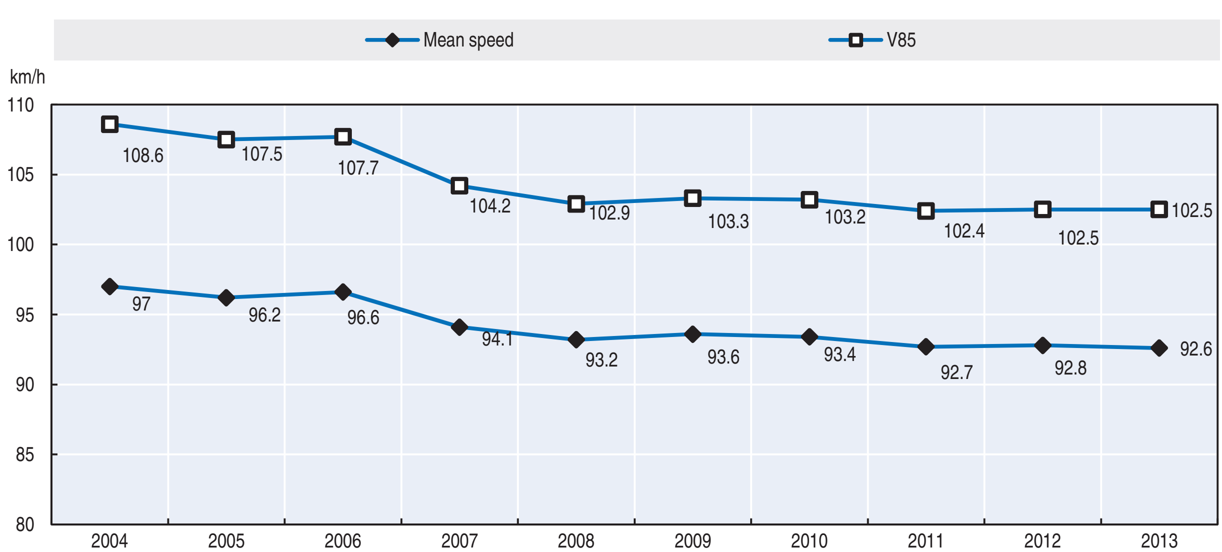
Fatigue

About 5% of fatal and injury crashes involve a driver who was drowsy, almost falling asleep or even fell asleep while driving.

Speed

Speed has been a major problem on Icelandic roads. However, from 2004 Iceland recorded a positive trend that has stabilised. Iceland has increased enforcement (both traditional and automatic speed controls), but budgets have limited the ability to increase the number of automatic speed cameras faster. The graph below shows the development of the average speed and the 85th percentile speed (V85, the speed at or below which 85% of vehicles travel) on Iceland's main road (rural road with a speed limit of 90 km/h).

Figure 16.3. **Development in mean speed and 85th percentile speed (V85)**



The table below summarises the main speed limits in Iceland.

Table 16.5. **Passenger car speed limits by road type, 2015**

Urban roads	50 km/h
Rural roads	90 km/h paved roads 80 km/h gravel roads
Motorways	n.a.

Seat belts and helmets

In Iceland, it is compulsory to wear seat belts in both front and rear seats if they are available.

Dedicated child restraint use is compulsory for children under 135 cm. A survey on child restraint usage is conducted every year in front of kindergartens and the trend has been very positive. Since 1985 the child seat using rate of kindergarten children (3-6 years old) has gone up from 21% to 92%.

During the period 2010-14, on average, 42% of car occupant fatalities did not wear a seat belt.

Table 16.6. **Seat-belt wearing rate by car occupancy and road type**

%

	2011	2013
Front seat		
General	85	84
Urban roads	76	79
Rural roads	91	93
Rear seats		
Adults + children	72	65
Children 3 to 6 (child restraint)		92

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

National road safety strategies and targets

Organisation of road safety

Under the supervision of the Ministry of the Interior, three organisations manage road safety in Iceland. The Icelandic Road and Coastal Administration (Vegagerðin) handles the infrastructure and the actual road improvements; the Icelandic Transport Authority (Samgöngustofa) handles the human behaviour elements through campaigns, education, etc., and the National Commissioner of the Icelandic Police monitors speed and alcohol and drug abuse.

Road safety strategy for 2011-2022

In 2012, the Icelandic Parliament agreed upon a new Road Safety Plan for the period 2011-22.

Road safety targets

The Plan has the following targets:

- In 2022, the number of traffic fatalities per 100 000 inhabitants in Iceland should not exceed the rate of countries with outstanding traffic safety records.

- The number of killed and seriously injured should decrease on average by 5% a year until 2022.

The target-setting process for the first indicator is self-explanatory. The second target (average annual decrease of 5% of killed and seriously injured) was selected because it is believed to be achievable with strategies and funds attached. This is equivalent to a 46% decrease over the 12-year period (2011-22). The baseline for the second target is the average of the years 2006-10, which is 201.

To assist in achieving this target, 11 sub-targets have been set to guide the strategy and monitor progress. These sub-targets include:

- 5% decrease of crashes involving young drivers (aged 17-20)
- elimination of fatalities due to lack of seat-belt wearing
- 5% decrease in injured foreigners.

Monitoring

Crash data are monitored monthly and this short-term analysis influences decisions on safety measures. Annual reviews focus in particular on the sub-targets.

Table 16.7. **Trends in road fatalities towards national target**

Type	Targets	Base year	Target year	Base year figure	Current results (2013 figure)
Fatalities per 100 000 inhabitants	Not higher than the best performing countries	Average 2006-10	2022	5.2	4.7
Killed and seriously injured	-5% per year (less than 109 by 2022)	Average 2006-10	2022	201	192

Based on a preliminary assessment of the 2011-22 Road Safety Plan, it is now proposed to make more use of performance indicators.

Recent safety measures (2012-14)

Road safety management

- In line with the directive of the European Commission on road safety management (2008/96/EC) there is much emphasis on Road Infrastructure Safety Management. The revised Road Safety Plan will introduce tools to improve municipal road infrastructure. Municipalities are encouraged to make their own road safety plans.

Road users

- Various campaigns are being conducted on such subjects as not using a mobile phone when driving, speeding, driving under the influence of alcohol and/or drugs, fatigue, etc.
- Road safety education is proposed in all school stages.
- There is a dedicated information programme to inform foreign drivers of specificities of driving in Iceland, including sheep on the road, gravel roads, narrow bridges, etc.
- Automatic speed control started in 2007. In the revised Road Safety Plan it is proposed to further deploy the system.

Infrastructure

- Because the majority of crashes in rural areas are run-off-road crashes, there are important projects to improve roads and roadsides to make them more forgiving. Efforts include:

- ❖ elimination of black spots
- ❖ separation of driving directions
- ❖ increased use of rumble strips
- ❖ improved winter services (as many crashes occur on icy roads).

Recent and ongoing research

- The Icelandic Road and Coastal Administration (IRCA) will perform several before and after studies in 2014-15. They will evaluate the effects of automatic speed control on the number of accidents at a certain road section and the effects of major infrastructure improvements on road safety.
- IRCA will study wintertime crashes involving foreign drivers on touristic routes.
- In 2015/16 one research project will focus on cycle crashes.
- IRCA regularly finances research by external bodies. One research project aims at estimating the effect of decreasing road lighting along the road to the international airport.

References

Sigthorsson, H. and V. Hilmarsson (2014), *Kostnadur umferdarslysa*, A research project for the Icelandic Road and Coastal Administration, May 2014, *www.vegagerdin.is/Vefur2.nsf/Files/Kostnadur_umferdarslysa/$file/Kostna%C3%B0ur%20umfer%C3%B0arslysa.pdf* (accessed 22 June 2015).

Websites

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- Icelandic Transport Authority: *www.samgongustofa.is*.
- Iceland Road and Coastal Administration: *www.vegagerdin.is*.
- Icelandic Transportation Safety Board: *www.rnsa.is*.

Chapter 17

Ireland

*This chapter presents the most recent crash data for Ireland, as well as an update on the Irish road safety strategy and recently implemented safety measures.**

* All data stem from the Irish Road Safety Authority and IRTAD unless otherwise noted. For more information please contact: Velma Burns vburns@rsa.ie.

In 2013 there were 188 deaths on Irish roads, an increase by 16% compared to 2012 and the first year on year increase since 2005. However, fatalities for all user groups have declined since 2000, with the highest reduction for pedestrians and car occupants. Driver and passenger fatalities represented over two thirds (67%) of fatalities in 2013, while vulnerable road users (pedestrians, motorcyclists and pedal cyclists) represented the remaining third. Of the vulnerable road users, there were almost as many motorcyclists as pedestrians killed in 2013, a trend not previously observed, as pedestrian fatalities have typically been significantly higher than motorcyclist fatalities to date.

Road safety data collection

Definitions applied in Ireland

- Road fatality: A death resulting from a road crash within 30 days.
- Serious injury: An injury for which a person is detained in hospital as an in-patient, or, whether or not detained in hospital, having any fractures, concussion, internal injuries, crushing, severe cuts and lacerations, or severe general shock requiring medical treatment.
- Slight injury: An injury of a minor character, such as a sprain or bruise.

In 2012, the Road Safety Authority (RSA) commissioned a study examining the feasibility of adopting the Maximum Abbreviated Injury Scale of three or more (MAIS3+) definition of a serious injury and linking Irish hospital data to police data. The report concluded that it is feasible, and the RSA is working with the Health Intelligence Unit of the Health Services Executive to develop an appropriate methodology. Statistical matching of the two datasets is a complex process. It requires approval from the Data Protection Commissioner and time to test and to refine the methodology.

Data collection and processing

In Ireland, official road crash data is generated by two agencies. Members of An Garda Siochana (Irish Police Force) complete detailed road crash reports that are subsequently forwarded to the RSA for analysis and publication. Reporting of fatalities is comprehensive in Ireland, but serious injury crashes are likely to be under-reported.

From 1 January 2014 reporting and collection of the road crash data moved from a paper based system to an electronic format. This change will improve recording in terms of the number of variables collected and the accuracy of the data.

Most recent safety data

Road crashes in 2014 – provisional data

As of 31 December 2014, there were 182 fatal crashes with 195 fatalities on Irish roads. This represents two more crashes and seven more deaths compared to 2013, which itself saw an increase in year-on-year fatalities.

Main facts for 2014 include:

- greater number of pedestrian fatalities, particularly among younger and older people
- more than double the number of cyclist fatalities
- significant number of motorcyclist fatalities, although a decline on 2013 figures
- high incidence of "no seatbelt" as a factor in fatal crashes
- a large increase in the number of child fatalities 14 years and younger
- a 27% increase in the number of vulnerable road user deaths
- a decline in driver deaths by 18%.

Road crashes in 2013

In 2013 there were 188 deaths on Irish roads, an increase by 16% compared to 2012 when 162 people were killed, and the first year on year increase since 2005. The following comments can be made:

- more car user fatalities
- more motorcyclist fatalities
- significant number of pedestrian fatalities, particularly among those aged 50+
- increased incidence of fatal crashes during the week and on Fridays
- high incidence of "no seatbelt" as a factor in fatal crashes.

Trends in traffic and road safety (1990-2014)

Traffic

After a number of years of declining figures for new vehicle registrations, fuel consumption and heavy goods vehicles, as well as rising unemployment figures, 2013 saw an overall improvement in the economy. Unemployment fell from 15% at the beginning of 2012 to 12% by the end of 2013. Fuel consumption and heavy goods vehicles increased 3% in 2013, and overall traffic volume increased by 2% compared to 2012.

There has been a close relationship between the rate of male unemployment and the number of male fatalities in road crashes. It is likely that increased employment leads to an increase in vehicles on the road thus greater exposure to risk for individuals.

Road safety

Crashes and casualties

The number of road fatalities peaked in 1972 with 640 deaths. Since then fatalities have been on a downward trend with some fluctuations. Between 1990 and 2013, the number of road fatalities decreased by more than 60%. The decrease was 60% in 2005-12, probably influenced significantly by road safety initiatives following establishment of the RSA in 2006.

The strategic approach to road safety was first adopted in 1998 and demonstrates how a co-ordinated commitment can contribute to reductions in deaths and serious injuries and an improvement in road user behaviour. The main changes in policies and legislation in the past 10 years that have influenced road safety include:

- introduction of the penalty points system for speeding offences in November 2002
- operation of the Safety Camera Network to produce 6 000 hours of enforcement per month beginning in November 2010

- operation of mandatory alcohol testing checkpoints introduced in July 2006
- targeted operations of traffic law enforcement with a particular emphasis on safety offences including excessive speeding, impaired driving, restraint or helmet misuse, mobile phone use and defective vehicles
- lowering the maximum authorised blood alcohol content level from 0.8 g/l to 0.5 g/l (0.2 g/l for young drivers and professional drivers) in 2010
- implementation of mass media campaigns to target the main causal factors for crashes, deaths and serious injuries for all road users, but in particular the high risk groups
- integrated mass media campaigns with policing plans of An Garda Siochana and other enforcement agencies
- implementation of educational interventions aimed at the high risk 17 to 24 year age group (e.g. "He drives she dies" campaign)
- implementation of specific educational measures aimed at vulnerable road users, such as use of high visibility material for pedestrians, cyclists and motor cyclists; awareness of intoxicated pedestrians; use of personal protection equipment for cyclists and motorcyclists; awareness of blind spots on heavy good vehicles and care for young and older people
- expansion in August 2012 and August 2014 of the range of road safety-related offences covered by penalty points and administrative fines
- introduction of novice plates for learners and newly qualified drivers in 2014 as part of Ireland's Graduated Driver Licensing programme.

Rates

Since 2000, the risk has been more than halved for the risk indicators deaths per 100 000 inhabitants, deaths per 10 000 registered vehicles and deaths per billion vehicle kilometres. In 2013, the death rate per 100 000 inhabitants was 4.1.

Table 17.1. **Road safety and traffic data**

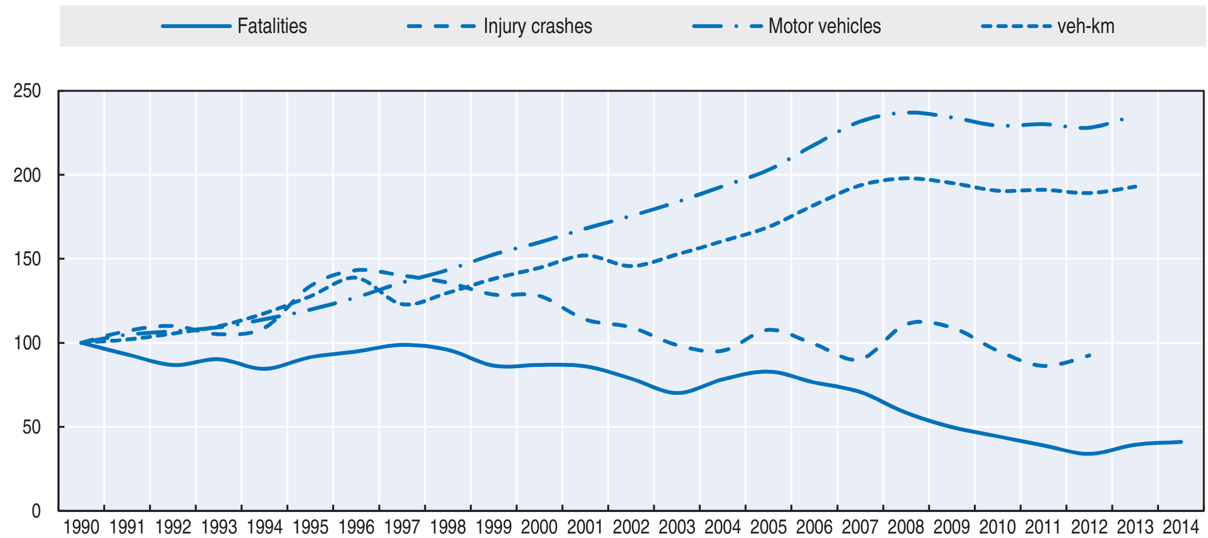
	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	478	415	212	162	188	16	-11.3	-54.7	-60.7
Injury crashes	6 067	7 757	5 780	5 610					
Deaths per 100 000 inhabitants	13.6	11.0	4.7	3.5	4.1	17.1	-11.2	-62.3	-69.6
Deaths per 10 000 registered vehicles	4.5	2.5	0.9	0.7	0.8	13.5	-12.8	-68.9	-83.1
Deaths per billion vehicle kilometres	19.2	11.5	4.5	3.4	4.0	15.0	-11.5	-65.7	-79.4
Traffic data									
Registered vehicles[1] (thousands)	1 054	1 684	2 416	2 403	2 483	3.3	2.7	47.4	135.5
Vehicle kilometres (millions)	24 896	36 001	47 414	47 088	48 028	2.0	1.3	33.4	92.9
Registered vehicles per 1 000 inhabitants	301	446	531	524	541	3.1	1.8	21.3	79.9

1. Registered vehicles excluding mopeds.

Road safety by user group

Fatalities for all user groups have declined since 2000, with the highest reduction for pedestrians (-64%) and car occupants (-57%).

Figure 17.1. **Road safety and traffic data index 1990 = 100**



Driver and passenger fatalities represented over two thirds (67%) of fatalities in 2013, while vulnerable road users (pedestrians, motorcyclists and pedal cyclists) represented the remaining third. Of the vulnerable road users, there were almost as many motorcyclists as pedestrians killed in 2013, a trend not previously observed, as pedestrian fatalities have typically been significantly higher than motorcyclist fatalities to date.

In 2013, the situation deteriorated for all road users except cyclists. The deterioration was extremely marked for motorcyclists (+37%). The increase in motorcyclist fatalities was driven by a greater number of fatalities in January, June, August, September and December compared to the same period in 2012. The increase over the summer months may be due to the exceptionally good weather experienced in 2013.

The research department has produced a report that shows that cyclist injuries (serious and minor) increased by 59% in 2012 (up from 395 in 2011 to 630 in 2012) (Road Safety Authority, 2014).

Table 17.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	46	10	5	8	5	-37.5	0.0	-50.0	-89.1
Motorcyclists	41	39	17	19	26	36.8	52.9	-33.3	-36.6
Passenger car occupants	206	260	130	89	112	25.8	-13.8	-56.9	-45.6
Pedestrians	150	85	44	29	31	6.9	-29.5	-63.5	-79.3
Others	35	21	16	17	14	-17.6	-12.5	-33.3	-60.0
Total	***478***	***415***	***212***	***162***	***188***	***16.0***	***-11.3***	***-54.6***	***-60.7***

Road safety by age group

There has been a reduction in fatalities for all age groups since 2000. The most impressive reduction was among the youngest age groups. In 2012, there were no fatalities among the 10-14 age group. In 2013, there was one fatality in the 10-14 age group and five fatalities between the ages of 0 and 9 years old.

In 2013, the greatest number of fatalities on Irish roads were among those aged 16-25, followed by those in the 26-35 year age group and those aged 65+. While there was a slight decline in fatalities among those aged 16-24, there were notable increases in fatalities among the older age groups.

Young people between 18 and 24 are at the most risk in traffic with a mortality rate more than twice that of the general population. Older people are the second group most at risk, being particularly vulnerable as pedestrians.

Table 17.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	15	8	3	2	4	n.a. figures too small for meaningful comparisons		-50.0	-73.3
6-9	12	6	2	1	1			-83.3	-91.7
10-14	19	8	1	0	1			-87.5	-94.7
15-17	28	23	7	7	4			-82.6	-85.7
18-20	56	63	21	12	13	8.3	-38.1	-79.4	-76.8
21-24	53	54	35	23	23	0.0	-34.3	-57.4	-56.6
25-64	195	195	109	81	96	18.5	-11.9	-50.8	-50.8
≥ 65	81	44	30	36	46	27.8	53.3	4.5	-43.2
Total	***478***	***415***	***212***	***162***	***188***	***16.0***	***-11.3***	***-54.6***	***-60.7***

Child safety

Road traffic crashes account for 37% of all child deaths and are the leading cause of child mortality in Ireland. In 2014, the number of children killed on the roads increased significantly compared to 2013. Fourteen children under the age of 15 lost their lives in 2014, compared to six in 2013. Seven were passengers, seven were pedestrians.

While child fatalities from 1997 to 2012 decreased by 89% and serious injuries by 75%, a total of 262 children were killed and 1 115 were seriously injured in that period.

Comprehensive, age-appropriate road safety education programmes have been developed with the assistance of an educational psychologist to educate all generations of road users about road safety. Since April 2014, the Nationwide Road Safety Education Service has delivered over 5 000 education programmes all over Ireland (Road Safety Education Service, 2014).

The RSA has also developed some interactive road safety resources available to the public. “Streetsmart” is aimed at children aged 4-12 years old and brings road safety to life in a fun way for young school children. It uses a mat with a typical street scene to teach children about road safety in a controlled and safe environment. In 2014, more than 12 000 school children took part in the Streetsmart programme.

The Road Safety Interactive Shuttle is a fully interactive, educational road safety experience which includes a presentation area, simulators of motorbikes, cars and cycles, and concentration games. Six computers are equipped with mock driving theory tests, interactive games and road safety videos. It is aimed at people from 12 years old and upwards, and 90 000 people visited the shuttle in 2014.

The RSA’s child car seat checking service (Check It Fits) originally took place twice yearly in 10 locations. Researchers found that as many as 3 out of 4 child car seats were incorrectly fitted and 1 in 10 was incompatible with the car in which they were installed. These statistics highlighted the need to expand the service, and since October 2013, *Check It Fits* is now a full-time, nationwide, expert service which aims to put parents', grandparents' and guardians' minds at ease that their child's car seat is safely and securely fitted in their car. The service is quick, easy and free. Since October 2013, over 8 000 child car seats have used the service.

Figure 17.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

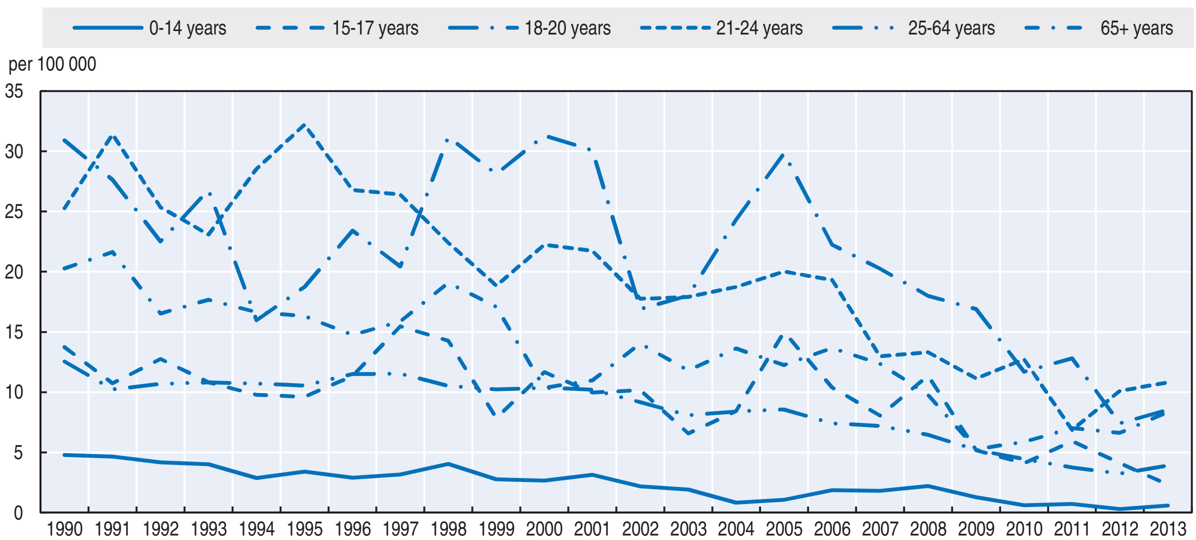
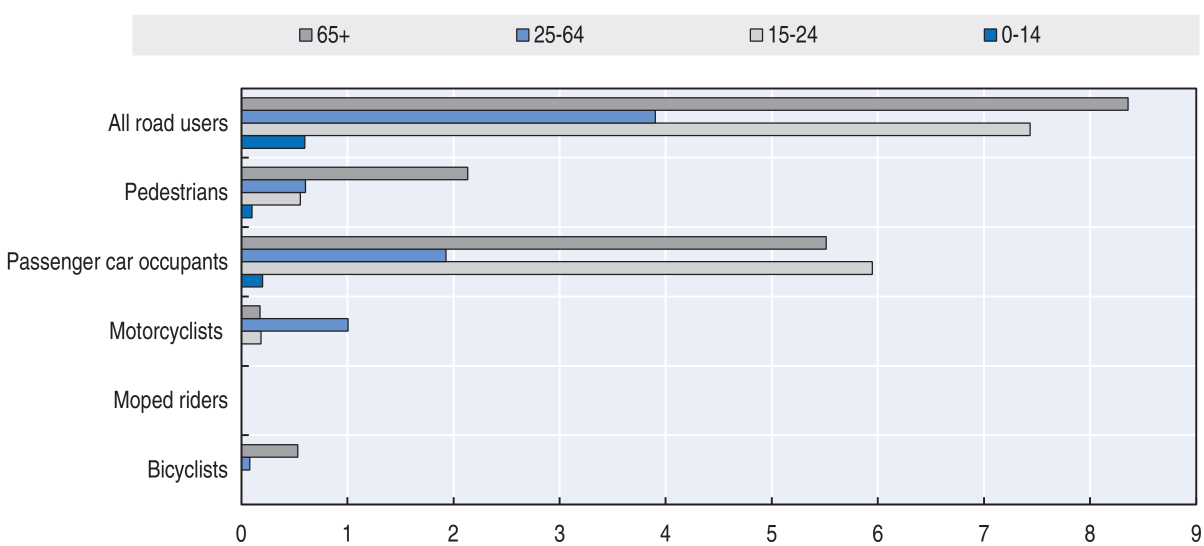


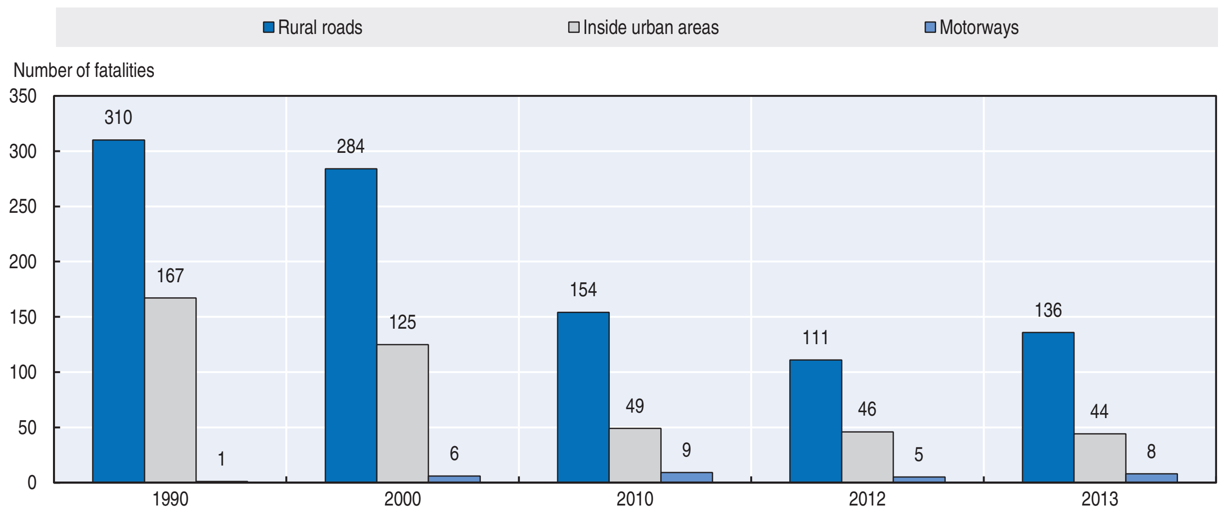
Figure 17.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants in 2013



Road safety by road type

A large majority of fatal crashes (73%) occur on rural roads. Since 1990, urban roads have recorded the greatest reduction in fatalities, of 72%. The small number of fatalities on motorways is mostly due to the relatively low crash rates on this type of carriageway.

Figure 17.4. **Road fatalities by road type**



Economic costs of traffic crashes

Traffic crashes represent a significant cost for society, estimated in 2012 at around EUR 773 million, or 0.58% of Ireland's gross national product.

The cost of crashes was calculated using the Goodbody Economic Consultants' report (2004), commissioned by the Department of Transport. An updating mechanism was used in order to inflate cost values of 2002 to 2012 values, using the growth in gross national product per person employed.

Table 17.4. **Costs of road crashes, 2012**

Costs (EUR)	Unit cost	Total
Fatalities	2.706 million	411 million
Serious injuries	361 531	120 million
Slight injuries	35 607	183 million
Property damage and other costs	2 849	59 million
Total (EUR)		773 million
Total as % of GDP		0.58%

Recent trends in road user behaviour

Impaired driving

Drink driving

Since 2010, the maximum authorised blood alcohol content (BAC) level is 0.5 g/l (0.2 g/l for young drivers and professional drivers). It was 0.8 g/l until 2009. In 2007, it was estimated that drink-driving (driver with a BAC > 0.2 g/l) was a factor in 15.5% of fatal crashes. This research is currently being updated to include a review of forensic investigation files for fatal road crashes from 2008-12. Results of the Pre-crash Behaviour Study are expected to be available in the summer of 2015.

Drugs and driving

Following several decades of successful efforts to understand and reduce the magnitude of drink driving, driving while impaired by other psychoactive substances has emerged as its own road safety issue. A wide variety of substances, from illegal drugs to some over-the-counter preparations, can adversely affect the cognitive and behavioural skills required to operate a vehicle safely.

It has been estimated that 1.5% of drivers and motorcyclists involved in fatal crashes in the period 2005-07 had taken illicit drugs, based on the information from a national study. Illicit drug use was prevalent among male and young (17-34) drivers in Ireland. A study from the coroner's district in County Kildare during 1998-2009 showed that of 92 driver deaths, 50% tested positive for alcohol and/or drugs, and 9.8% had a positive toxicology for a drug. This rate of 1 in 10 drivers under the influence of drugs undoubtedly points to the need for intoxicant impairment testing.

An Garda Síochána now have additional powers to test drivers suspected of driving under the influence of drugs using Roadside Impairment Testing. There are five impairment tests a driver must undergo; a Pupil Dilation Test, Modified Romberg Balance Test, Walk and Turn Test, One Leg Stand and a Finger to Nose Test.

Distraction

Driver distraction is thought to play a role in 20-30% of all road crashes, and the device that has become a real road safety concern is the use of a mobile phone while driving, whether hand-held or hands-free. Up to 42% of drivers report using their mobile phone at least sometimes while driving (Road Safety Authority, 2015a), and it is estimated that at any given moment during the day, 6-10% of drivers are using a mobile phone (Road Safety Authority, 2015b). Epidemiological studies suggest that using a mobile phone while driving can increase the risk of being involved in a road crash up to four times. It is illegal to drive while using a hand-held mobile phone.

Fatigue

There is increasing recognition of the effects of fatigue and sleepiness on driver performance and recent RSA campaigns have specifically highlighted driver fatigue as a risk factor. Although published estimates vary, sleep-related crashes may account for 15-20% of all road traffic crashes.

In a survey of over 1 000 drivers in Ireland in 2014, 11% stated that they have fallen asleep at the wheel while driving (Road Safety Authority, 2015a).

Speed

Between 2002 and 2012, excessive speed was cited as a contributory factor in 15% of all road fatalities and it was a contributory factor in 11% of all serious injury crashes (Road Safety Authority, 2015c).

A survey in 2013 measured the free speed of 12 410 cars: Speeds at which drivers choose to travel when unconstrained by road geometry, weather conditions, or traffic conditions. The survey revealed that:

- 22% of all cars observed on rural roads were driving faster than the posted speed limit.
- 61% of all cars observed on urban roads were speeding.

- On motorways, dual carriageways, national primary and national secondary roads, the proportion of cars complying with speed limits has increased since 1999.

The table below summarises the main speed limits in Ireland.

Table 17.5. **Passenger car speed limits by road type, 2015**

	General speed limit
Urban roads	50 km/h
Rural roads	80 km/h or 100 km/h
Motorways	120 km/h

An analysis of speed related crashes in Ireland between 2002 and 2012 estimated the economic cost to Irish society of speeding related crashes at EUR 140 million per year for 2002-12.

Seat belts and helmets

Seat belt use has been compulsory in front seats since February 1979 and in rear seats since January 1993. Children must be protected by a child restraint appropriate for their size and weight.

A 2014 observational survey of seatbelt wearing rates on Irish roads showed that the overall seat belt wearing rate for adults (drivers, front and rear passengers) was 92%. The wearing rate for drivers was 92%, 93% for all front seat passengers, and 88% for all rear seat adult passengers.

A review of the 2014 fatal crashes found that 19% of these fatalities were not wearing a seat belt. This suggests that 23 fatalities may have been prevented had a seatbelt been worn. Garda reports indicate that about 10% of children killed as car occupants were not wearing a seat belt or using a child restraint.

Table 17.6. **Seat-belt wearing rate by car occupancy and road type**

%

	2014
Adult seat-belt use	
Front seat	
All roads	92
Urban roads	95
Rural roads	92
Rear seats – all roads	88
All roads	88
Children (child restraint use)	
Front seat	
All children	93
Primary school	97
Secondary school	91
Rear seats	
All children	91
Primary school	93
Secondary school	88

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

A roadside observation survey of cyclists and motorcyclists in 2014 found that almost 100% of motorcyclists were wearing helmets, while 46% of pedal cyclists wore a helmet. Of cyclists using the city bike scheme in Dublin, only 9% were wearing helmets.

National road safety strategies and targets

Organisation of road safety

The RSA is a state agency under the aegis of the Department of Transport, Tourism and Sport tasked with improving safety on Irish roads in order to reduce road death and injury resulting from road crashes.

The RSA co-operates and co-ordinates with stakeholders including:

- the Department of Transport, Tourism and Sport
- An Garda Síochána
- the National Roads Authority
- Medical Bureau of Road Safety
- The department of Justice and Equality; Education and Skills; Environment, Community and Local Government; Health; Children and Youth Affairs, etc.

Road safety strategy for 2013-20

The Road Safety Authority has published a new Road Safety Strategy to cover the period 2013 to 2020. The strategy sets out comprehensive targets and identifies 144 actions to be completed within its lifetime.

Road safety targets

The main targets are:

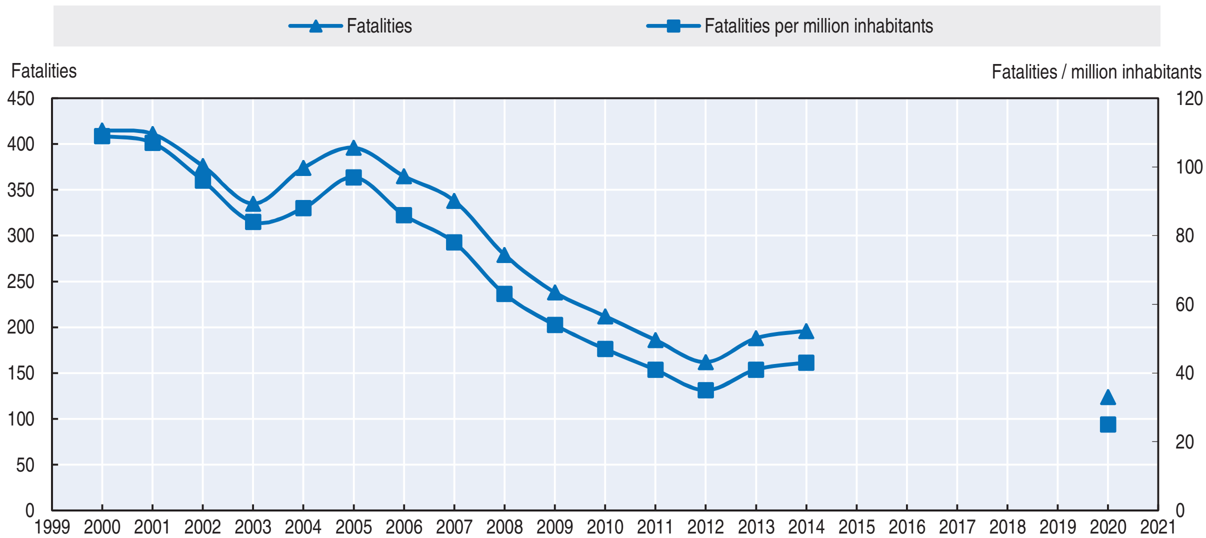
- a reduction of road crash fatalities on Irish roads to 25 per million population or less by 2020
- a provisional target for the reduction of serious injuries by 30% from 472 in 2011 to 330 or fewer by 2020, or 61 per million inhabitants.

Monitoring

In order to meet the target of 25 per million inhabitants, or about 124 deaths by 2020, a 37% decline in fatalities between 2014 and 2020 is required, equivalent to an average annual 7% reduction.

The broad monitoring arrangements that were instrumental in the success of the previous Strategy will be maintained. There will be an annual review of the strategy involving the lead departments and agencies. Progress in implementing the strategy will be reported in the context of the Annual Road Safety Strategy Report to the Minister for Transport, Tourism and Sport. This report will be informed by consultation with the major stakeholders. A mid-term evaluation of the strategy will be implemented in 2016, and this will provide an opportunity to recalibrate targets and to implement adjustments to the education, engineering and enforcement measures as required.

Figure 17.5. **Trends in road fatalities towards national target**



Recent safety measures (2012-14)

Road safety management

Penalty point system

- From 1 August 2014, penalty points for speeding, holding a mobile phone while driving and not wearing a seat belt or not using child restraints increased from two points to three. For those who do not pay the fixed charge and are subsequently convicted in Court, the points will increase from four to five.

Novice drivers

- Under the terms of the 2014 Act, the new category of novice driver came into effect from 1 August 2014. Those drivers who receive their first full licence will be considered as novice drivers for their first two years. Novices will be required to display an N-plate during that time. Under the terms of the Act, novices will face disqualification from driving for six months if they reach seven penalty points, as opposed to 12 for those with a full licence.

Vehicles

Emergency pack

- The RSA will be conducting a public consultation on the proposal that all vehicles be fitted with an emergency pack (first aid kit, torch, high-visibility vest and warning triangle).

Recent and ongoing research

- A survey of over 1 000 drivers in Ireland in 2014 asked those with children about their use of child restraints. About 1 in 10 parents indicated they do not always use appropriate restraints for children in their car, and 45% said they had not checked with an expert on whether the seat was appropriate for the child's height and weight (Road Safety Authority, 2015a).
- The RSA conducted a survey in February 2015 with 400 children aged 10-14 and their parents in their own homes on the topic of pedestrian safety. A key finding was that

social norms are the greatest predictor of children's intention to behave when crossing the road. Parents, teachers, peers and other family members have a significant impact on children's social norms.

- Two important new studies were started 2014 involving an analysis of fatal crashes to gain a greater understanding of pre-crash contributory factors, particularly information on alcohol, drugs and fatigue. The results expected in 2015 and 2016 will help inform Ireland's road safety interventions, particularly with regard to driver impairment interventions.
- The RSA is awaiting the results of a study on an evaluation of the potential road safety impact of the implementation of the Brighter Evenings Bill. This study will update a previous piece of research conducted by the RSA on this topic. It will include a comprehensive literature review and analysis of road crash data to see if any conclusions can be drawn about the impact of Daylight Saving Time on casualty numbers.
- The RSA is developing a new mechanism for generating risk exposure figures, including vehicle kilometres travelled, to enable improved analyses and comparison of road crash data. It is aiming to propose a comprehensive methodology that will include exposure data for all road users, including cyclists and pedestrians.
- Another study will investigate the economic cost of congestion due to road crashes in Ireland.

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Chapter 18

Israel

*This chapter presents the most recent crash data for Israel, as well as an update on Israel's road safety strategy and recently implemented safety measures.**

* The statistical data for Israel are supplied by the relevant Israeli authorities. The use of such data by the ITF/OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.
All data stem from the National Road Safety Authority and IRTAD unless otherwise noted. For more information please contact: Ms. Rachel Goldwag. rachelg@rsa.org.il.

Although Israel recorded two more road crash fatalities in 2014, for a total of 279, the trend indicates it could reach its target for 2020 of fewer than 240 fatalities. In recent years about one-third of all road user fatalities in Israel were pedestrians, but in 2014 the pedestrian fatality share increased to 40%. In 2014 the Israel Road Safety Agency began to focus efforts on reducing the number of pedestrian casualties.

Road safety data collection

Definitions applied in Israel

- Road fatality: Person killed immediately or dying within 30 days as a result of a road crash.
- Seriously injured Person: A person injured in a road crash and hospitalised for a period of 24 hours or more, not for observation only. The words "not for observation only" were added by the Israel Police in December 1995 in order to obtain a clear and uniform definition. Before the second half of 1970, "seriously injured" applied only to those hospitalised for at least six days.

Data collection

Police collect crash data at the scene of the crash and subsequently send them to the Central Bureau of Statistics. The Road Safety Authority (RSA) funds both the Traffic Police and the Transportation Unit at the Central Bureau of Statistics in order to manage and maintain the data system.

Police data are regularly linked with other data sources, such as hospital databases (for fatalities up to 30 days and injuries), Trauma Registry, Ministry of Transport (driver and vehicle registries) and Ministry of Interior (population registry). Crash data covers the entire population and the entire geographical area.

By linking hospital and police data, it is estimated that 55% of patients who were hospitalised for more than 24 hours were recorded by the police as slightly injured, and additional crash survivors arrive at hospitals that were not reported in police data. In addition to police data, Israel currently uses the Injury Severity Score (ISS) system to assess the severity of an injury. Police data is used as a basis for Israeli statistical publications. In 2014, Israel collected data using the Maximum Abbreviated Injury Scale with scores of three or higher (MAIS3+) for the years 2008-2014, and a decision must be made whether to use these data in place of the current police data.

Most recent safety data

Road crashes in 2014 – final data

There were 279 road fatalities in 2014, two more than in 2013. Injury crashes decreased by 10%.

While the number of fatalities in road crashes increased slightly, the number of injuries decreased by almost 10%. In addition, the number of deaths per 100 000 inhabitants, per

10 000 registered vehicles and per billion vehicle-kilometres decreased by 4%, 2.4% and 1.3% respectively. There were fluctuations in fatalities by age group, with fewer fatalities for the age groups 10-14, 18-20 and 21-24.

The Israel RSA began to focus efforts on reducing the number of pedestrian casualties after a 28% increase in pedestrian deaths.

Trends in traffic and road safety (1990-2014)

Traffic

Between 1990 and 2013, the number of motorised vehicles and the distance travelled almost tripled.

Road safety

Crashes and casualties

The number of road fatalities peaked in 1974, with 704 road deaths.

Between 1990 and 2014, the number of fatalities decreased by 34%, with all of the improvement coming in the 39% decline since 2000.

Rates

Efforts at improving safety have yielded significant annual reductions in fatality and injury rates. By the end of 2014, Israel had a mortality rate of 3.3 fatalities per 100 000 inhabitants and 5.3 fatalities per billion vehicle-kilometres. Between 1990 and 2014, the mortality rate (expressed in terms of deaths per 100 000 inhabitants) decreased by 62% and the fatality risk (expressed in terms of deaths per distance travelled) decreased by 77%.

Table 18.1. **Road safety and traffic data**

	1990	2000	2010	2013	2014	2014 % change over			
						2013	2010	2000	1990
Reported safety data									
Fatalities	418	452	352	277	279	0.7	-20.7	-38.3	-33.3
Injury crashes	17 496	19 925	14 724	13 048	11 772	-9.8	-20.0	-40.9	-32.7
Injured persons hospitalised	3 965	2 896	1 683	1 624	1 562	-3.8	-7.2	-46.1	-60.6
Deaths per 100 000 inhabitants	8.7	7.1	4.6	3.4	3.3	-4.0	-28.5	-53.5	-61.9
Deaths per 10 000 registered vehicles[1]	4.1	2.5	1.4	1.0	0.9	-2.4	-31.4	-61.6	-77.0
Deaths per billion vehicle-kilometres	22.4	12.4	7.1	5.4	5.3	-1.3	-24.3	-56.9	-76.1
Traffic data									
Registered vehicles[1] (thousands)	1 015	1 832	2 547	2 851	2 942	3.2	15.5	60.6	189.9
Vehicle-kilometres (millions)	18 668	36 482	49 870	51 207	52 231	2.0	4.7	43.2	179.8
Registered vehicles per 1 000 inhabitants	210	288	334	354	352	-0.5	5.3	22.4	67.2

1. Registered vehicles excluding mopeds.

Road safety by user group

Since 2000, the situation has improved for all road users, with the least progress for motorcyclists. The number of motorcycles increased by 53% between 2005 and 2014, so stability in the number of fatalities across time is a positive indication.

In recent years about one-third of all road user fatalities in Israel were pedestrians, but in 2014 the pedestrian fatality share increased to 40%.

Figure 18.1. **Road safety and traffic data index 1990 = 100**

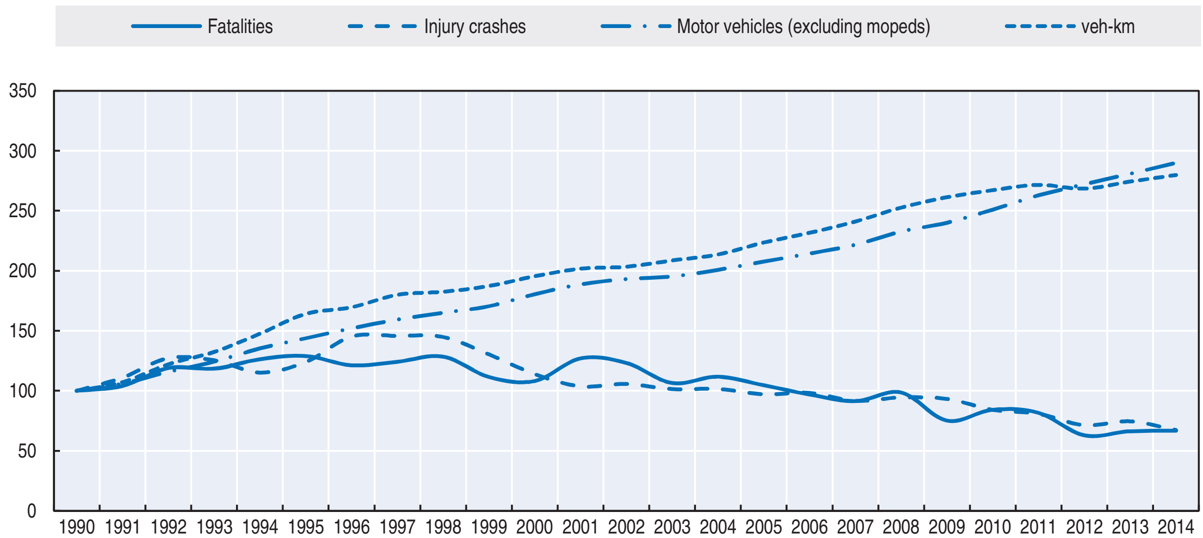


Table 18.2. **Road fatalities by road user group**

Road users	2000	2010	2012	2013	2014	2014 % change over		
						2013	2010	2000
Cyclists	20	18	11	13	10	-23.1	-44.4	-50.0
Mopeds	7	3	12	2	4	100.0	33.3	-42.9
Motorcyclists	38	40	24	37	32	-13.5	-20.0	-15.8
Passenger car occupants	219	172	124	130	113	-13.1	-34.3	-48.4
Pedestrians	169	119	90	91	116	27.5	-2.5	-31.4
Others incl. unknown	0	0	2	4	4	0.0		
Total	***452***	***352***	***263***	***277***	***279***	***0.7***	***-20.7***	***-38.3***

Road safety by age group

Since 2000, road safety improvements have benefited almost all age groups, with the largest decrease for the 15-17 year olds (78%). After an increase in the number of killed children aged 0-5 in 2004, the level is back to those of 2000.

The percentage of elderly killed in road crashes in Israel in 2014 (23%) is more than twice that of their percentage in the population (10%). In the last year, the number of elderly killed in road crashes increased by 30%.

Table 18.3. **Road fatalities by age group**

Age	2000	2010	2012	2013	2014	2014 % change over		
						2013	2010	2000
0-5	20	21	12	11	20	81.8	-4.8	0.0
6-9	16	9	6	3	7	133.3	-22.2	-56.3
10-14	10	10	5	9	3	-66.7	-70.0	-70.0
15-17	23	13	15	4	5	25.0	-61.5	-78.3
18-20	51	20	18	29	22	-24.1	10.0	-56.9
21-24	43	40	21	38	25	-34.2	-37.5	-41.9
25-64	201	154	123	128	132	3.1	-14.3	-34.3
≥ 65	89	73	55	50	65	30.0	-11.0	-27.0
Total incl. Unknown	***452***	***352***	***263***	***277***	***279***	***0.7***	***-20.7***	***-38.3***

Figure 18.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 2005-14

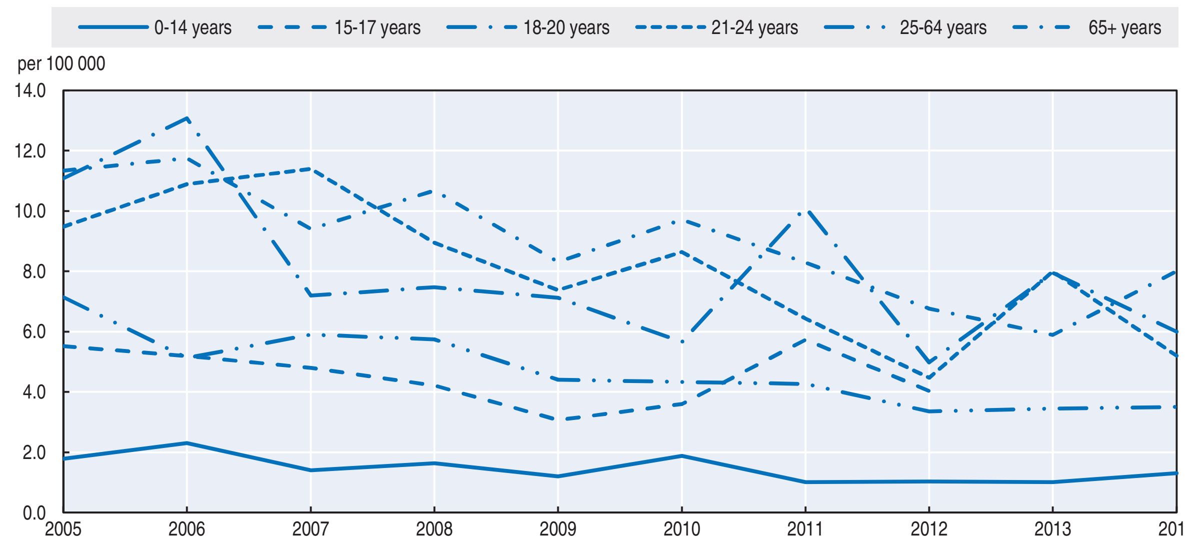
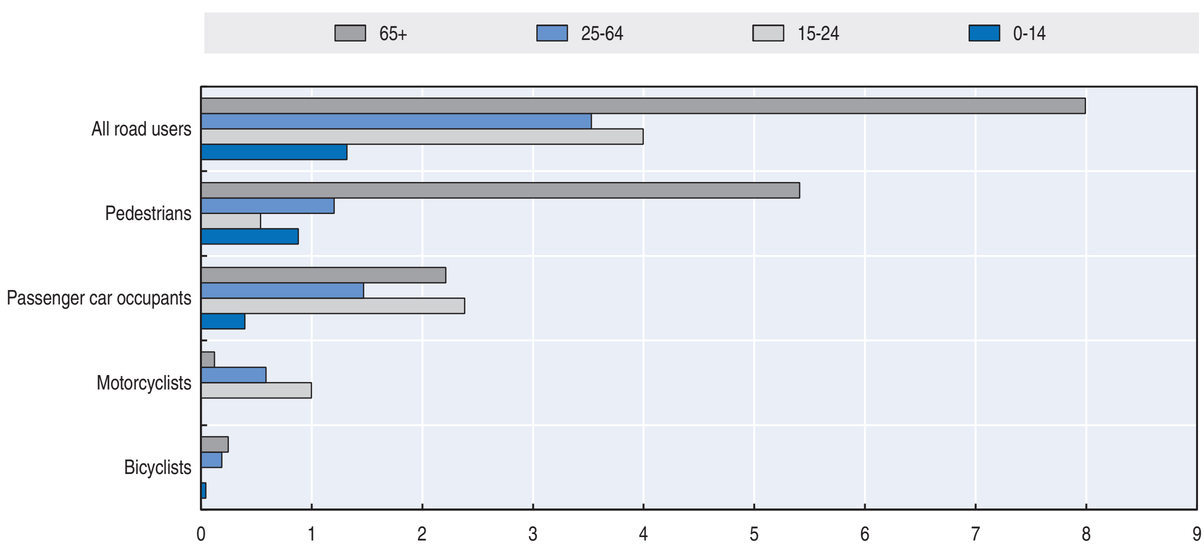


Figure 18.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants in 2014



Road safety by road type

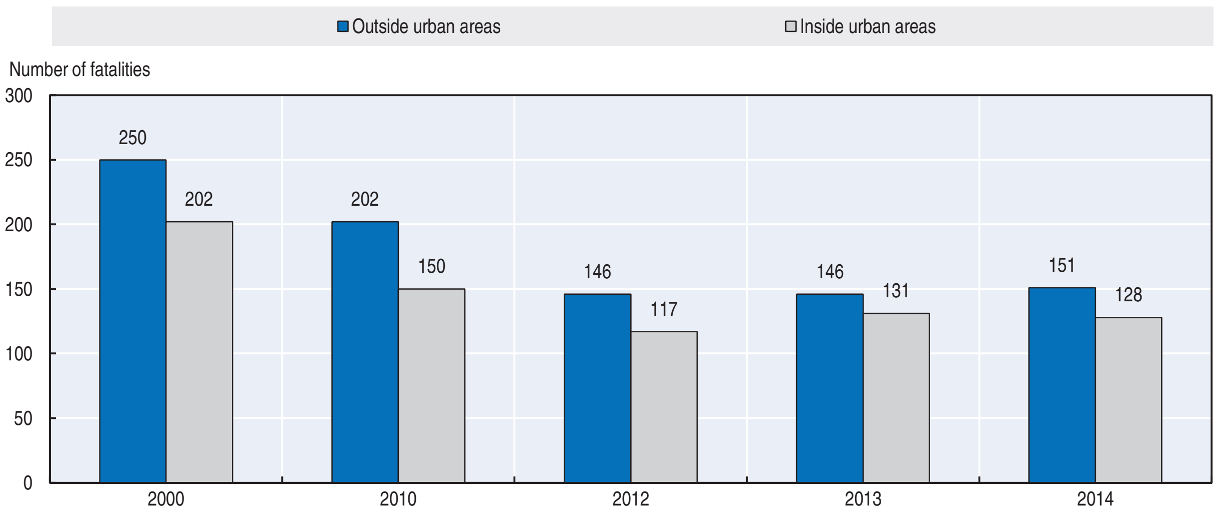
In 2014, fatalities on roads outside urban areas rose 3.4% and account for 54% of all road fatalities. Due to the higher speed limits outside urban areas, the risk of fatalities when a crash occurs is higher.

Economic costs of traffic crashes

Traffic crashes represent a significant cost for society, estimated in 2012 at around ILS 15 billion or 1.1% of gross domestic product.

The methodology for assessing road crash costs in Israel was developed in 2004 using a combination of all available data sources and applying willingness-to-pay approach for

Figure 18.4. **Road fatalities by road type**



the estimation of human costs (Cohen, 2004). The injury and crash cost values were recently updated (Ministry of Transport and Ministry of Finance, 2012). Calculations are based on casualty data of the National Insurance Institute and crash data from the Israel Police. Crash costs include indirect and direct costs, such as:

- medical expenses, assistance and nursing care
- work disability
- property damage costs
- time lost due to traffic congestion caused by the crash
- administrative costs
- damage to the environment.

Table 18.4. **Costs of road crashes, 2012**

	Unit cost	Total
Fatalities	ILS 6.1 million	
Hospitalised people	ILS 880 000	
Slight injuries	ILS 120 000	
Property/damage costs		
Total		ILS 15 billion
Total as % of GDP		1.1%

Source: Ministry of Transport and Ministry of Finance, (1 Euro = 4.30 NIS in April 2015).

Recent trends in road user behaviour

Impaired driving

Drink driving

The maximum authorised blood alcohol content is 0.5 g/l and 0.1 g/l for drivers below age 24, novice drivers for the first two years after receiving their license, professional and public transport drivers.

The extent of drink driving was for a long time underestimated and not identified as a major problem, but the problem is now recognised. Police have increased roadside alcohol checks and testing for drivers involved in crashes. Conservative estimates indicate that alcohol is a contributing factor in 7-15% of fatal crashes.

In 2011, a national survey of alcohol-impaired driving was undertaken in Israel in co-operation with the Police Traffic Department. Police checked 1 703 drivers on weekend nights on main arterial roads in the vicinity of pubs and night-clubs. Based on the results of the survey and additional extrapolation, it was estimated that in 2011, 6.7% of drivers were suspected of drink driving, while 2.9% of drivers were actually "drunk drivers".

Enforcement and public information concerning drink driving is a focus, especially at high-risk times and high risk locations.

Drugs and driving

Drivers are not routinely checked for drugs, but in the case of fatal crashes the involved parties are tested.

Distraction

In Israel, it is legal to drive while operating a hands-free mobile phone, but not with a hand-held phone. The percentage of fatal and non-fatal crashes due to distraction is known to be underestimated.

Fatigue

Based on police reports, between 2000 and 2014 the share of fatal crashes due to fatigue was 1.2%. This percentage is known to be underestimated.

Speed

There is no estimation of the share of speed-related crashes. However, a systematic monitoring of driving speeds on the national road network is carried out. In 2014 there was a significant share of non-compliance with speed limits on all non-urban road types.

The table below summarises the main speed limits in Israel.

Table 18.5. **Passenger car speed limits by road type, 2015**

Road type	Speed limit (km/h)
Motorways	110
Dual-carriageway roads without at-grade junctions	90-100
Other dual-carriageway roads	90
Single-carriageway roads	80
Local roads	80
Urban arterial roads	70
Other urban roads	50

Source: National Road Safety Authority.

Seat belts and helmets

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

Seat belts, child safety seats and booster seats are required of all relevant occupants at all times. In 2014, the usage rate among drivers and front seat passengers was 97%, while only 76% of rear seat passengers buckled up.

Dedicated child restraint use is compulsory for children up to eight years old. By law, children in their first year must sit in a rear-facing child restraint; children aged 1-3 must sit in a forward-facing restraint; and children aged 3-8 must sit in a booster seat. The RSA has issued stricter recommendations for children up to age 2 to sit in a rear-facing child restraint; children aged 2-5 to sit in a forward-facing restraint; and children aged 5-10 to sit in a booster seat. According to a 2013 roadside survey, the overall usage rate is 78%.

Between 2005 and 2014, 13% of all car occupant fatalities were not wearing seatbelts when the crash occurred.

Table 18.6. **Seat-belt wearing rate by car occupancy**

%

	2003	2005	2010	2011	2012	2013	2014
Front seats							
Driver	89	90	96	96	97	97	97
Passengers	85	84	92	92	95	95	95
Rear seats							
Adults	23	25	70	68	73	74	74
Children (child restraint)							78

Source: National Road Safety Authority.

Helmet use is compulsory for all motorcycle and moped riders. The rate of use by motorcyclists is close to 100% but varies according to riding conditions (alone or in group), the age of the rider, type of site, size of town, etc.

Helmets are compulsory for child cyclists and for adults on non-urban roads. A 2013 roadside survey found that over 90% of cyclists wear helmets while riding outside urban areas.

National road safety strategies and targets

Organisation of road safety

The lead agency for traffic safety management is the National Road Safety Authority, which was created in 2007. The agency is charged with:

- financing and co-ordinating traffic safety activities of other government agencies such as the Public Roads Company, the National Traffic Police, the Ministry of Education, and the Ministry of Transport
- funding the analysis national crash statistics and providing the primary resource for crash data and traffic safety knowledge and research
- creating public information campaigns and various municipal traffic safety projects.

Road safety strategy for 2011-20

A five-year strategic plan for road safety was released in 2012. It includes the objectives to reduce the fatality rate to less than four fatalities per billion kilometres travelled and to position Israel among the leading five countries in road safety based on fatalities per kilometre travelled.

Road safety gargets

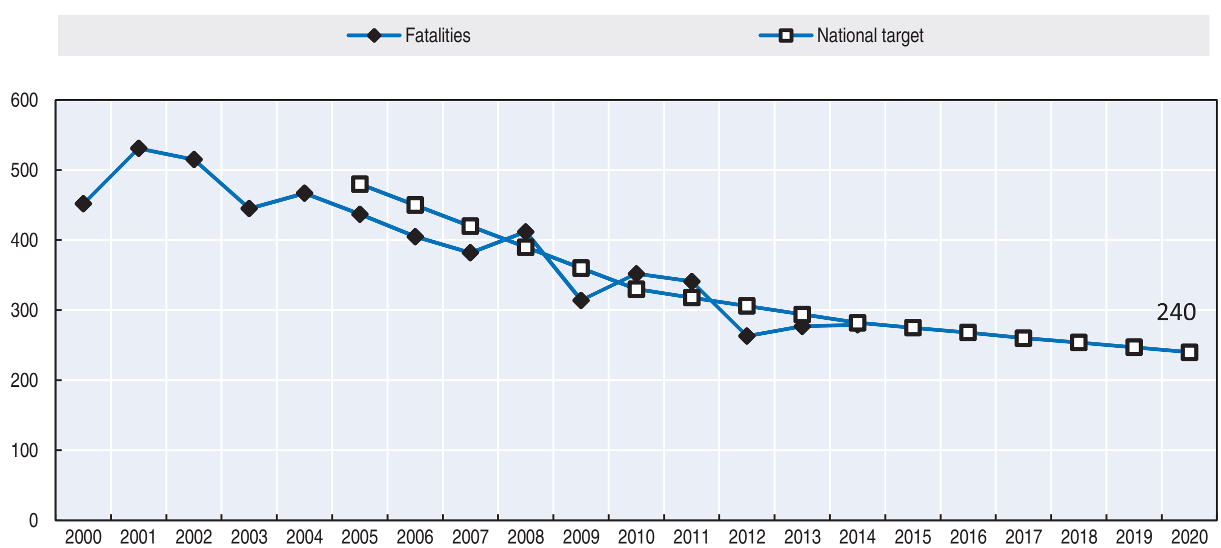
The National Road Safety Authority set a target of no more than 240 fatalities by 2020, corresponding to a reduction of about 30% compared to 2010 level. In addition, it set up the following objectives as a series of indicators:

- increasing the use of seatbelts to 98% for drivers, 95% for front seat passengers and 85% for rear seat passengers
- increasing the use of restraints for children (ages 0-15) in vehicles with 70% properly using seat restraints and no more than 5% unrestrained
- adopting of a "zero tolerance" policy towards drivers in general, and in particular the at-risk populations (new and/or young drivers, drivers of public and/or heavy vehicles, drivers of vehicles carrying hazardous goods)
- increasing the number of alcohol tests performed by the police relative to the total number of drivers from 26% in 2010 to 40% in 2020
- reducing the 85th percentile speed and the percentage of vehicles exceeding speed limits on all types of road.

Monitoring

Based on final data for the years 2012-14, the country is on track to reach the target set for 2020 of less than 240 road fatalities.

Figure 18.5. **Trends in road fatalities towards national target**



Source: National Road Safety Authority.

Recent safety measures (2012-14)

Road safety management

Graduated licensing

- A new law for graduated driving licences came into effect on 1 January 2013. This law requires all new drivers (up to the age of 24) for the first three months to drive at all times accompanied by an adult driver with at least five years driving experience. The following three months require accompaniment for evening and night driving only. An evaluation study of the law will be completed in 2015.

Traffic rules

A number of updates were introduced in recent years including:

- Regulations were revised regarding the use of child restraint use (2014).
- All seats in a car must be equipped with a safety belt (2014).
- Cyclists can cross at crosswalks providing they walk their bicycle across the street (2014).
- Electric scooters may not drive on non-urban roads (2014).

Speed management

- Automatic enforcement of speeding and red light running began in February 2012. The speed enforcement cameras incorporate automatic number plate recognition and can be used for the detection of local and average speeds. The project was accompanied by a three-year evaluation. Speed was reduced around the speed cameras (1 km before and after) but there has not been a more global effect. This may be due to the low number of cameras in place (about 60) (Bar Gera, et al., 2014).

Road users

Pedestrian safety

- A programme to address pedestrian safety was started in 2014, with a specific focus on elderly pedestrians.

Safety campaigns and education

- A number of safety campaigns and education programmes were implemented in 2013-14.

Vehicles

- In order to be seen from all directions, large vehicles (longer than 20 metres or wider than three metres) must add blinking yellow lights on top of their vehicle and/or must be accompanied by an accompanying safety vehicle.

Post crash measures

- In order to provide faster access to more roads, the RSA funded additional stations for Magen David Adom (the Israel Red Cross) in recent years (6 in 2012 and 2013, 4 in 2014).
- Trauma registries operate in 19 of 27 general hospitals that collect post-crash data on patients following a trauma including road crashes.

Recent and ongoing research

- The Safety Impact of Billboards.
- The Impact of Electronic Speed Enforcement.
- The Safety Potential of Selected Electronic In-Car Systems.
- The Perception of Speeding by the Israeli Driver on Urban Roads.
- Mapping of High Risk Areas by Information from Black Boxes.
- Is Air Evacuation by Helicopter More Effective than Ambulance Evacuation?
- The Link between the Legal Speed Limit and Speed Travelled and Number of Crashes and their Severity.

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- Or Yarok Association for Safer Driving in Israel: *www.oryarok.org.il/*.

Chapter 19

Italy

*This chapter presents the most recent crash data for Italy, as well as an update on the Italian road safety strategy and recently implemented safety measures.**

* All data stem from the Italian Ministry of Infrastructure and Transport provided by the University la Sapienza, Automobile Club of Italy and IRTAD unless otherwise noted. For more information please contact: davideshingo.usami@uniroma1.it or l.pennisi@aci.it.

In 2013, there were 3 385 persons killed on the Italian roads, a decrease by nearly 10% when compared to 2012. All main road user categories benefited from the improvement. A new National Road Safety Plan, Horizon 2020, is being developed. The main vision of the Plan is "No child should die on the road".

Road safety data collection

Definitions applied in Italy

- A road fatality is any person killed immediately or dying within 30 days as a result of a road crash.
- In crash statistics, injured persons are not differentiated by degree of severity.
- In future, Italy will follow the recommendations of the *International Road Traffic and Accident Database* and the European Union and adopt the Maximum Abbreviated Injury Scale of 3 or more (MAIS3+) to define a serious injury. According to the working group on road safety of the European Commission, in which Italy participates, a first estimate of the number of serious injuries is expected in 2015 based on data from 2014 or 2013 and using a conversion table to translate data from the International Classification of Diseases (ICD-9CM).

Data collection

In Italy, road crash data are collected by the national road police, the carabinieri and local police. Data collection is centrally organised for the national road police and carabinieri, but local police may have different crash investigation procedures.

The Italian National Institute of Statistics (ISTAT) is responsible for collecting and validating road safety statistics on all injury crashes occurring in Italy. All police forces are obliged to send ISTAT a standard crash form for each injury crash collected. ISTAT checks data consistency, both quantitatively and qualitatively, reviews any deficiencies and proceeds with data correction.

Starting in 2007, some regions signed a memorandum of understanding asking ISTAT to take charge of collecting regional crash data, which has improved the collection and quality of data. The system is now working in 13 out of 20 regions.

In 2013, representatives from ISTAT, the Automobile Club of Italy, the Ministry of Infrastructure and Transport, the national road police, carabinieri, local police, regions, provinces and municipalities defined a new crash data collection form. The form is more comprehensive and compatible with requirements of the European accident Community database on Accidents on the Road in Europe and the *Common Accident Database* set (CARE/CADAS). The new form is expected to be progressively introduced as of 2016.

This process is expected to bring a number of improvements, including a unique data collection process and a good set of information gathered for each road crash. The data collection process is currently under review, both in terms of data records and workflow.

Changes are expected to overcome the weakness of the current system, including no linkage with health data, no distinction between serious and slight injuries, and no systematic localisation of crashes.

Statistics about property damage crashes are released by the National Association of Insurance Companies ANIA (*www.ania.it*) and by the National Insurance Supervisory IVASS (*www.ivass.it*).

Most recent safety data

Road crashes in 2014 – provisional data

Provisional data for 2014 from the national road police – limited to the principal Italian road network of motorways and state roads – show that road crashes decreased by about 4% while the number of fatalities decreased by about 5%. Motorway fatalities decreased by about 9%.

Road crashes in 2013

In 2013, there were more than 180 000 injury and fatal crashes, resulting in 3 385 persons killed and 257 421 injured. This corresponds to a decrease by 3.7% in crashes, 3.5% in injuries and 9.8% for killed persons when compared to 2012.

The decrease was more pronounced on urban roads, where injury crashes fell by 4.4%, fatalities by 11.3%, and injuries by 4.2%. There were also good improvements on extra-urban roads where injury crashes decreased by 1.8%, fatalities by 9.8% and injured persons by 1.6%.

Trends in traffic and road safety (1990-2013)

Traffic

In Italy, passenger and freight transport is mainly served on roads. The car remains the preferred mean of transport (83.5% vs. 13.9% buses and 2.6% powered two-wheelers; Isfort, 2014). Between 2001 and 2013, while population increased 5%, the number of vehicles rose by 16.9%.

The economic crisis had a major impact on transport. In 2013 the number of registrations for new vehicles decreased by 9.3% to 1.6 million new vehicles. As a consequence of that reduction and an increase in the number of vehicles scrapped, the total vehicle fleet decreased for the second consecutive year.

In 2013 motorised trips in suburban areas grew by 4% compared to 2012 but remain at significantly low levels, 15% below 2008 before the economic crisis started (Isfort, 2014). Total vehicle-kilometres on motorways in the period 2001-10 rose by about 14%, but in 2011-13, a decrease of 9.8% was reported. In 2013 vehicle-km on motorways decreased by 1.7% on average, and by 2.3% for freight traffic (AISCAT, 2014).

Road safety

Crashes and casualties

The number of road fatalities peaked in 1972 with 11 078 road deaths. Between 1990 and 2013, the number of fatalities decreased by almost 50%. In recent years (2000-13), fatalities declined by more than 50%, the number of dead falling from 7 061 to 3 385. The number of injury crashes started declining in 2003 when the penalty points system was introduced (-29% since 2000). The difference between the reductions in fatalities and injury crashes is mainly due to measures being oriented toward fatality risk (e.g. reduction in average motorway speed and driving-under-influence enforcement) and to the development of safer vehicles.

Since 2001, several road safety measures were implemented under the National Road Safety Plan 2001-2010: Improvement of road traffic legislation, increased enforcement, improvement of road infrastructure, communication and awareness campaigns and road safety education interventions. Some important measures include:

- Introduction of a penalty point system for drivers (2003).
- Progressive implementation since 2005 of the tutor system of cameras controlling average speed on motorways. As of April 2014, the system covers 2 500 km of motorways.
- Significant increase of penalties for the most dangerous behaviours in relation to speeding, driving under the influence of alcohol or drugs, driving without a licence, and mobile phone use while driving.
- Restrictions introduced in 2007 for novice drivers during their first three years of driving.
- Institution of permanent provincial commissions under the responsibility of the prefect with the task of planning and co-ordinating actions and monitoring accident rates. These committees are active in many provinces, meet twice a year and examine in detail the accident data of the territory with particular regard to sections of road where a high number of accidents occur, primarily if they are caused by speed or distraction.
- Wide-ranging reform (2010) of the Highway Code, focusing on the equipment and safety of vehicles, with penalties for the most dangerous kinds of behaviour.
- Approval of Legislative Decree No. 35 in March 2011 to adopt European Commission Directive 2008/96/EC on Road Safety Infrastructure Management.
- Field test of Vergilius (a system similar to Tutor), for measuring the instantaneous and average speeds on national roads, operated by ANAS in July 2012.

Rates

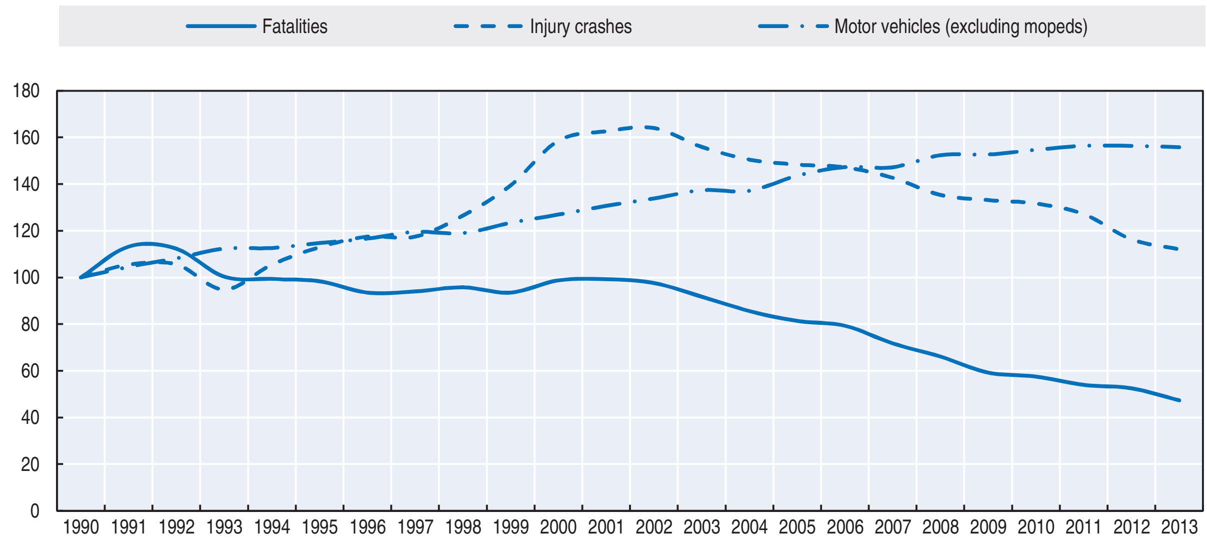
In the last 13 years, the mortality rate in terms of deaths per 100 000 inhabitants has declined by 54% and by 61% expressed in deaths per 10 000 vehicles. In 2013, Italy's mortality rate of 5.7 deaths per 100 000 inhabitants, was above the average for the EU28 countries.

Table 19.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	7 151	7 061	4 114	3 753	3 385	-9.8	-17.7	-52.1	-52.7
Injury crashes	161 782	256 546	212 997	188 228	181 227	-3.7	-14.9	-29.4	12.0
Deaths per 100 000 inhabitants	12.6	12.4	7.0	6.3	5.7	-10.2	-18.4	-54.3	-55.0
Deaths per 10 000 registered vehicles	2.3	1.8	0.8	0.8	0.7	-9.5	-18.3	-60.9	-69.6
Traffic data									
Registered vehicles[1] (thousands)	31 461	39 931	48 668	49 192	49 013	-0.4	0.7	22.7	55.8
Registered vehicles per 1 000 inhabitants	555	701	822	828	821	-0.8	-0.1	17.1	48.0

1. Registered vehicles excluding mopeds. About one million registered vehicles are in showrooms to be sold as used vehicles.

Figure 19.1. **Road safety and traffic data index 1990 = 100**



Road safety by user group

Since 2000, reductions have been recorded in all road user categories. The most important decrease concerned moped riders (-80%). This has to be seen in the context of the introduction of the compulsory use of helmets for moped riders of all ages (from 2000) and a decreasing popularity of this means of transportation.

In 2013, all main road user categories benefited from the improvement in road safety. Important improvements were observed for motorcyclists (-14.5%). This can be partially explained by the reduction in crash exposure, as 2013 was the first year since 2000 where a reduction in both the car fleet and motorcycles fleet was observed. Another contributing factor is the application since 2011 of European regulations on the issuance of driving licence that provide more difficult exams and practice tests for the first level of licence. More than 500 000 persons up to 45 years old (360 000 of which up to 29 years old) obtained a license to drive a powered two-wheeler, and a major decrease of fatalities was observed for these age groups.

Passenger cars are involved in 67.5% of road accidents, motorcycles account for 12.8%, trucks 6.4%, bicycles 5.3% and mopeds 4.5%.

Table 19.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	477	401	265	292	251	-14.0	-5.3	-37.4	-47.4
Moped users	620	637	206	127	125	-1.6	-39.3	-80.4	-79.8
Motorcyclists	713	770	950	847	724	-14.5	-23.8	-6.0	1.5
Passenger car occupants	3 797	3 850	1 822	1 684	1 479	-12.2	-18.8	-61.6	-61.0
Pedestrians	1 069	982	621	576	549	-4.7	-11.6	-44.1	-48.6
Others	474	421	250	249	276	10.8	10.4	-34.4	-41.8
Total	***7 151***	***7 061***	***4 114***	***3 753***	***3 385***	***-9.8***	***-17.7***	***-52.1***	***-52.7***

Road safety by age group

Since 1990, the reduction in fatalities benefited all age groups, in particular the young. The reduction was less marked for seniors, in part due to the ageing of the population.

In 2013 a sharp increase was observed for the 6 to 9-year-olds, but the figures are too small to draw any solid conclusions.

The age groups 18-20 and 21-24 are the most at risk in road traffic, with a mortality rate almost twice that of the general population. Older people are the most involved in road crashes with pedestrians.

Child safety

In 2013 55 children were killed in a traffic crash, three more than in 2012. Between 2000 and 2014, the number of children killed only decreased by 3.7%. Between 2010 and 2014, the number of children aged 0 to 5 fatally injured was lower (-3.7%) to some extent than the decline observed for the total number of crashes in the same period (-17.7%).

Apart from the enormous social cost entailed by the death of children, their lives are a core value for the society. Following the principle that “No child should die on the road” the National Road Safety Plan established the goal of no children dying on Italian roads by 2020.

Table 19.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	69	39	27	12	26	116.7	-3.7	-33.3	-62.3
6-9	60	34	14	15	8	-46.7	-42.9	-76.5	-86.7
10-14	118	63	29	25	21	-16.0	-27.6	-66.7	-82.2
15-17	429	211	121	85	68	-20.0	-43.8	-67.8	-84.1
18-20	640	485	253	165	177	7.3	-30.0	-63.5	-72.3
21-24	786	740	294	258	223	-13.6	-24.1	-69.9	-71.6
25-64	3 245	3 637	2 218	2 056	1 776	-13.6	-19.9	-51.2	-45.3
≥ 65	1 436	1 437	1 064	1 068	1 009	-5.5	-5.2	-29.8	-29.7
Total	***7 151***	***7 061***	***4 114***	***3 753***	***3 385***	***-9.8***	***-17.7***	***-52.1***	***-52.7***

Road safety by road type

In 2013, 48% of fatalities occurred on rural roads, 42% inside urban areas and 9.5% on motorways.

In 2013 the most severe crashes occurred on the rural roads, with nearly five deaths for every 100 road crashes. Crashes inside urban areas are less severe (one death per 100 crashes). For the motorways, the index is three deaths per 100 crashes. The relative lower decrease in the number of fatalities on motorways in 2013 is also due to the tragic crash of a bus in which 40 people died.

Economic costs of traffic crashes

A Ministry of Infrastructure and Transport study in September 2012 on the costs to society of road crashes in Italy was based on a human capital approach. The average cost per road crash has been estimated by degree of severity: for fatal, serious, slight and

Figure 19.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

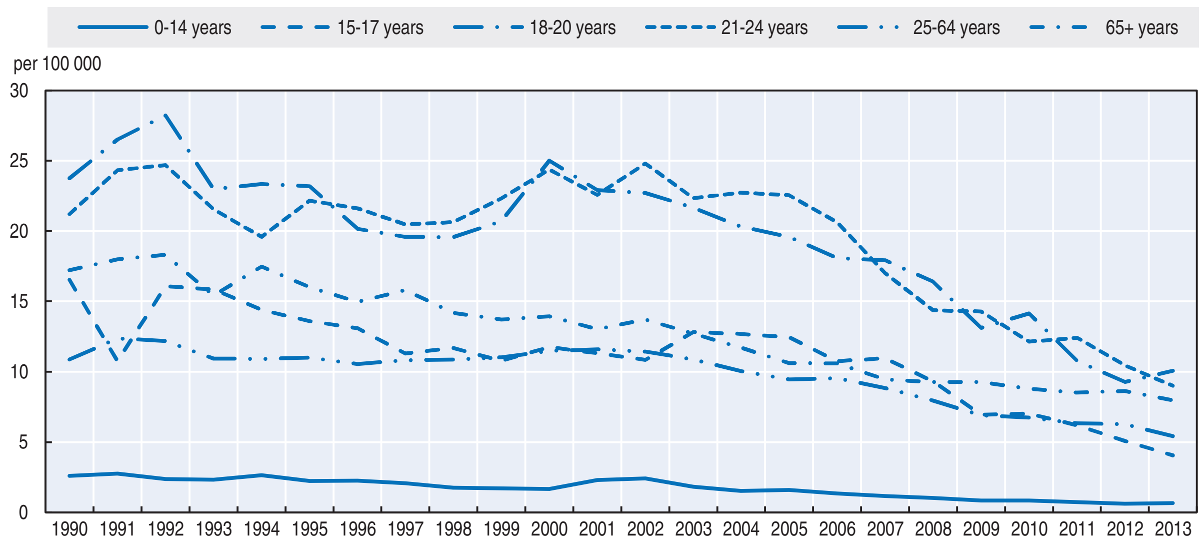
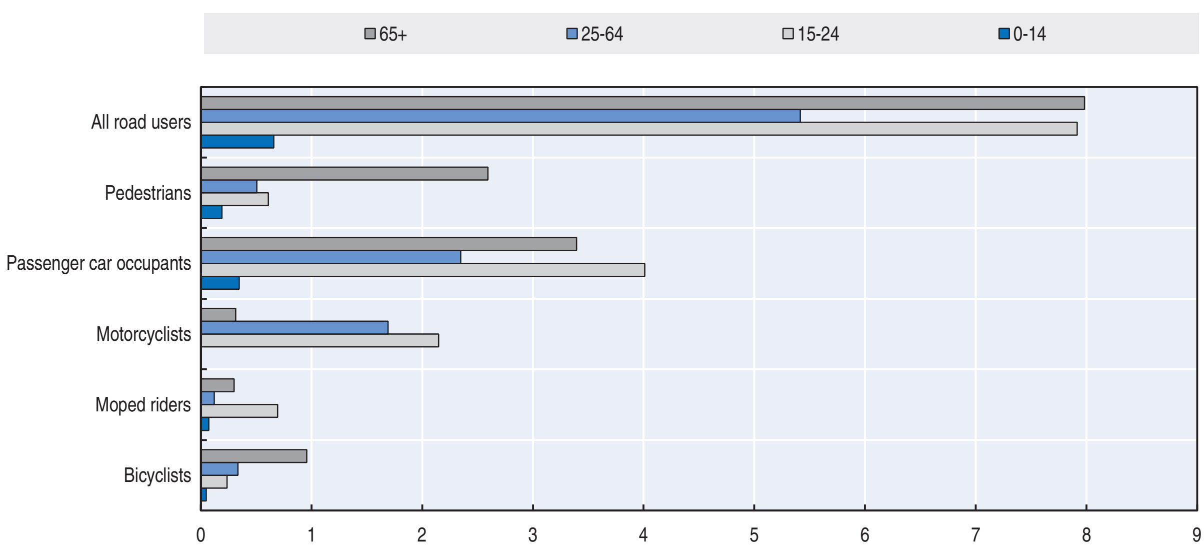


Figure 19.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants in 2013



property damage-only crashes. Since in Italy, injured persons reported by crash statistics are not differentiated by degree of severity, in order to estimate the human costs regarding a severe or slightly injured person, the definitions of "slightly" and "seriously injured" used in the European road accident database CARE/CADAS have been adopted (i.e. hospitalised at least 24 hours for seriously injured and hospitalised less than 24 hours for slightly injured).

The table below shows the main results in terms of average casualty costs and the overall average crash cost per severity in Italy in 2011. Based on this value, it is estimated that in 2013, road crashes cost Italian society EUR 24.3 billion, or 1.6% of Gross Domestic Product.

Figure 19.4. **Road fatalities by road type**

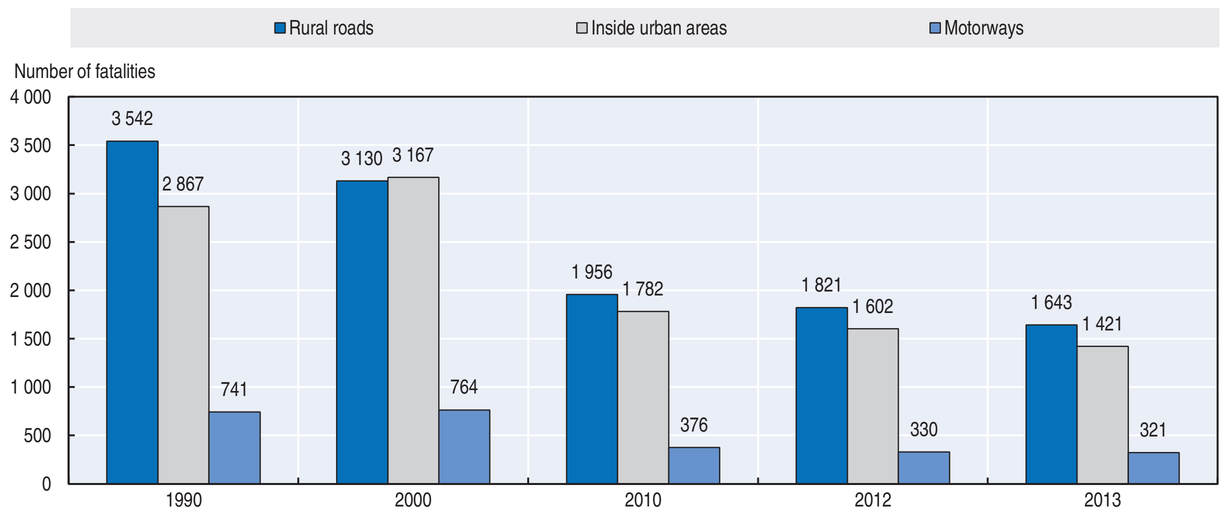


Table 19.4. **Costs of road crashes, 2013**

	Unit cost	Total
Fatalities	EUR 1.503 million	
Hospitalised people	EUR 0.197 million	
Slight injuries	EUR 0.017 million	
Property/damage costs		EUR 6.39 billion
Total		EUR 24.34 billion
Total as % of GDP		**1.6%**

Source: Ministry of Infrastructure and Transport (2015).

Recent trends in road user behaviour

Impaired driving

Alcohol and drugs are significant risk factors in Italy. In 2012, 1.8% of drivers checked were found to be impaired by alcohol or drugs.

Drink driving

The current blood alcohol content (BAC) limit in Italy, which came into force in 2002, is 0.5 g/l.

Since July 2010, there is zero tolerance for young drivers, novice drivers and professional drivers, for whom the BAC limit is equal to 0.0 g/l.

For BAC levels between 0.5 g/l and 0.8 g/l, the sanctions are a fine of EUR 500-2 000 and withdrawal of the driving licence for a period varying from between 6 to 12 months. Sanctions are doubled when a crash is involved.

For BAC levels between 0.8 g/l and 1.5 g/l, the sanctions are: imprisonment for a period of up to a maximum of six months, with the alternative of a probation period with social services, a fine of EUR 800-3 200 and withdrawal of the driving licence for a period of up to two years. Sanctions are more severe in case of a crash.

For BAC levels higher than 1.5 g/l, the sanctions are: imprisonment for a period varying from six months to one year, a fine of EUR 1 500 to 6 000 and withdrawal of the driving licence for a period varying from one to two years.

Drink driving crashes are defined in police reports as crashes in which a driver has a BAC above the legal limit. In 2008, ISTAT indicated that 2% of traffic fatalities were due to drink driving. However, this figure is probably underestimated, due the difficulty involved in collecting this information on the spot.

According to data from national and local police, the number of fines for drink driving decreased in 2013 and 2014 (*Polizia di Stato*, 2014 and 2015).

Drugs and driving

Drivers under the influence of drugs can be imprisoned for a period varying from six months to one year, fined EUR 1 500 to 6 000 and can have their driving licence withdrawn for between one and two years, or two to four years if the vehicle does not belong to the driver.

Due to difficulties in collecting the relevant data on the scene of the crash, drug use data are probably underestimated, and data are not disseminated.

According to national and local police, the number of fines for driving under the influence of drugs decreased in 2013 and 2014 (*Polizia di stato*, 2014 and 2015).

Distraction

In 2013, it was estimated that distraction was a contributing factor in 17% of injury crashes.

Since 2002, the use of hand-held mobile phones or full headsets while driving is not permitted. The use of hands-free devices, including those with a headset in one ear, is permitted. During 2009-11, about 9% of drivers were observed mobile phones in selected cities.

An estimate of crashes due to the use of mobile phones while driving is not available.

Fatigue

Even if there is no evidence on the basis of police data, it is assumed that fatigue and drowsiness are a contributing cause in about 22% of injury road crashes (Garbarino, 2010).

Speed

In 2013, on the basis of police data, inappropriate speeds were reported in 12% of injury crashes, and about 15% of fatalities were related to speed.

The table below summarises the main speed limits in Italy.

Table 19.5. **Passenger car speed limits by road type, 2015**

Urban roads	50 km/h	
Rural roads	90 km/h	
Motorways	130 km/h	110 km/h in case of rain or snow 100 km/h for novice drivers In theory, the motorway operator may decide to increase the limit up to 150 km/h, if stringent requirements are met.

Seat belts and helmets

Seat belt usage is compulsory in front seats since 1988 and rear seats since 1994. It has also been compulsory on micro cars since 2011.

Children under 12 and less than 150 cm should be seated in a dedicated and approved child restraint system adapted to their weight and stature. An Italian observatory on the use of helmets, safety belts called "Ulisse System" was set up in 2000. The system is based on direct observation and not a questionnaire-based survey. Monitors make monthly observations on over 800 sites, mainly on suburban and urban roads.

Table 19.6. **Seat belt wearing rate by car occupancy, 2009-11**

Front seat	
General	63.8% (urban roads) 75.5% (outside urban areas)
Rear seats	
Adults	10%
Children (child restraint system)	No data

Beginning in 1986, helmet use was compulsory for motorcyclists and moped riders under 19 years old. Since 2000 helmets are required for all powered two-wheelers and for all ages. During 2009-11, helmet use in urban areas was near 90%. The percentage is higher on rural roads.

National road safety strategies and targets

Organisation of road safety

Road safety policy-making is centralised in Italy. The Ministry of Infrastructure and Transport, through its Directorate for Road Safety, is responsible for national road safety plans and road safety programme. National and local road authorities are responsible for the improvement of road infrastructure.

Police forces are responsible for the enforcement of traffic law. The Italian National Institute of Statistics is responsible for collecting road safety statistics on injury crashes at the national level.

A national structure has been created for consultation with stakeholders.

Road safety strategy for 2011-2020

A new National Road Safety Plan, Horizon 2020, is being developed, in accordance with the actions and targets (-50% fatalities) recommended by the European Commission.

The main vision of the Plan is "No child should die on the road". The Plan will propose a hierarchical system of objectives with two levels, allowing the monitoring of both the general road safety trend and specific targets related to road users in high risk groups such as motorcyclists, cyclists and pedestrians.

A public consultation on the Road Safety Plan ended in July 2014. Final approval by an inter-ministerial board is expected.

Road safety targets

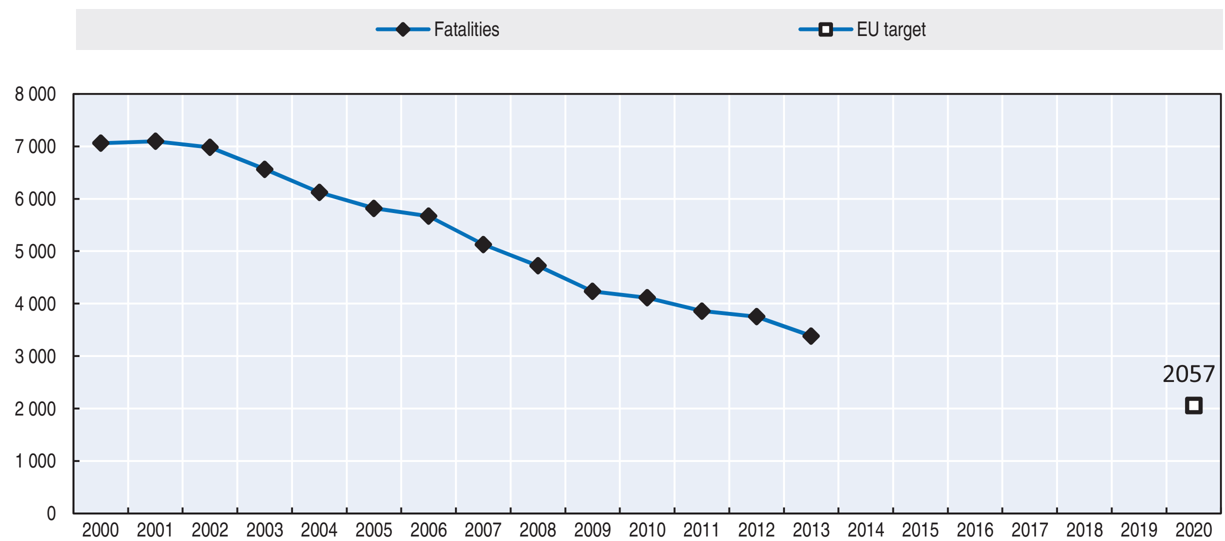
The draft version of the Road Safety Plan identifies priority areas and sets specific objectives for the categories of road users showing the highest risk levels: powered-two-wheelers; cyclists, pedestrians and users involved in work-related road crashes.

Intermediate targets have been proposed for 2017, when a mid-term review of the Plan is expected. They are based on an average annual reduction of fatalities by 7%, corresponding to a reduction by 38% in 2017 in comparison with 2010.

Monitoring

A monitoring process is being implemented in order to review and update the adopted strategies in case of deviations from the established targets. To reach the EU target for a 50% fatality reduction, an average annual reduction of 6.9% is required.

Figure 19.5. **Trends in road fatalities towards EU[1] target**



1. In 2010, the European Commission adopted the target of halving road deaths by 2020, compared to 2010 levels.

Evaluation of past road safety strategy

The European Commission target of halving the number of road fatalities between 2001 and 2010 was reached in Italy in 2013, when road fatalities were 52% less than in 2000.

Recent safety measures (2012-14)

Road safety management

At least twice a year the Ministry of Transport and Infrastructure convenes a technical committee, formed of representatives of regional governments responsible for road safety, to monitor the implementation of the Plan and discuss other road safety related matters.

Road users

Speed management

- In 2006, a section system of speed control called Tutor was introduced to measure average speeds on sections of motorway with high crash rates. Drivers are informed by a road-sign of the presence of a speed monitoring system. As of 2013, the system was operational on about 2 500 km of motorways, or 40% of the motorway network. According to a study (Montella et al., 2015) carried out on a urban motorway in Italy, the section control system results in an impressive reduction in speed variability and a reduction of excessive speeding behaviour. The decrease in the standard deviation of speed was 26% while the proportion of light and heavy vehicles exceeding the speed limits by more than 20 km/h was reduced respectively by 84% and 77%.

- The introduction of a 30 km/h limit on secondary roads in residential zones is being tested in some Italian towns like Bologna, Venezia Mestre, Reggio Emilia, Milano, Torino, and Cesena. In Torino, where a 30 km/h zone was introduced in 2009, average speed decreased from 42 to 31 km/h. In addition, the noise level was reduced by two decibels.
- A field test of Vergilius, a system similar to Tutor for measuring instantaneous and average speeds on national road, is underway since 2012. The system is operating now on some high risk portions of national roads and on the motorway A3.

Campaigns

- A national road safety campaign “On the good road” was launched in 2013 before the winter season. The campaign message was delivered by children to better sensitise adults. The campaign theme was speed and the safety of vulnerable road users: children in vehicles, pedestrians and users of two-wheelers. The campaign made use of television, radio and the internet, in particular with social network posting.

Infrastructure

- At local level the National Road Safety Plan 2001-2010 financed and is still financing the implementation of about 1 600 road safety interventions through specific programmes promoted by the Ministry of Infrastructure and Transport. Most interventions were implemented on the road infrastructure.
- In 2013, about 140 km of new highways were constructed. An extraordinary maintenance programme for bridges, viaducts and tunnels started in 2013, and 100 projects have been financed.

Vehicles

- If approved, a law proposed in 2015 would make insurance less costly for cars installed with an alcohol-lock or a black box to record vehicle data in case of an accident. A similar proposal was made in 2012 but it failed to be adopted.

Post-crash measures

- Italy will be ready to handle the eCall, the automatic emergency call system that will be mandatory across Europe on new cars. A pilot project conducted in the Varese province led to very good results, as communication was established within 15-20 seconds for 90% of the requests for assistance.

Recent and ongoing research

- In 2014 the Department of Transport carried out a study on Statistics on accidents in transports (*www.mit.gov.it/mit/site.php?p=cm&o=vd&f=cl&id_cat_org=37&id=3631*).
- A study on road crashes and infrastructure will be launched in 2015.

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- ISS National Health Institute: *www.iss.it*.
- ISFORT, Istituto Superiore Di Formazione E Ricerca Per I Trasporti: *www.isfort.it*.

Chapter 20

Jamaica

*This chapter presents the most recent crash data for Jamaica, as well as an update on the country's road safety strategy and recently implemented safety measures.**

* Data included in this report have not been validated by IRTAD.
All data stem from the Ministry of Transport, Works and Housing unless otherwise noted. For more information please contact: Khare@mtw.gov.jm.

Road fatalities escalated to 331 in 2014, the highest since 2009. More than half the fatalities were vulnerable road users (pedestrians, motorcyclists and cyclists). There were 307 road fatalities in 2013, an 18% increase in comparison to 2012. While this is a steep increase when compared with 2012, it was close to Jamaica's target for the year of being below 300. The majority (56%) of the persons killed were pedestrians, motorcyclists and cyclists. Therefore significant efforts are being made to reduce the deaths amongst these road users. Passenger car occupants are the second largest casualty groups. Most of them do not wear a seatbelt, although it is compulsory.

Road safety data collection

Definitions applied in Jamaica

- Road fatality: Death which occurred within 30 days of the road crash.
- Injury crash: Crash resulting in at least one injured or killed person.

Data included in this report correspond to the consolidated set of police data. They have not been validated by the International Road Traffic and Accident Database (IRTAD) group.

Data collection

Jamaica joined the IRTAD group in 2012 as an observer country. It benefits from a twinning programme with the Transport Research Laboratory and the Department for Transport in the United Kingdom which has been organised through IRTAD. The aim of the twinning is to review the current crash data collection and analysis system and to provide advice in areas of road safety which are data related. It is envisaged to provide data to IRTAD in 2016. Stakeholders in Jamaica were provided with technical devices and assistance for crash data collection. Once the exercise is complete, Jamaica plans to share best practices and knowledge with other countries in the Caribbean.

In Jamaica, traffic crash data are collected by police officers in 19 police divisions and sent in standardised forms to the divisional level where they are vetted. The crash reports are then sent to the police traffic headquarters where records are again reviewed and vetted. The police traffic headquarters then forwards the reports to the Road Safety Unit in the Ministry of Transport, Works and Housing, where individual crash records are entered in the database system and become the basis for traffic crash analysis.

Traffic officers are progressively being equipped with Global Positioning System handsets allowing them to easily and precisely code the location of a crash.

The Ministry of Transport, Works and Housing indicates that most road fatalities are captured in the police-based reporting system. Comparisons of the fatality numbers with Health Ministry and Vital register data sources will help support this assumption. However, there is still more work to do to improve the ability to capture information on injuries. Measures are currently being developed to improve this aspect of the data system. It is expected that by 2016, the Injury Surveillance System will be fully operational, thus ensuring that injury data can be collected from all hospitals on the island.

Most recent safety data

Road crashes in 2014 – Actual data

Road fatalities escalated to 331 in 2014, the highest since 2009. More than half the fatalities were vulnerable road users (pedestrians, motorcyclists and cyclists).

Road crashes in 2013

There were 307 road fatalities in 2013, an 18% increase in comparison to 2012. While this is a steep increase when compared with 2012, it was close to Jamaica's target for the year of being below 300. The majority (56%) of the persons killed were pedestrians, motorcyclists and cyclists. Therefore significant efforts are being made to address the danger to vulnerable road users. Passenger car occupants are the second largest casualty group. Most of them did not wear a seatbelt, although it is compulsory.

Trends in traffic and road safety (1990-2014)

Traffic

Since 1990, total vehicle-kilometres driven have increased significantly, but there is no precise breakdown for different vehicle types. Total vehicle-kilometres travelled in 2013 increased, which can be seen as a return to the normal upward trend after a period of stagnation starting in 2010 due to the economic recession.

It is difficult to get accurate figures for the size of the registered vehicle fleet in Jamaica. The Ministry of Transport, Works and Housing is working with other ministries to improve access to figures for the registered vehicle fleet.

Road safety

Crashes and casualties

The number of road fatalities peaked in the year 1993. Between 2000 and 2013, the number of fatalities decreased by 22%. Some of the reduction experienced recently may be attributable to the recent reduction in traffic and the economic climate.

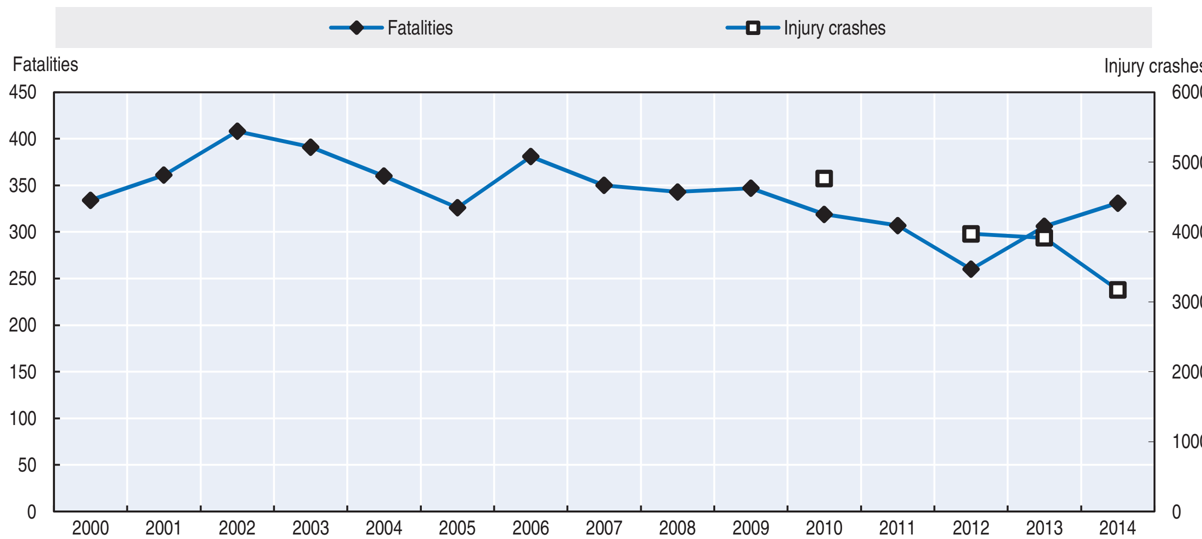
Rates

In 2013, the rate of annual deaths per 100 000 inhabitants was 11.3.

Table 20.1. **Road safety and traffic data**

	1991	2000	2010	2012	2013	2014	2014 % change over			
							2013	2010	2000	1991
Reported safety data										
Fatalities	444	334	319	260	307	331	27.3	3.8	-0.9	-25.5
Injury crashes			4 765	3 973	3 917	3 171	-20.2	-33.5		
Deaths per 100 000 inhabitants	18.7	12.9	11.8	9.6	11.3	12.2	8.0	3.4	-5.4	-34.8
Deaths per 10 000 registered vehicles			9.4	7.5	8.7					
Traffic data										
Registered vehicles			339 430	346 650	352 447					
Registered vehicles per 1 000 inhabitants			126	128	130					

Figure 20.1. **Road fatalities and injury crashes**



Road safety by user group

Pedestrians are particularly at risk. In 2013, 88 pedestrians were killed in fatal crashes, 30% of all road fatalities and an increase of 3.5% over 2012. Motorcyclists and cyclists also record high numbers of fatalities.

The safety level of public transport vehicles is also a high priority and concern in Jamaica. Many people rely on buses for their journeys.

Between 2000 and 2014, the situation deteriorated for motorcyclists with a 92% increase in the number of fatalities. This is partly explained by a significant increase in motorcycle use over recent years. Most of the motorcyclists killed were not wearing a helmet. They were all males. It is strongly believed that had they worn helmets, there would have been a reduction in the number of motorcyclists killed in traffic crashes. Stringent measures will be deployed to enforce helmet wearing by motorcyclists.

All the cyclists killed were males who did not wear a helmet.

Table 20.2. **Road fatalities by road user group**

Road users	1992	2000	2010	2012	2013	2014	2014 % change over			
							2013	2010	2000	1992
Cyclists	40	44	26	17	27	30	11.1	15.4	-31.8	-25.0
Motorcyclists	67	38	44	45	64	73	14.1	65.9	92.1	9.0
Passenger car occupants			70	54	67	67	0	-4.3		
Pedestrians	171	100	115	85	88	99	12.5	-13.9	-1.0	-42.1
Others incl. unknown			64	59	61	62	1.6	-3.1		
Total	*428*	*334*	*319*	*260*	*307*	*331*	7.8	3.8	-0.9	-22.7

Road safety by age group

Young people are the most at risk. In 2011, the 5-24 age group accounted for 17% of the population but 23% of the road deaths.

Figure 20.2. **Breakdown of road fatalities by user group, 2013**

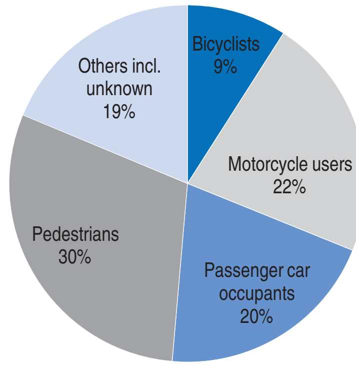


Table 20.3. **Road fatalities by age group**

Age	2010	2012	2013	2014	2014 % change over	
					2013	2010
0-5	3	5	6	3	Figures too small for meaningful % comparisons	
6-9	3	6	3	7		
10-14	10	1	7	2		
15-17	19	9	13	9	-30.8	-52.6
18-20	19	20	15	25	66.7	31.6
21-24	27	27	23	33	43.5	22.2
25-64	151	134	175	192	9.7	27.2
> 65	47	40	42	31	-26.2	-34.0
Total incl. unknown	***319***	***260***	***307***	***331***	7.8	3.8

Road safety by road type

The road network in Jamaica is classified in the following manner:

- Main roads are controlled by the Ministry of Transport, Works and Housing.
- Local roads are controlled by the Ministry of Local Government and Community Development.

In 2014, 65% of road fatalities occurred on rural roads.

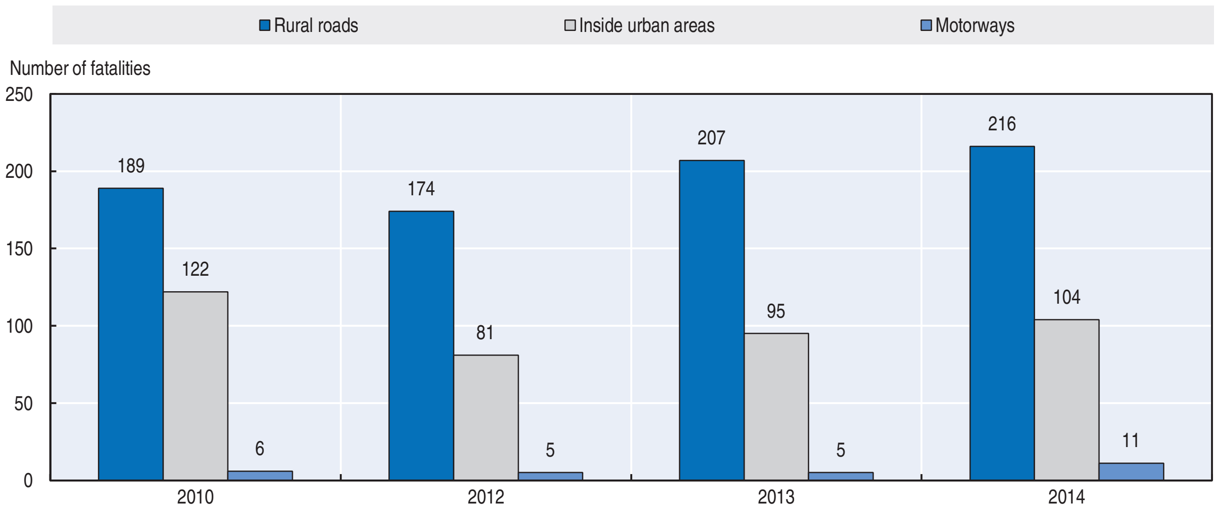
Economic costs of traffic crashes

In 2005, it was estimated that road crashes cost the health and insurance sectors around JMD 7.5 billion, or 0.5% of its gross domestic product. Of the total, 60% are direct and indirect costs borne by the health sector and 40% are costs borne by the Insurance Association of Jamaica.

This estimate is only a subset of total costs, as they do not include loss of earnings, pain, grief and suffering, nor costs to the police and other government departments.

Using calculations of the Value of a Statistical Life by the Human Capital Approach or Willingness to Pay would undoubtedly result in much higher cost estimates, so the true economic impact of crashes and road injuries on the economy is higher.

Figure 20.3. **Road fatalities by road type**



Recent trends in road user behaviour

Impaired driving

Drink driving

In Jamaica, the Road Traffic Act states that the legal alcohol limit for all drivers is 35 micrograms of alcohol in 100 millilitres of breath, or a blood alcohol content of 0.8 g/l.

Drugs and driving

There are no tests available to test driver for drug consumption while driving.

Distraction

It is not illegal to use a hand-held or hands-free phone while driving. However, the Road Traffic Act is going to address this issue; probably by forbidding the use of hand-held devices. This could be legislated in 2015.

Speed

Speeding remains the number one cause of fatal road crashes. Inappropriate speed is typically a factor in more than 23% of fatal accidents and about 11% of serious injury crashes over the last decade.

The table below summarises the main speed limits in Jamaica.

Table 20.4. **Passenger car speed limits by road type, 2015**

Urban roads	50 km/h	A few roads have a speed limit of 80 km/h
Rural roads	50 km/h	A few roads have a speed limit of 80 km/h
Motorways	70 km/h or 110 km/h	

Seat belts and helmets

All drivers of cars, trucks and buses are required to wear a seat belt. It is mandatory for car passengers in front and back seats to wear a seat belt. For trucks or buses, front seat passengers must wear a seat belt.

There is no regular survey on the use of seat belts. A survey will be undertaken in 2015.

Information reported in the World Health Organization Global Status Report (WHO, 2014) indicated that seat-belt wearing rates over the period 2007 to 2008 were low, at 44% in the front seat and only 4% in the back seat.

All motorcyclists (drivers and passengers) are required to wear an approved helmet. Of the 56 motorcycle drivers who died in 2013, only two were wearing a helmet.

There is no mandatory helmet use law for cyclists. However, cyclists are encouraged to use one.

National road safety strategies and targets

Organisation of road safety

The National Road Safety Council is the lead agency for road safety, having the central role of co-ordinating activities with and among local administration stakeholders, such as the police, the insurance sector, the medical sector and others. It was established in 1993 as a non-profit organisation and depends on the Office of the Prime Minister for its main funding.

The National Road Safety Council is responsible for safety legislation, education and communication campaigns.

Road Safety in Jamaica is guided by three main policies:

- National Road Safety Policy.
- Vision 2030 – Transport Sector.
- National Transport Policy.

Road safety strategy for 2012-15

The current road safety strategy covers the period 2012-15 and is based on five pillars:

- education and information
- enforcement and legislation
- emergency response
- evaluation
- engineering and traffic environment.

Road safety targets

The previous road safety programme included the target to reduce the number of fatalities below 300 by 2012. The target was achieved in 2012; however the number of road deaths rose above 300 in 2013 and 2014.

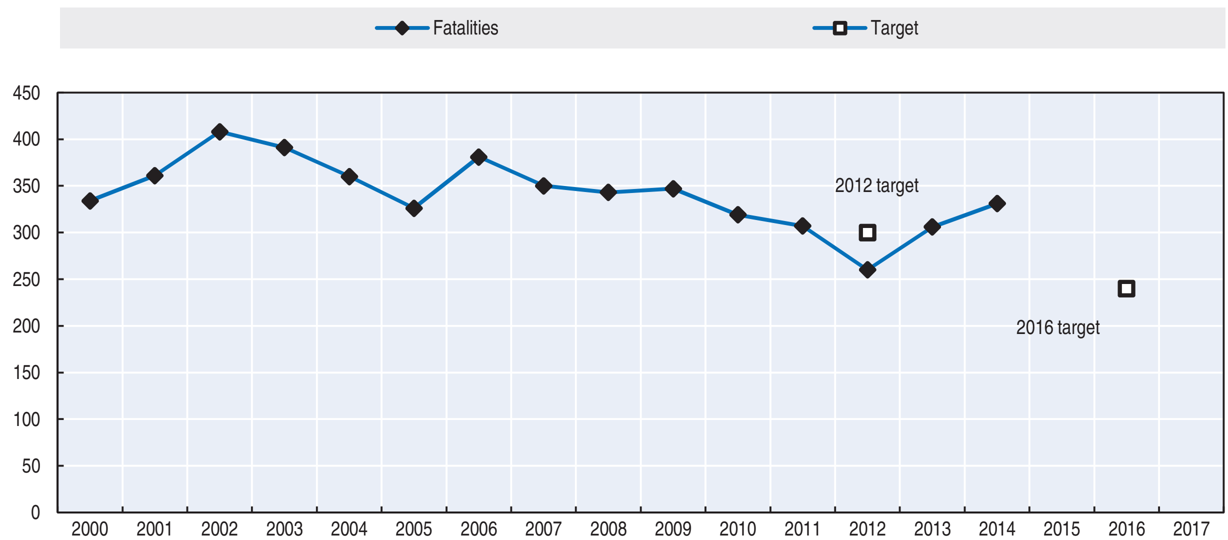
The target of the 2012-15 strategy is to reduce the number of fatalities below 240 by 2016. Based on the forecast, achieving this target will be difficult.

Monitoring

Evaluation of past road safety strategy

The Cabinet Office has ordered a review of the past road safety strategy. A report is expected in 2015.

Figure 20.4. **Trends in road fatalities towards national target**



Recent safety measures (2012-14)

Road safety management

Legislation

- The Ministry of Transport, Works and Housing is working towards the adoption of a modernized Road Traffic Act featuring contemporary road safety standards and best practices. The main road safety issues are addressed in the proposed act, including driver training, education, and a graduated driving licence system. The act is expected to be passed before March 2016.

Institutional setting and capacity building

- When the United Nations Decade of Action for Road Safety was launched in 2011, the government of Jamaica started strengthening its institutions and building capacity. With support from the Inter-American Development Bank's Road Improvement Programme, several people were trained in road safety auditing as well as crash investigation, analysis and reconstruction.

Crash data system

- The IRTAD twinning with the Transport Research Laboratory in the United Kingdom, initiated in 2013 with support from the Inter-American Development Bank, focuses on improving the crash data collection and analysis system.
- The goal of progressive improvements of the crash data system is to ensure that all road safety stakeholders have seamless access to crash data, allowing them to make well informed decisions in a timely manner.

Road users

Speed management

- Speed enforcement is ensured by the Traffic and Highway Division of the Jamaica Constabulary Force. In 2012, their actions focused on high risk sites identified by their history of crashes. Early indications suggest that this may have been beneficial, but formal statistical evaluation has not been undertaken.

Education and awareness

- Defensive driving training is incorporated in the "Driver Training and Instruction Curriculum" of the Island Traffic Authority, the National Works Agency, the Caribbean Maritime Institute and the Driver Training Institutions.
- Children from primary, secondary and tertiary schools receive classes on road safety.

Infrastructure

- A major motorway is being built that will connect the North and South.
- Road safety audits and in-depth investigation and analysis of collisions have become standard operations in Jamaica.

Vehicles

- Efforts will be made to develop a vehicle safety standard.

Post-crash measures

- The Ministry of Transport, Works and Housing will be working with the Ministry of Health to ensure people are trained in first aid.

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- National Road Safety Council: *www.nationalroadsafetycouncil.org.jm*.

Chapter 21

Japan

*This chapter presents the most recent crash data for Japan, as well as an update on the Japanese road safety strategy and recently implemented safety measures.**

* All data stem from the National Police Agency and IRTAD unless otherwise noted. For more information please contact: k.fujimaki.x2.9j@npa.go.jp.

Japan has an ageing population, and 55% of the road fatalities in 2014 were aged 65 and over. The fatality rate for the elderly is twice that of the average population. The national goal of making Japan's roads the "safest in the world" can only be realised if greater effort is made to improve the safety of senior citizens. The country is on the way toward its goal, as fatalities have declined every year since 2000.

Road safety data collection

Definitions applied in Japan

- Road fatality: Persons who die within 24 hours of a crash or within 30 days of a crash. Two sets of records are kept, and the data in this report and included in the International Road Traffic and Accident Database (IRTAD) use the 30-day definition.
- Serious injury: Injury which requires medical treatment for 30 days or more.
- Slight injury: Injury which requires medical treatment for less than 30 days.

There is no plan to adopt a definition of serious injuries based on the Abbreviated Injury Scale.

Data collection

In Japan, road crash data are collected by the police. The National Police Agency has been collecting crash data since 1948. In 1966, an online database system was created and in 1993 the 30-day definition for a crash fatality was added.

Hospital data are not used to complete police data. They may be used on an ad hoc basis for research.

Most recent safety data

Road crashes in 2014 – provisional data

Provisional data for 2014 show a 6% decrease in road fatalities in 2014.

In 2014, people age 65 and over represented 55% of total fatalities.

Road crashes in 2013

In 2013, there were 5 152 road fatalities on Japanese roads, a 1.6% decrease in comparison to 2012. In 2013 Japan reached its lowest fatality level since record-keeping began.

Trends in traffic and road safety (1990-2014)

Traffic

Between 1990 and 2013, the vehicle fleet increased by 35% and the distance travelled by 19%.

After stagnating in 2012, as a consequence of the economic downturn, the motorised vehicle fleet increased slightly in 2013.

Road safety

Crashes and casualties

Between 1990 and 2013, the number of fatalities decreased by 65%; however the number of injury crashes decreased only slightly. This discrepancy is due to the important increase in the number of vehicles and the number of licensed drivers, which led to more crashes but, fortunately, not to more fatal crashes.

Traffic deaths peaked in the late 1960s. Since then, fatalities have decreased, albeit with some fluctuations over the years. Since 2000, the number of road fatalities has decreased every year.

The improved safety record in the past decade is related to a significant increase in the seat belt wearing rate, reduction in speed and safer behaviour of pedestrians.

Rates

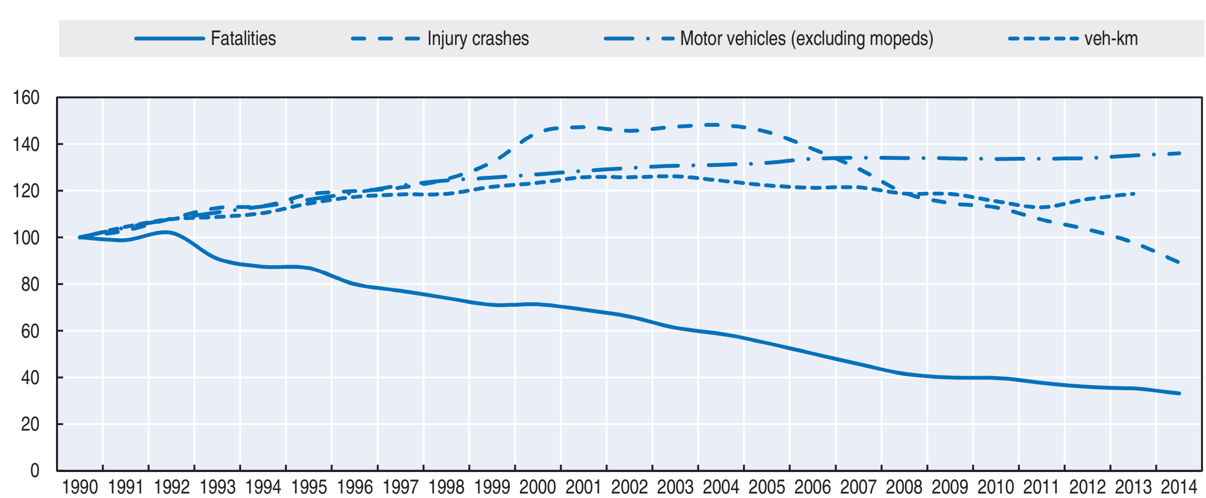
Since 1990, the death rate per 100 000 inhabitants has decreased by 66%, reaching 4.0 in 2013.

Table 21.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	14 595	10 410	5 806	5 237	5 152	-1.6	-11.3	-50.5	-64.7
Injury crashes	643 097	931 950	725 903	665 138	629 021	-5.4	-13.3	-32.5	-2.2
Deaths per 100 000 inhabitants	11.8	8.2	4.5	4.1	4.0	-1.5	-10.7	-50.7	-65.7
Deaths per 10 000 registered vehicles	2.4	1.3	0.7	0.6	0.6	-2.4	-12.2	-53.5	-73.9
Deaths per billion vehicle kilometres	23.2	13.4	8.0	7.2	6.9	-3.5	-13.6	-48.5	-70.3
Traffic data									
Registered vehicles[1] (thousands)	61 927	78 682	82 770	82 993	83 666	0.8	1.1	6.3	35.1
Vehicle kilometres (millions)	628 581	775 723	726 256	731 943	746 177	1.9	2.7	-3.8	18.7
Registered vehicles per 1 000 inhabitants	501	620	646	651	657	1.0	1.7	6.0	31.2

1. Registered vehicles excluding mopeds.

Figure 21.1. **Road safety and traffic data index 1990 = 100**



Road safety by user group

Since 2000, safety improvements have benefited all road users, especially car occupants, for whom fatalities have been reduced by 63%. Factors contributing to this reduction have been safer vehicles, better emergency medical care, improved road infrastructure and a change in road user behaviour. The improvement was smaller for vulnerable road users, in particular cyclists and pedestrians.

Pedestrians represent a very high share of total fatalities (36% of all fatalities in 2013) in comparison with other OECD countries. The high proportion of pedestrian fatalities is partly explained by the fact that only about 40% of people 65 and older have a driving licence. About half of the road users killed in this age group are pedestrians.

In 2013, cyclists represented 16% of total fatalities. This share could rise, given the increasing popularity of cycling. Improving the safety of cyclists has become a priority.

Table 21.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	1 509	1 278	936	787	813	3.3	-13.1	-36.4	-46.1
Moped users	1 320	944	458	417	357	-14.4	-22.1	-62.2	-73.0
Motorcyclists	1 920	903	568	528	502	-4.9	-11.6	-44.4	-73.9
Passenger car occupants	3 887	2 903	1 197	1 088	1 081	-0.6	-9.7	-62.8	-72.2
Pedestrians	3 955	2 955	2 009	1 904	1 864	-2.1	-7.2	-36.9	-52.9
Others	2 005	1 427	638	513	535	4.3	-16.1	-62.5	-73.3
Total	***14 595***	***10 410***	***5 806***	***5 237***	***5 152***	***-1.6***	***-11.3***	***-50.5***	***-64.7***

Road safety by age group

Since 1990, impressive reductions in fatalities have benefited all age groups, with a more modest reduction for the elderly (65+). This is due to the ageing of Japanese society. In 2013, victims aged 65 and over accounted for more than half of all fatalities.

Unlike most other countries, the oldest age group is also the one most at risk in traffic, with a fatality rate twice that of the average population. 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 national goal of making Japan's roads the "safest in the world" can only be realised if greater effort is made to improve the safety of senior citizens. The government is implementing a wide range of measures targeting the elderly population.

Road safety by road type

In 2013, urban areas accounted for more than half of all road fatalities.

Economic costs of traffic crashes

There is no estimation of the economic costs of traffic crashes.

Table 21.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	312	88	45	38	40	5.3	-11.1	-54.5	-87.2
6-9	198	76	42	34	41	20.6	-2.4	-46.1	-79.3
10-14	143	75	37	26	21	-19.2	-43.2	-72.0	-85.3
15-17	1 006	327	124	97	95	-2.1	-23.4	-70.9	-90.6
18-20	1 820	690	220	201	171	-14.9	-22.3	-75.2	-90.6
21-24	1 381	772	224	166	180	8.4	-19.6	-76.7	-87.0
25-64	6 261	4 641	2 115	1 927	1 833	-4.9	-13.3	-60.5	-70.7
≥ 65	3 475	3 741	2 999	2 748	2 771	0.8	-7.6	-25.9	-20.3
Total	***14 595***	***10 410***	***5 806***	***5 237***	***5 152***	***-1.6***	***-11.3***	***-50.5***	***-64.7***

Figure 21.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

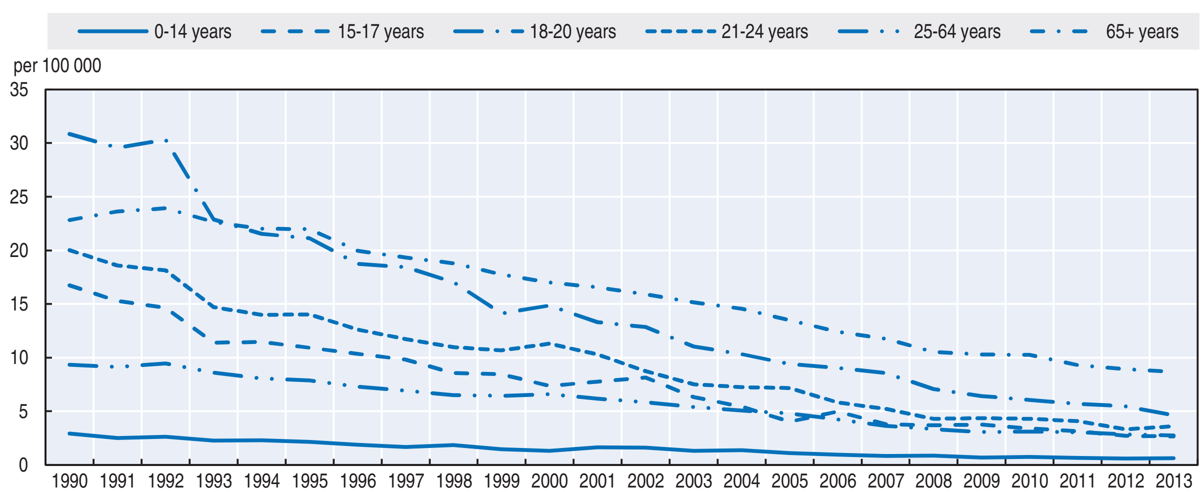


Figure 21.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants in 2013

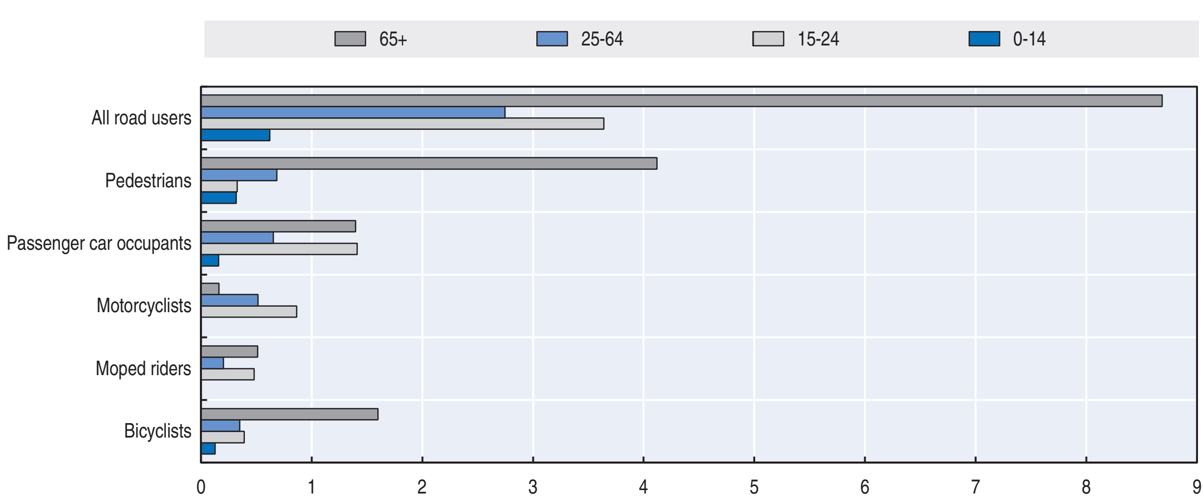
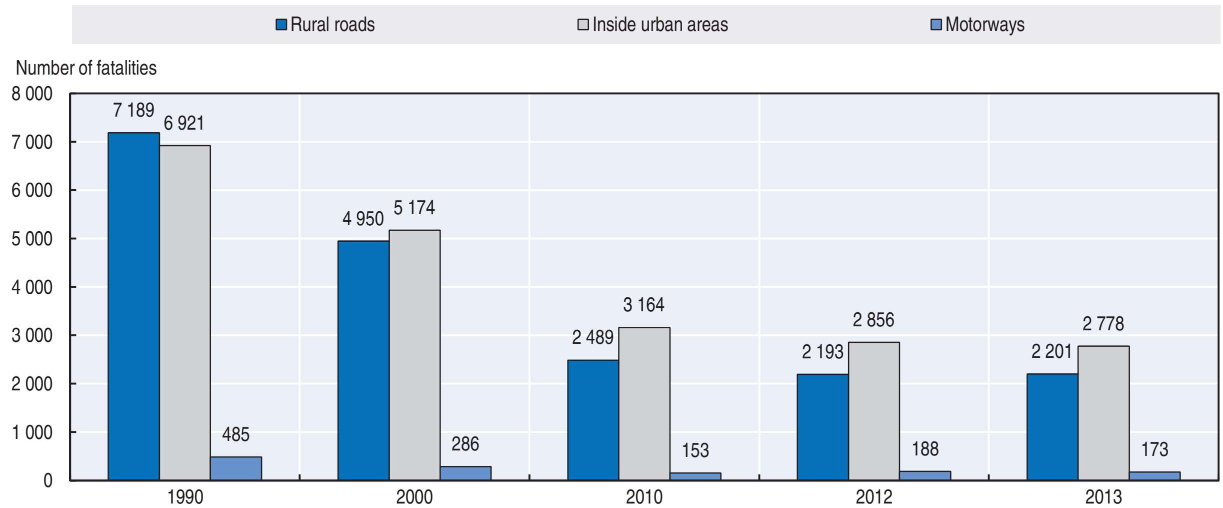


Figure 21.4. **Road fatalities by road type**



Recent trends in road user behaviour

Impaired driving

Drink driving

In 2002, the maximum authorised blood alcohol content (BAC) level was lowered from 0.5 g/l to 0.3 g/l. Since then, the number of fatal crashes caused by alcohol has been divided by nearly four, although the rate of improvement has been slower since 2008.

Distraction

Using hand-held phones or other electronic devices while driving has been prohibited since 1990. Causing a crash due to the use of these devices is subject to punishment, and since 2004 such use is punishable even if no crash is caused.

In 2013, there were 1 042 injury crashes, or 0.17% of all injury crashes, due to the use of mobile phones, including crashes involving cyclists.

Speed

Over the past decade, the number of high-speed crashes has decreased, which has contributed to the decrease in fatal crashes. In 2013, in comparison to 2003, the number of crashes outside the motorway network involving speeds above 100 km/h decreased by 78%.

The table below summarises the main speed limits in Japan.

Table 21.5. **Passenger car speed limits by road type, 2014**

Urban roads	40, 50, 60 km/h
Rural roads	50, 60 km/h
Motorways	100 km/h

Seat belts and helmets

Seat belt wearing has been compulsory in front seats since 1985 and in rear seats since 2008. Children below six years old must be seated in a dedicated child restraint system.

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

Table 21.6. **Seat belt wearing rate by car occupancy and road type**

%

	2002	2010	2014
Front seats			
Driver	88	97	98
Passengers	75	92	94
Motorways (driver)	97	99	99.5
Rear seats			
Adults + children (no age distinction)	7	33	35
Children (child restraint system)	52	57	62

National road safety strategies and targets

Organisation of road safety

From the first half of the 1950s to around 1970, Japan suffered from a significant increase in the number of road traffic crash casualties. As a result, traffic safety emerged as an important social issue. In June 1970, the government of Japan enacted the Traffic Safety Policies Act, with the aim of promoting traffic safety measures nationwide in a systematic manner. Under this act, the government has been working together with local governments and relevant private organisations to vigorously implement traffic safety measures.

The government has prepared a National Traffic Safety every five years, starting in 1971.

Road safety strategy for 2011-2015

The Ninth Programme was launched in April 2011 and covers the period 2011-15. It has three strategic objectives and eight pillars. The three strategic objectives are:

- safety for the elderly and children
- pedestrian and bicycle safety
- ensuring safety on local roads and on main roads.

The eight pillars are:

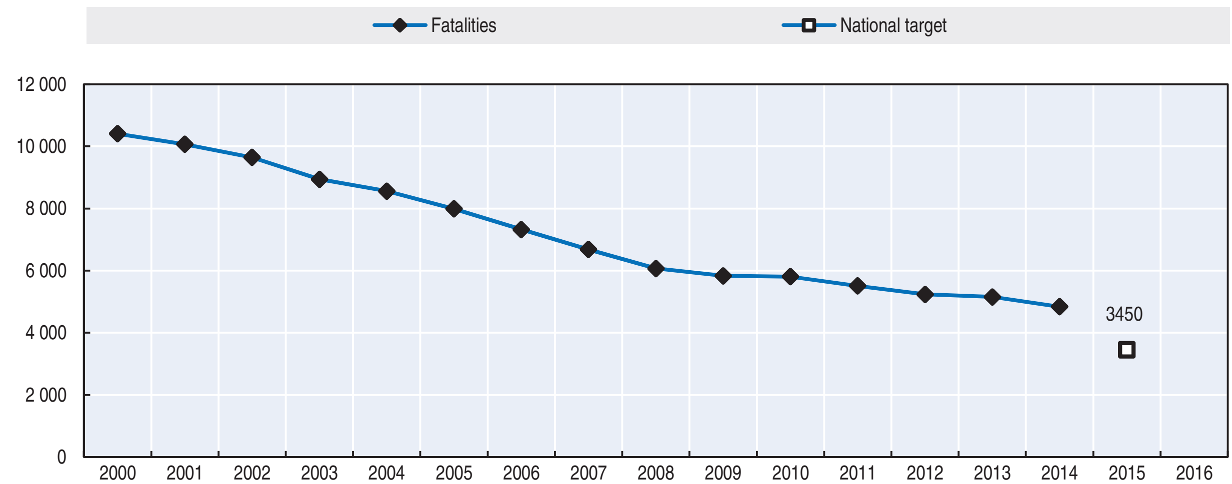
- improvement of the road traffic environment
- dissemination and reinforcement of traffic safety messages
- safe driving
- vehicle safety
- enforcement
- an improved rescue and emergency medical system
- victim support, including an appropriate damage compensation system
- research and development
- road safety targets.

The plan includes the target for 2015 to have fewer than 3 000 deaths within 24 hours of a crash (equivalent to 3 450 deaths within 30 days) and fewer than 700 000 casualties. The vision is to make Japan the safest country for road traffic.

Monitoring

Monitoring and evaluation have been regularly carried out since 2012 by the government's Cabinet Office, and indicators are regularly reviewed by the study group.

Figure 21.5. **Trends in road fatalities towards national target**



Recent safety measures (2012-14)

Road users

- Cycles account for about 20% of overall traffic crashes. Police are reinforcing guidance and regulations for cyclists and raising awareness of rules, such as the fact that in principle, cyclists should ride on streets.
- Improving the safety of the elderly is a key priority for the Japanese government. Police are co-operating with the relevant agencies and organisations to implement measures such as offering individual guidance during home visits and offering traffic safety education at such facilities as hospitals and care centres for elderly persons.

Websites

- National Police Agency: *www.npa.go.jp*.
- Institute for Traffic Accident Research and Analysis (ITARDA): *www.itarda.or.jp*.
- National Research Institute of Police Science (NRIPS): *www.npa.go.jp/nrips/en/index.html*.

Chapter 22

Korea

*This chapter presents the most recent crash data for Korea, as well as an update on the Korean road safety strategy and recent safety measures that have been implemented.**

* All data stem from the The Korea Road Traffic Authority (KoROAD) unless otherwise noted. For more information please contact: dragonhwang@koroad.or.kr.

In 2014, there were 4 762 road fatalities, representing a decrease of 6.5% when compared to 2013. Korea's elderly population (above 65) has a very high crash risk when compared to other OECD countries. This is a serious concern as the share of the elderly population is increasing steadily. In July 2013, the government announced a comprehensive plan for reducing traffic accident casualties for the period 2013-17, with the target to reduce the number of road fatalities to less than 4 000 by 2017.

Road safety data collection

Definitions applied in Korea

- Road fatality: Any person killed immediately or dying within 30 days as a result of a road crash.
- Person seriously injured: Any injured person requiring medical treatment for more than three weeks.
- Person slightly injured: Any injured person requiring medical treatment for less than three weeks.

Data collection

Any road crash resulting in at least one person killed or injured must be reported to the police. The police investigate the crash, fill out a form and enter the information in the police Traffic Accident Management System database. The police refer to the medical diagnosis to classify the injuries by severity.

To complete police reported crash data, the Korea Road Traffic Authority (KoROAD) has developed an integrated road crash database, the Traffic Accident Analysis System (TAAS). This contains not only police data, but also inputs from car insurance companies and mutual aid associations. The TAAS data are collected regularly from these sources, and are refined to eliminate duplicated information.

Most recent safety data

Road crashes in 2014 – provisional data

In 2014, there were 4 762 road fatalities, representing a decrease of 6.5% when compared to 2013. However, the number of police reported injury crashes increase by 3.8%

Road crashes in 2013

In 2013, there were 5 092 road deaths in Korea, a 5.6% decrease when compared to 2012. The number of police reported injury crashes decreased by 3.7%.

The decrease in fatalities benefited mainly the young people (10-17 years old) for whom the number of road deaths decreased by 18%.

Trends in traffic and road safety (1990-2014)

Traffic

Since 1990, Korea has had a very rapid increase in motorisation. Between 1990 and 2013, the number of motorised vehicles was multiplied by more than four. Since 2000, the increase has been more moderate and in 2012, for the first time, traffic volume slightly decreased. In 2013, it increased again by 1%.

Road safety

Crashes and casualties

Fatalities peaked in 1991 at 13 429. Since then, road deaths have decreased (with some fluctuations) and were halved by 2004. Between 1990 and 2013, the number of road fatalities decreased by 64%, while the number of injury crashes decreased by only 16%.

This important decrease is due in part to the following measures:

- the compulsory wearing of front seat belts (1990)
- drink driving enforcement (1998)
- installation of median barriers on national roads
- speed enforcement by the police, including automatic speed camera enforcement since 2008.

However, Korea still faces a number of challenges and has fatality rates above the average for countries in the Organisation for Economic Co-operation and Development (OECD). Reasons for the elevated levels of death and serious injury on the roads include high alcohol consumption, wide junctions, lack of sidewalks on rural roads, high speed limits on urban roads (usually 60 km/h and sometimes 80 km/h), a lack of road safety education in high schools and the low priority of road safety by local government.

In particular, Korea's elderly population (above 65) has a very high crash risk when compared to other OECD countries. This is a serious concern as the share of the elderly population is increasing steadily.

Rates

From 1990 to 2013, the road death rate per 100 000 inhabitants decreased by 69% to 10.1, and the death rate per 10 000 registered vehicles decreased by 92% to 2.3. During the same period the number of vehicles per 1 000 inhabitants, which is representative of the national level of motorisation, has multiplied by four.

Road safety by user group

Since 1990, all user groups have benefited from improvements in road safety. The highest fatality decreases were observed for pedestrians (-72%) and motorcyclists (-68%).

Pedestrians count for 39% of all fatalities, which is very high when compared to the average for OECD countries of 18%.

For 2000-13, most user groups, with the exception of moped riders, benefited from a sharp decrease in the number of fatalities. The greatest decrease was observed for car occupants (-57%) and motorcycle riders (-55%). The decrease in cyclist fatalities was more moderate (-11%).

In 2013, the number of moped riders killed decreased by 20% compared to 2012.

Table 22.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change over			
						2012	2010	2000	1990
Reported safety data									
Fatalities	14 174	10 236	5 505	5 392	5 092	-5.6	-7.5	-50.3	-64.1
Injury crashes	255 303	290 481	226 878	223 656	215 354	-3.7	-5.1	-25.9	-15.6
Deaths per 100 000 inhabitants	33.1	21.8	11.3	10.8	10.1	-6.0	-10.0	-53.4	-69.3
Deaths per 10 000 registered vehicles[1]	28.9	6.9	2.6	2.5	2.3	-8.5	-14.7	-67.1	-92.2
Deaths per billion vehicle- kilometres		49.5	18.7	18.4	17.2	-6.5	-7.8	-65.2	
Traffic data									
Registered vehicles[1] (thousands)	4 897	14 928	20 832	21 909	22 401	2.2	7.5	50.1	357.4
Vehicle kilometres (millions)		206 985	295 055	293 065	296 040	1.0	0.3	43.0	
Registered vehicles per 1 000 inhabitants	114	318	426	438	450	2.7	5.6	41.7	294.0

1. Registered vehicles excluding mopeds.

Figure 22.1. **Road safety and traffic data index 2000 = 100**

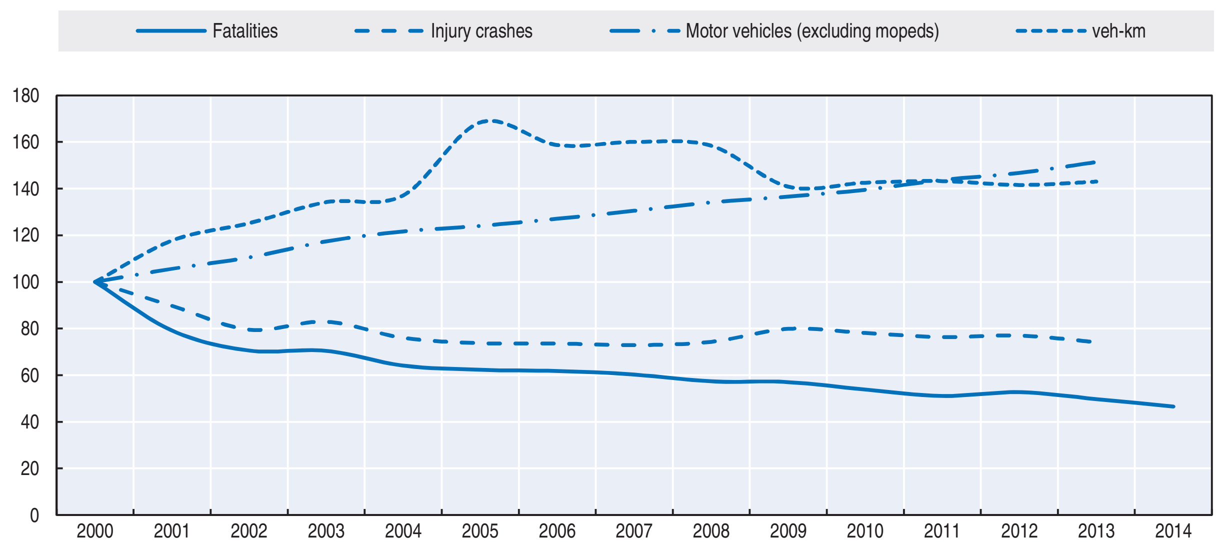


Table 22.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	644	317	294	286	281	-1.7	-4.4	-11.4	-56.4
Mopeds		343	450	360	289	-19.7	-35.8	-15.7	
Motorcycles	1 674	1 221	633	588	541	-8.0	-14.5	-55.7	-67.7
Passenger car occupants	2 100	2 792	1 228	1 283	1 195	-6.9	-2.7	-57.2	-43.1
Pedestrians	7 063	3 764	2 082	2 027	1 982	-2.2	-4.8	-47.3	-71.9
Others	2 692	1 799	818	848	804	-5.2	-1.7	-55.3	-70.1
Total	***14 174***	***10 236***	***5 505***	***5 392***	***5 092***	***-5.6***	***-7.5***	***-50.3***	***-64.1***

Road safety by age group

Since 2000, the reduction in road fatalities has benefited all age groups. The most impressive reduction concerned the youngest group (0-14), for which fatalities decreased by 83%; from 588 in 2000 to 99 in 2013. However, the number of road fatalities among the oldest group (65 and above) hardly decreased (1%). This age group represents nearly 40% of all fatalities and has a much higher risk than the general population, with more than 30 deaths for 100 000 inhabitants, over twice the risk of the average population. The elderly are particularly vulnerable as pedestrians, and represent nearly half of all pedestrian fatalities.

Child safety

The improvement of children safety has been one of the most important successes in the past two decades. The number of children (0-14) killed in traffic was reduced from 1 148 in 1993 to 99 in 2013, representing a 91% improvement, compared to the overall improvement of 57%.

This success followed a decision in 1990 by the Inter-Ministerial Commission on Road Safety to designate the improvement of children safety in traffic as one of the nation's top priority. This decision was supported by a range of effective safety measures.

Between 2003 and 2014, around 15 000 designated school zones were created with a maximum speed of 30 km/h and a prohibition on parking. The Green Mothers Organisation (a grass roots organisation to protect children) played significant roles in reducing child road fatalities by helping children cross roads safely around schools.

Table 22.3. **Road fatalities by age group**

Age	2000	2010	2012	2013	2013 % change from		
					2012	2010	2000
0-5	275	49	36	38	5.6	-22.4	-86.2
6-9	202	49	32	33	3.1	-32.7	-83.7
10-14	111	62	33	28	-15.2	-54.8	-74.8
15-17	263	139	107	87	-18.7	-37.4	-66.9
18-20	459	149	109	119	9.2	-20.1	-74.1
21-24	573	236	198	191	-3.5	-19.1	-66.7
25-64	6 474	3 068	3 013	2 763	-8.3	-9.9	-57.3
> 65	1 853	1 752	1 864	1 833	-1.7	4.6	-1.1
Total	***10 236***	***5 505***	***5 392***	***5 092***	***-5.6***	***-7.5***	***-50.3***

Figure 22.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1993-2013

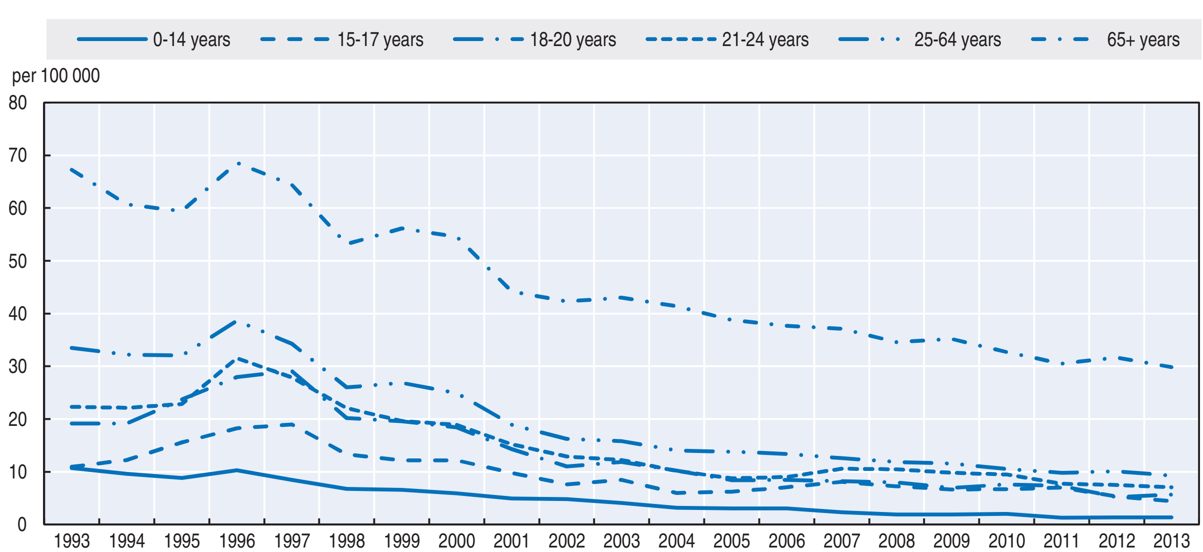
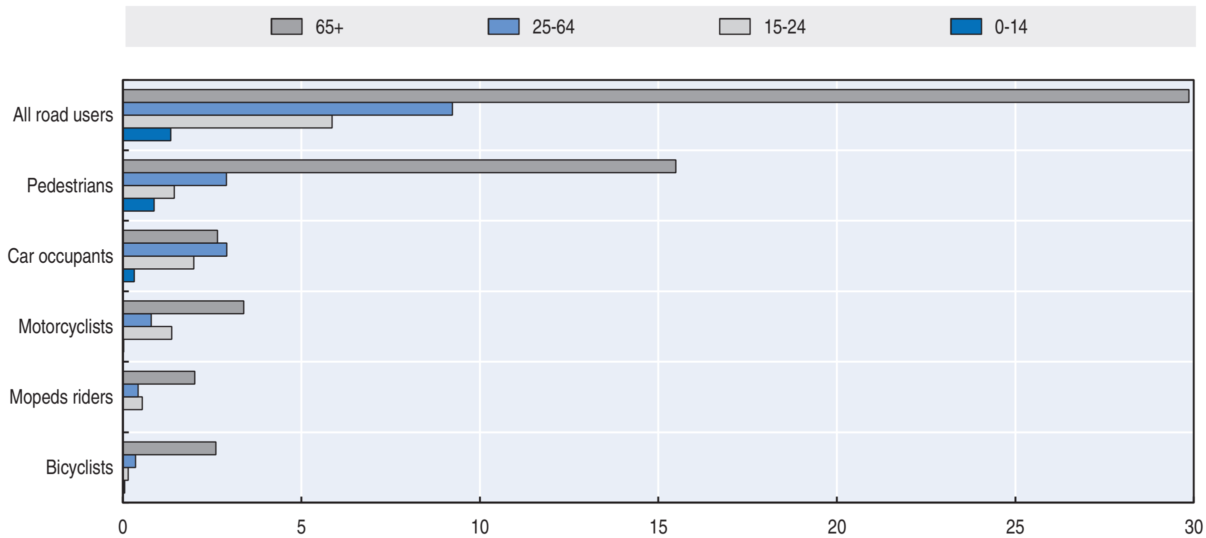


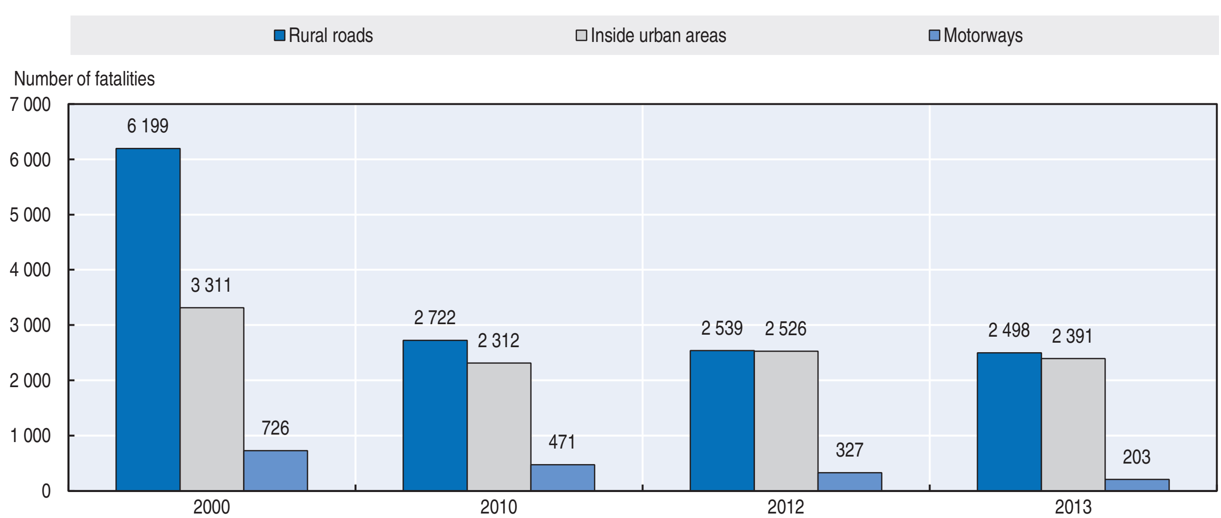
Figure 22.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants, 2013



Road safety by road type

In 2013, the number of fatalities was shared equally between urban and non-urban areas, with 49% of fatalities on rural roads, 47% on urban roads and about 4% on motorways. Since 2000, the greatest reduction has been achieved on motorways (-72%). The good performance on motorways is explained by stronger police enforcement, treatment of black spots, construction of rumble strips, prevention campaigns on fatigue and the installation of 113 new rest areas for drowsy drivers constructed between 2011 and 2013.

Figure 22.4. **Road fatalities by road type**



Economic costs of traffic crashes

Since 1992, KoROAD calculates the economic cost of road crashes using the Gross Loss of Output Approach on an annual basis. The most recently published estimation of road crash cost is based on 2012 crash data (KoROAD, 2012).

The cost of crashes is calculated taking into account the direct costs such as vehicle damage, hospital and administration costs as well as the costs of future lost output. The calculation includes the following elements:

- Direct costs
  - property damaged, costs for repairs and replacement of infrastructure components and vehicle parts
  - medical or funeral costs for casualties
  - compensation for casualties from insurance companies.
- Indirect costs
  - administration costs for police and insurance companies
  - ambulance costs.
- Lost output of casualties

Traffic crashes represent a significant cost for society, estimated in 2012 at around USD 11.7 billion for all police-reported road casualties, or about 1.0% of the gross domestic product (GDP) of Korea. However, when taking into account the crashes not reported by the police, the costs could be as high as USD 20.9 billion (up to 1.85% of GDP). These costs do not take into account the cost of suffering and pain.

Table 22.4. **Costs of road crashes, 2012**

	Total
Casualties costs	KRW 3 468 billion
Administration costs	KRW 984 billion
Property/damage costs	KRW 8 686 billion
Total	KRW 13 138 billion *approx.. USD 11.67 billion*
Total as % of GDP	1.03%

Source: KoROAD (2012). These costs do not take into account cost related to suffering and grief.

The next table shows the unit cost of road crash and casualty in Korea by severity.

Table 22.5. **Unit cost of road crashes and casualties**

Costs	2012
Fatalities	KRW 432 066 000 *USD 383 632*
Serious injuries	KRW 50 319 000 *USD 44 678*
Slight injuries	KRW 2 270 000 *USD 2 415*
Property damage	KRW 1 534 000 *USD 1 362*

Source: KoROAD (2012).

Recent trends in road user behaviour

Impaired driving

Drink driving

The maximum authorised Blood Alcohol Content (BAC) is 0.5 g/l. In 2013, the number of alcohol-related crashes decreased by 8.6% in comparison with 2012, and the number of fatalities due to alcohol-related crashes decreased by 10.8%.

Distraction

The use of hand-held mobile phones is not permitted while driving.

Speed

The table below summarises the main speed limits in Korea. In 2012, the speed limit in urban areas was reduced from 80 km/h to 60 km/h for two-lane roads.

Table 22.6. **Passenger car speed limits by road type, 2015**

Urban roads	60 km/h
Rural roads	One-lane roads: 60 km/h Two-lane roads: 80 km/h
Motorways	Urban areas: 100 km/h Outside urban areas: 110 km/h

Seat belts and helmets

Seat belt use in front seats has been compulsory since 1990 on all roads. The use of rear seat belts on motorways was made compulsory in 2008, but is not compulsory on other roads.

The nationwide 2014 observation survey showed that 89% of drivers, 75% of front passengers and 22% of rear seat passengers wear seatbelts on motorways.

Table 22.7. **Seat belt wearing rate by car occupancy and road type**

%

	2010	2011	2012	2013	2014
Front seat (motorways)					
Driver	88.5	84.1	88.3	86.7	89.1
Passenger	78.2	72.1	76.3	79.1	74.6
Rear seat passengers (motorways)	6.3	4.5	9.4	19.4	21.8

All riders of motorised two-wheelers are required to wear helmets. In 2014, overall helmet use increased from 74% to 78%. The wearing rate varies markedly between cities.

There is no mandatory helmet use law for cyclists.

National road safety strategy and targets

Organisation of road safety

In Korea, road safety responsibility is shared among various ministries and agencies.

- The Ministry of Land, Transportation and Infrastructure is responsible for the national trunk road network of motorways and national highways. It also manages vehicle safety and runs the New Car Assessment Program.
- The Ministry of Public Safety and Security oversees road safety particularly for local governments. It contributes to safety strategies for provincial, municipal and county roads.
- The National Police Agency is mainly responsible for traffic enforcement and crash investigation. It also operates traffic signals, crossings and speed enforcement cameras.
- The Korea Transportation Safety Authority is a government agency supporting the Ministry of Land, Transportation and Infrastructure, mainly in charge of vehicle safety.

- KoROAD is a government agency, supporting the National Police Agency, responsible for road traffic management. The agency is in charge of traffic monitoring, drivers' license examinations and management, training and education.

Road safety policy is co-ordinated by the National Transport Safety Committee, an intergovernmental body. The committee is chaired by the Minister of Land, Transport and Infrastructure. Private professionals can participate in the committee, but in practice the committee does not convene often.

The role of the committee is to review road safety policies and measures implemented by the various agencies; however, it does not have a monitoring function as in Sweden for example, nor does it have a budget or budget allocation power.

Road safety strategy for 2013-17

In July 2013, the Office for Government Policy Coordination announced a comprehensive plan for reducing traffic accident casualties for the period 2013-17, including five strategic areas, each with a set of targeted measures.

Table 22.8. **Strategies and main measures of the national road safety plan**

Strategies	Areas	Actions
Improvement of road user behaviours	Better safety for school routes	Walking school bus Registration of school buses Child car seat enforcement
	Children – oriented road safety education	Development of education textbooks Increase of road safety classes Promotion of road safety instructors
	Better safety for the elderly	Self-diagnosis manual Education programme Provision of the older-friendly cars
	Enforcement on drink driving	Reinforcement on BAC level Installation of ignition interlock device Increased penalties for violation
	Improvement in insurance policy	Premium reduction for cars with safety equipment Differentiation of premiums by regions More responsibility to rental car drivers Distance based insurance
	Working hour limit for commercial vehicle drivers	Research on working hours per day for various types of drivers Amendment of Labour Act
	More education and promotion	Passing priority at unsignaled junctions More TV advertisements Road safety experience centre
Provision of safe transport infrastructure	Safe and comfortable pedestrian space	Sidewalks for roads in residential areas More pedestrian priority zones LED lights over pedestrian crossings
	Special zones for vulnerable road users	Silver zone increase More safety facilities for disabled people
	Better safety facilities	Installation of signal posts before junctions Safety improvement at entrance to villages
	Area-wide road safety improvement	Designation of pilot road safety cities
	Bicycle safety	Better cycle paths and education
	Sharing road safety information	National road safety data sharing system Sharing in-depth crash investment data
Operation of smart transport system	Advanced safety assistance equipment	Introduction of various sensors, alarms, and occupant protection to reduce vehicle to vehicle accidents
	Safety equipment for commercial vehicles	More installation of maximum speed limiters and digital tachometers

Table 22.8. **Strategies and main measures of the national road safety plan** *(cont.)*

Strategies	Areas	Actions
	Meeting global standards in vehicle safety	More testing areas in NCAP Life-cycle management for motorbikes Safety standards for Green cars
Enforcement of safety management system	Speed management for people	60 km/h speed limit for minor arterial roads 30 km/h speed limit in residential areas
	Scientific investigation of accident causes	More in-depth investigation on major crashes Introduction of Korea Road Assessment Program
	Safer logistics systems	Information system for hazardous materials movement
Enhancement of emergency response system	Emergency response by areas	e-Call system Emergency routes along congested areas Emergency response by helicopters
	Weather information system	Provision of weather forecasts along roads

Source: Korean Transport Research Institute (KOTI).

Road safety targets

Two principal targets have been set for 2017:

- Reducing the rate of fatalities per 10 000 vehicles (including mopeds) below 1.64, which corresponds to a reduction by 30% from 2012, in order to be ranked in the middle range of OECD member countries.
- Reducing the number of road fatalities to less than 4 000.

The plan includes interim targets for each year from 2013 to 2017.

Table 22.9. **Specific road safety targets by year**

	2012	2013	2014	2015	2016	2017
Fatality target (actual figure)	- (5 392)	5 100 (5 092)	4 900 (4 762)	4 600	4 300	4 000
Targets expressed in fatalities per 10 000 vehicles (including mopeds) (actual figure)	- (2.4)	2.2 (2.2)	2.1	1.9	1.8	1.6

A new target for 2020 is under discussion for inclusion in the Eighth National Safety Transport Plan, which will be released in 2016.

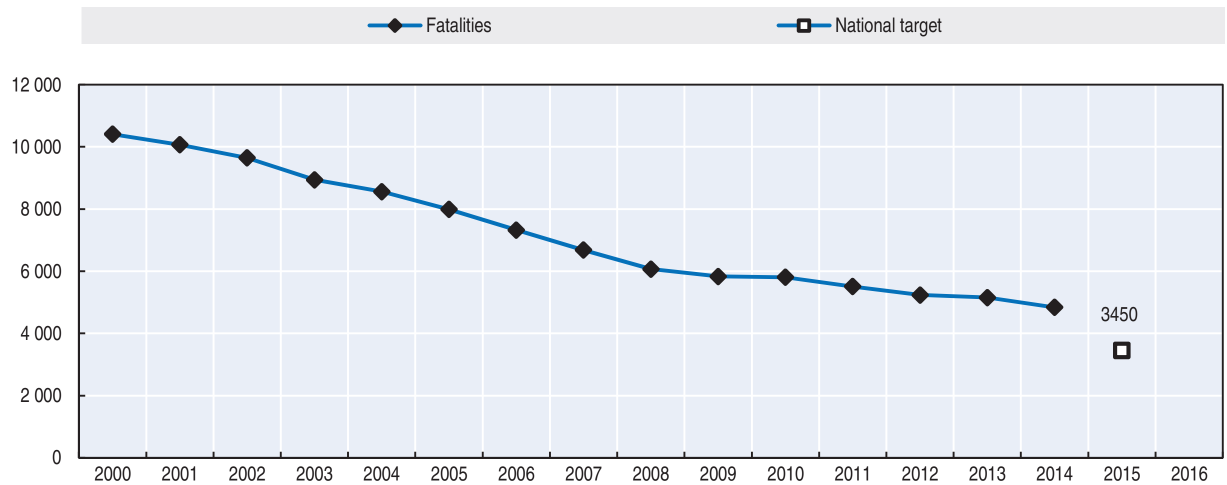
Evaluation of the road safety strategy

The year 2013 was the first year of implementation of a new set of traffic safety measures. They have not yet yielded the expected decrease in the number of fatalities; nevertheless progress is being made, and the measures implemented are considered to be successful.

The improvement of traffic intersections and the construction of additional roundabouts and rest areas along highways have helped reduce the number of infrastructure related crashes.

Police have increased enforcement through video recording and increased fines on a number of traffic violations, including tailgating, aggressive driving, non-respect of stop lines and stopping at pedestrian crossings. These efforts have contributed to a greater compliance with traffic law.

Figure 22.5. **Trends in road fatalities towards national target**



Safety of vulnerable road users has been addressed through dedicated safety measures for children, the elderly, multi-cultural families and foreigners.

Traffic safety of commercial vehicles has been improved by installing digital tachographs, and a rating programme for buses has been introduced.

Recent safety measures (2012-14)

Institutional organisation

- Increased responsibility of local police agencies: The responsibility of developing road safety measures is being progressively transferred from the National Police Agency to local governments, with the creation of local autonomous police agencies. Local governments manage and promote their traffic crash-reducing measures by creating their own police organisations.

Driver behaviour

Speed management

- Speed limits have been reduced to 30 km/h in several residential areas.

Enforcement campaigns

- A number of targeted enforcement campaigns were implemented in 2012, in particular focusing on:
  - traffic violations around school zones
  - motorised two-wheelers
  - heavy trucks, especially during the holiday season
  - traffic violations towards the end of the year
  - drink driving offenses during the New Year period.

Vehicle safety

- The installation of standardised digital tachograph devices on trucks was expanded in 2013-2014. Tachograph records can be analysed by companies to identify poor drivers.
- Attachment of a safety evaluation label, to provide safety information on manufactured vehicles on a systematic basis, became obligatory by 2014.
- The National Police Agency has access to recordings in black boxes that are currently installed in two million cars. These recordings may be used to reduce dispute about crashes.

Infrastructure

Projects include:

- ❖ construction of additional roundabouts (ongoing)
- ❖ expansion of 30 km/h zones in residential areas (ongoing)
- ❖ designation of "silver zone" near facilities for the elderly (ongoing)
- ❖ additional designation of Pedestrian Priority Zones (ongoing)
- ❖ construction of additional rest areas along highways (ongoing)
- ❖ construction of around 2 000 pedestrian crosswalks in residential areas by 2015.

Recent and ongoing research

- Research on pedestrian safety is being undertaken and focuses on:
  - ❖ development of standards for pedestrian facilities
  - ❖ evaluation tools to assess the pedestrian friendliness of the infrastructure through site inspections
  - ❖ assessment of current laws to further protect pedestrians.
- New Car Assessment Programme: Assessment of vehicle safety through crash tests and other tests. Results of the tests are publicly released to inform consumers and serve as an incentive to car manufacturers to build safer cars.
- Research and development on advanced safety vehicles, focusing on:
  - ❖ protection of backseat passengers, active protection of pedestrians, and dynamic rollover stability
  - ❖ Lane Keeping Assistance System, pedestrian detection; Automatic Emergency Braking System, electronic stability control, alcolock
  - ❖ in depth accident investigation.
- Research on the international harmonisation of vehicle safety standards include:
  - ❖ a study on international standards for vehicle parts subject to self-certification
  - ❖ a pilot study to implement amended Global Technical Regulations to domestic standards
  - ❖ research on standards that suit the domestic transportation environment and international harmonisation
  - ❖ research on the institutional development of performance and standards of vehicles and vehicle parts
  - ❖ development of a comprehensive database system to control the performance and standards of vehicles and their parts.

References

KoROAD (2012), *The Estimation and Evaluation of Road Accidents Costs,* Road Traffic Authority.

Websites

- Ministry of Land, Infrastructure and Transport: *http://english.molit.go.kr*.
- Road Traffic Authority: *www.koroad.or.kr*.
- Korea Transportation Safety Authority: *www.ts2020.kr*.
- Korea Transport Institute (KOTI): *http://english.koti.re.kr/*.

Chapter 23

Lithuania

*This chapter presents the most recent crash data for Lithuania, as well as an update on the country's road safety strategy and recently implemented safety measures.**

* All data stem from the Road and Transport Research Institute and IRTAD. For more information please contact m.katkus@ktti.lt.

Lithuania reduced its death rate per 100 000 inhabitants from 29.3 in 1990, at the end of the Soviet era, to 8.7 in 2013. The national goal for 2017 is to reduce that to 6.0 by improving vehicles, infrastructure, road user behaviour and rescue services. Road crash fatalities increased 4.2% in 2014, after falling 14% in 2013. Pedestrians are particularly vulnerable, making up 41% of fatalities.

Road safety data collection

Definitions applied in Lithuania

- Road fatality: Person killed in a traffic crash or so died within 30 days of the crash (before 1995, the delay after the crash was 7 days).
- Serious and slight injury: There is no official definition as yet of slight and serious injuries. The concept of using the Maximum Abbreviated Injury Scale of three or more (MAIS3+) for a serious injury is under discussion.

Data collection

Traffic police collect and manage most crash data Lithuania. Hospitals and insurance companies also have data on some crashes.

There is no estimate of under-reporting. According to the police, nearly 100% of injury crashes are collected and reported in the police database. The data are available to road safety experts for research.

Road safety experts lack information to identify crash causes. Information on road user behaviour is also limited, and information on injury type is not systematically recorded.

Most recent safety data

Road crashes in 2014 – provisional data

In 2014, 3 278 injury crashes were recorded, in which 265 road users were killed. This corresponds to a 2.7% increase in fatalities. 41% of all fatalities were pedestrians.

Road crashes in 2013

In 2013, 3 417 injury crashes were recorded, in which 258 road users were killed and 4 040 were injured. This corresponds to a 14% decrease in fatalities, but an 8% and 9% increase in the number of road crashes and in the number of persons injured.

Trends in traffic and road safety (1990-2014)

Traffic

Between 1990 and 2013, the number of motor vehicles was multiplied by 2.7; the number of passenger cars was multiplied by 3.4; the number of trucks by 1.7 and the number of motorcycles was divided by 2.6. In 2013, 80% of the vehicle fleet was made of passenger cars.

Road safety

Crashes and casualties

The number of road fatalities peaked in 1991 with 1 267 road deaths. Since then it has been divided by nearly five, while the number of motor vehicles has gradually increased.

Since 1991, road safety can be analysed for the following periods:

- **1992-96**: In 1992, a significant reduction in the number of fatalities was observed, immediately after the fall of the Soviet Union. The following years saw dramatic changes in politics as well as economic austerity. Nevertheless there was a positive impact on road safety, mainly through the introduction of safer European vehicles into the market.
- **1997-2000** brought a relatively slight increase in the number of traffic fatalities, which reached a new peak in 1998. The number of casualties then dropped for two years as a result of an economic crisis in neighbouring Russia.
- In **2000-07** the economic situation in Lithuania started to improve and brought a rapid increase in traffic volume, which was accompanied by a yearly increase in road traffic fatalities.
- **2008-13**: An important breakthrough was achieved in 2008, with a growing awareness among citizens of road safety issues and the leading role of the European Union in setting a target to reduce by 50% the number of fatalities, between 2001 and 2010, which many EU countries achieved. In 2010 Lithuania reached the EU road safety target.

Rates

The 2013 death rate of 8.7 per 100 000 inhabitants was less than a third of the 1990 rate, yet it remains much higher than the EU27 average of 5.2.

Table 23.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	1 081	641	299	301	258	-14.3	-13.7	-59.8	-76.1
Injury crashes	5 135	5 807	3 530	3 173	3 417	7.7	-3.2	-41.2	-33.5
Deaths per 100 000 inhabitants	29.3	18.3	9.5	10.0	8.7	-13.4	-8.8	-52.4	-70.3
Deaths per 10 000 registered vehicles	12.7	5.0	1.4	1.3	1.1	-15.7	-18.7	-77.3	-91.1
Traffic data									
Registered vehicle (thousands)	849	1 286	2 145	2 238	2 276	1.7	6.1	76.9	168.2
Registered vehicles per 1 000 inhabitants	230	366	683	745	766	2.8	12.2	109.1	233.4

Road safety by user group

Car occupants and pedestrians are the main victims of traffic crashes. Pedestrians in particular represent more than one-third of casualties, a high share in comparison with other countries in the International Road Traffic and Accident Database.

Road safety by age group

Young people (18-24) are the age group the most at risk with a fatality rate of 13 fatalities per 100 000 inhabitants. Older people are particularly vulnerable as pedestrians.

Figure 23.1. **Road safety and traffic data index 1990 = 100**

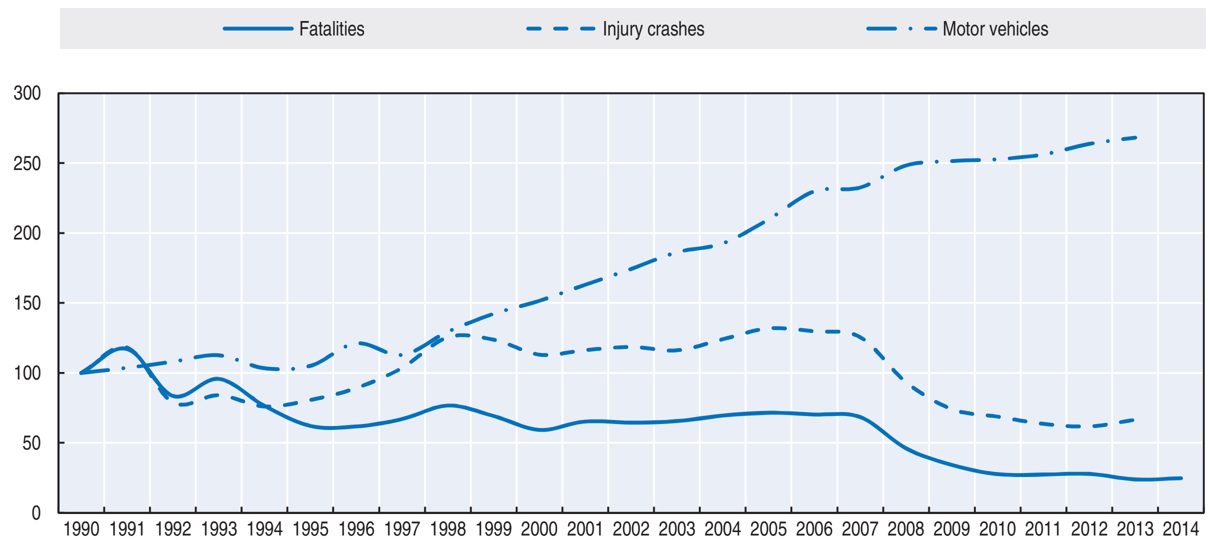


Table 23.2. **Road fatalities by road user group**

	2010	2012	2013	2013 % change from	
				2012	2010
Cyclists	23	32	18	-43.8	-21.7
Moped users	3	6	4	-33.3	33.3
Motorcyclists	15	15	16	6.7	6.7
Passenger car occupants	130	125	103	-17.6	-20.8
Pedestrians	108	105	98	-6.7	-9.3
Others	20	18	19	5.6	-5.0
Total	***299***	***301***	***258***	***-14.3***	***-13.7***

Child safety

In 2013, more than half of children killed were pedestrians, 28% were cyclists and 14 % were car occupants.

Table 23.3. **Road fatalities by age group**

Age	2010	2012	2013	2013 % change from	
				2012	2010
0-5	1	2	2	Figures too small for meaningful comparisons	
6-9	2	2	3		
10-14	4	8	2		
15-17	10	2	2		
18-20	18	28	17	-39.3	-5.6
21-24	25	27	22	-18.5	-12.0
25-64	173	181	155	-14.4	-10.4
≥ 65	62	49	54	10.2	-12.9
Total	***299***	***301***	***258***	***-14.3***	***-13.7***

Road safety by road type

In 2013, most road crashes occurred in built-up areas. However, crashes were more severe on rural roads, where speeds are higher and infrastructure for cyclists and pedestrians less developed. Lighting is present only on a small part of the network.

Figure 23.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

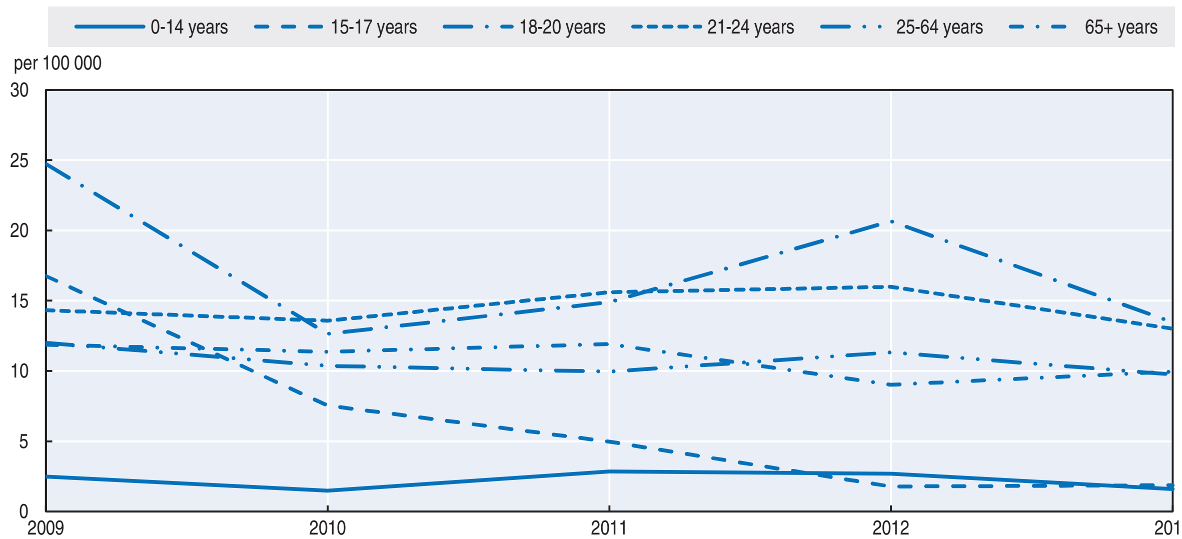
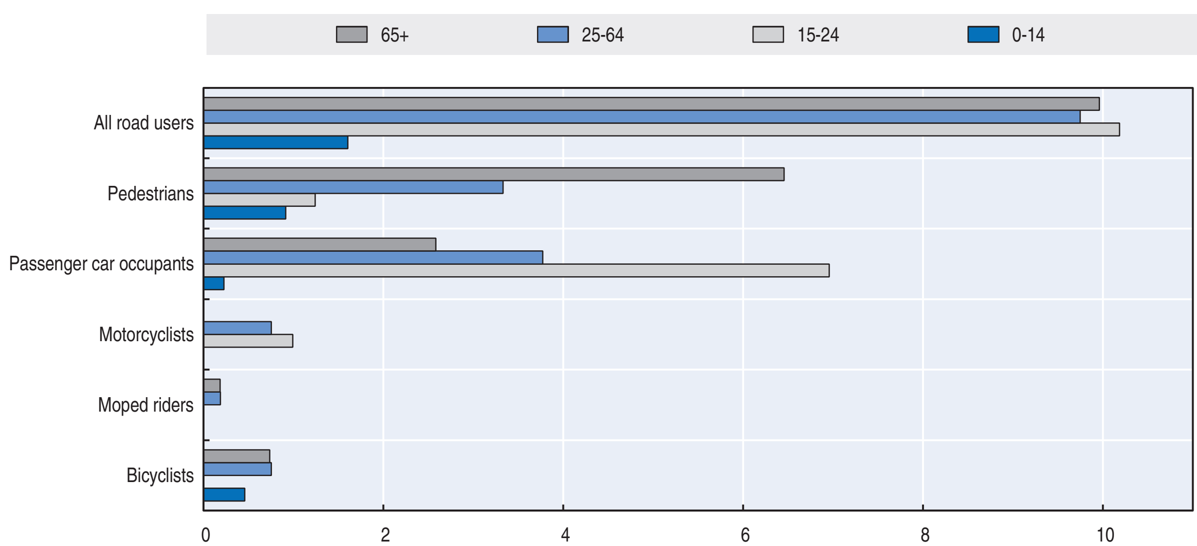


Figure 23.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants in 2013



In the past three years, the situation has improved on rural roads, but not on urban roads or motorways.

Economic costs of traffic crashes

Traffic crashes represent a significant cost for society, estimated in 2013 at around EUR 354 million, i.e. 1% of Gross Domestic Product. Costs are estimated using a "capital approach" method.

Figure 23.4. **Road fatalities by road type**

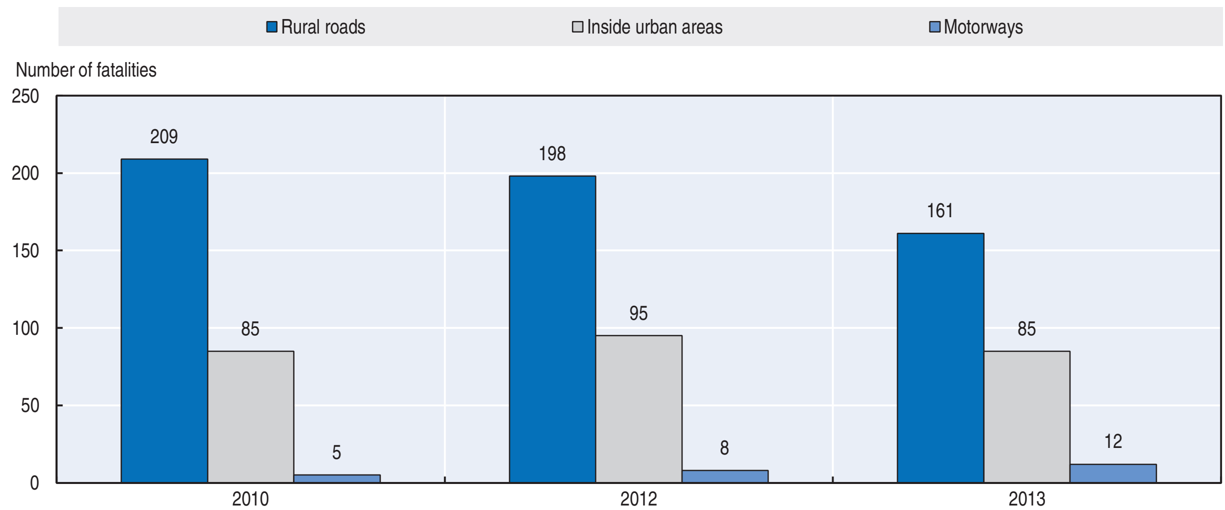


Table 23.4. **Costs of road crashes, 2013**

	Unit cost	Total
Fatalities		EUR 146 million
Injured people (serious and slight injuries)		EUR 208 million
Property damage costs		
Total		EUR 354 million
Total as % of GDP		1%

Recent trends in road user behaviour

Impaired driving

Drink driving

The general maximum authorised blood alcohol content (BAC) in Lithuania is 0.4 g/l and since 1 May 2015 0.0 g/l for novice drivers (less than 24 months driving experience), professional drivers, moped and motorcycle drivers.

Drivers controlled for being under the influence of alcohol have their licence withdrawn for 12-36 months and are fined EUR 150-900. The most dangerous violations (and repeat drink-driving offences) can be punished by an administrative arrest for 10-30 days.

In 2013, drink driving contributed to 10% of road crashes.

Between 2004 and 2013, the number of alcohol related crashes was halved. However, the share of crashes due to drink driving has remained stable at about 10%.

Drugs and driving

Drivers controlled for driving under the influence of drugs are subject to a fine (EUR 300-900) and a licence withdrawal of 12-36 months. They can also be subject to 10-30 days administrative arrest.

In 2013, it was estimated that 0.03% of road crashes involved drivers under the influence of drugs.

Distraction

It is not permitted to drive using a hand-held mobile phone. Hands-free mobile phones may be operated.

There is no estimate of the number of fatal crashes due to the use of mobile phone.

Speed

According to police data, inappropriate speed is the main cause of traffic crashes in Lithuania. Speeding by 30 km/h above the limit is considered a serious violation, incurring severe sanctions, including immediate licence withdrawal for novice drivers.

Observations in 2013 indicate that 13% to 24% of all drivers exceed the speed limit by more than 10 km/h on different types of state roads. In 2014 research showed that 33% of drivers exceed the speed limit by more than 10 km/h in urban areas.

The table below summarises the main speed limits in Lithuania.

Table 23.5. **Passenger car speed limits by road type, 2015**

Urban roads	50 km/h	-
Rural roads	90 km/h (70 km/h on gravel roads)	70 km/h for novice drivers (driving experience of less than 24 months)
Motorways	120 or 130 km/h (110 km/h in winter)	90 km/h for novice drivers

Seat belts and helmets

Seat belt wearing is compulsory in all seats. Children below 135 cm in height must use dedicated child restraints.

According to police data, in 2013, 45% of killed car occupants and 30% of killed drivers were not wearing a seat belt when the crash occurred. (In the road crash statistics, there is no distinction between rear and front seats.)

Table 23.6. **Seat belt wearing rate by car occupancy outside urban areas**

%

	2014
Front seats	95
Rear seats	33

All riders of two-wheeled motor vehicles are required to wear a helmet. Cyclists under 18 years old must wear a helmet.

National road safety strategies and targets

Organisation of road safety

The main stakeholder is the Ministry of Transport and Communications of the Republic of Lithuania, supported by the Lithuanian Road Administration. Police and municipalities are also agencies responsible for road safety.

Nominated by the government, the State Traffic Safety Commission comprises representatives of state and municipal administration bodies and NGOs. The commission makes recommendations on road safety policy.

Road safety strategy for 2011-2017

Following the encouraging results in the past decade, Lithuania developed a new National Traffic Safety Development Programme for 2011-17, based on the long-term vision that no one should be killed or seriously injured on Lithuanian roads.

Road safety target

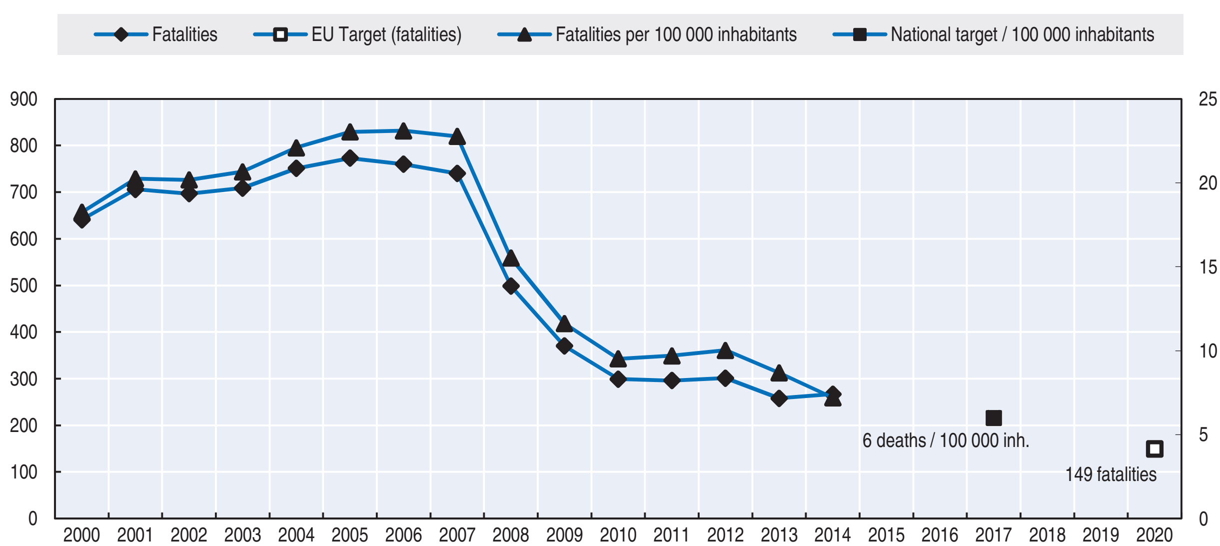
The main goal is to reach a mortality rate of fewer than six killed per 100 000 inhabitants, in order to be ranked among the 10 best performing countries in the European Union. To achieve this objective, it is planned to improve:

- road user behaviour
- vehicle safety
- infrastructure
- the rescue service quality
- the crash data collection system.

Monitoring

The figure below illustrates the trends towards the national target to reach a fatality rate of fewer than six fatalities per 100 000 inhabitants by the year 2017, and the EU target to halve the number of road fatalities between 2010 and 2020.

Figure 23.5. **Trends in road fatalities towards national and EU targets**



Evaluation of past road safety strategy

Lithuania successfully achieved the target set in the EU White Paper of reducing by 50% the number of traffic deaths in the period 2001-10. The number of fatalities was reduced 58%, from 706 to 299.

Recent safety measures (2012-14)

Road safety management

- Recent road safety management measures focused on the following areas:

- ❖ implementation of the EU Directive 2008/96/EC on road infrastructure safety management
- ❖ implementation of road network safety management (high risk site ranking, black spot management); road safety inspections; road safety audits and road safety impact assessment.

Road users

Cyclist safety

- Since 2014, cyclists are required to wear a bright coloured and reflective vest in daytime (it was already compulsory at night-time), or alternatively to ride with lights on.

Infrastructure

- In 2014 a national method to manage city black spots was approved and a pilot project was implemented for the five largest cities.

Websites

- Ministry of Transport and Communications of the Republic of Lithuania: *www.transp.lt*.
- Road and Transport Research Institute: *www.ktti.lt*.
- Lithuanian Road Administration: *www.lra.lt*.

Chapter 24

Luxembourg

*This chapter presents the most recent crash data for Luxembourg, as well as an update on the country's road safety strategy and recently implemented safety measures.**

* All data stem from STATEC unless otherwise noted. For more information please contact: Marie-Jo. Airoldi@statec.etat.lu.

Since 1990, the number of vehicles registered in Luxembourg has almost doubled, but the national traffic depends to a large extent on foreign vehicles that cross the country and transport 45% of the working population to their job from homes in France, Belgium and Germany. Speeding was the presumed contributing factor for 19% of the 35 fatalities in Luxembourg in 2014, and alcohol impairment was cited for 22%. The government is expanding speed cameras and section control systems, and a law is in Parliament to punish impaired driving more severely.

Road safety data collection

Definitions applied in Luxembourg

- Road fatality: Person killed in a traffic crash or who died because of an injury within 30 days of the crash.
- Serious injury: Injury causing a person to be hospitalised for at least 24 hours.
- Slight injury: Injury requiring less than 24 hours of hospitalisation.

Luxembourg is not using the Maximum Abbreviated Injury Scale of three or more to define serious injuries for the time being but the administrations concerned and hospitals are preparing the system for operation by 2016.

Data collection

Data are collected by the National Police called to the scene of crashes. Their reports are transmitted to the national statistical institute (STATEC) for data compilation.

The number of fatalities is checked twice by police reports and media.

Most recent safety data

Road crashes in 2014 – final data

The final figure for 2014 is 35 road deaths, a decrease of 10 fatalities compared with 2013. Compared to 2010, the number of persons seriously injured decreased by 8%. In the period March to October 2014, eight motorcyclists were victims of a fatal road crash.

Speeding is the presumed contributing factor for 48% of all fatalities. It is estimated, that 19% of road fatalities and 22% of seriously injured casualties are due to surpassing the maximum authorised blood alcohol content (BAC).

Road crashes in 2013

In 2013, 45 persons were killed in a road crash. This represented an increase of 11 fatalities compared with 2012. Compared to 2010, the number of persons seriously injured increased by 19%.

In the period July to September 2013, eight motorcyclists were victims of a fatal road crash.

Speeding is the presumed contributing factor for 39% of all fatalities. It is estimated that 20% of road fatalities and 23% of seriously injured casualties are due to driving impaired by alcohol.

Trends in traffic and road safety (1990-2014)

Traffic

As Luxembourg is bordered by larger countries there is much traffic in transit (including heavy goods vehicles) as well as many workers who cross the border every day to go to work. Traffic increases every year.

Since 1990, the number of vehicles has almost doubled. However, the vehicle fleet in Luxembourg is not an adequate measure of road mobility. The number of cars circulating and kilometres driven in Luxembourg depends to a large extent on foreign vehicles involved in road transport, transit, and other pursuits. Luxembourg has 563 000 inhabitants (as of 31 December 2014), and it has more than 160 000 workers who commute to work from Belgium, France and Germany, many of whom travel daily by car. Moreover, fuel is cheaper than in neighbouring countries, which attracts many car drivers from elsewhere to refuel in Luxembourg.

Road safety

Crashes and casualties

Fatalities peaked in 1970 with 132 road deaths.

Between 1990 and 2013, the number of fatalities has globally followed a downward trend with some fluctuations. In recent years (2000-13), the decrease in the number of fatalities was sustained (-41%).

Most crashes happen in rush hours when border workers (45% of the working population) are on the roads. One fourth of the seriously injured and killed people in road accidents are foreigners.

Rates

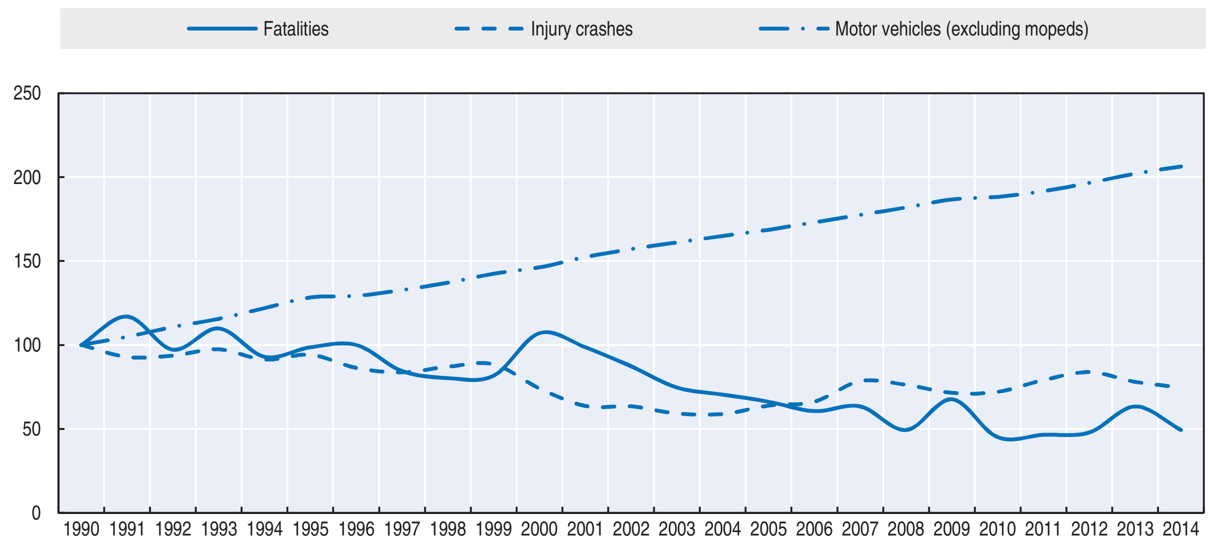
Since 1990, the death rate per 100 000 inhabitants has decreased by more than 60%, while the number of vehicles per 1 000 inhabitants has increased by more than 30%.

Table 24.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	71	76	32	34	45	32.4	40.6	-40.8	-36.6
Injury crashes	1 216	901	876	1 019	949	-6.9	8.3	4.9	-23.6
Injured persons hospitalised	556	400	266	339	316	-6.8	18.8	-21.0	-42.3
Deaths per 100 000 inhabitants	18.7	17.5	6.4	6.5	8.4	29.3	31.5	-52.2	-55.2
Deaths per 10 000 registered vehicles	3.3	2.5	0.8	0.8	1.1	28.8	31.0	-57.1	-67.3
Traffic data									
Registered vehicles[1] (thousands)	205	300	386	403	414	2.8	7.3	38.2	93.5
Registered vehicles per 1 000 inhabitants	540	688	769	768	771	0.4	0.3	11.6	36.7

1. Registered vehicles excluding mopeds.

Figure 24.1. **Road safety and traffic data index 1990 = 100**



Road safety by user group

Since 1990 the number of fatalities or serious injuries has decreased for all user groups. The reduction was more important for car occupants, with the number killed or seriously injured in road accidents halved between 2000 and 2014. Motorcycle fatalities and serious injuries only dropped by 16 % between 2000 and 2014, while the number of pedestrians killed or seriously injured decreased by 42%.

Table 24.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Bicyclists	1	1	1	0	0				
Moped users	0	0	0	0	0				
Motorcyclists	8	8	1	5	8	Figures too small for meaningful comparisons			0
Passenger car occupants	51	53	27	22	30				-41
Pedestrians	10	11	1	6	5				-50
Others	1	3	2	1	2				
Total	***71***	***76***	***32***	***34***	***45***	***32.4***	***40.6***	***-40.8***	***-36.6***

Road safety by age group

Since 1990, all age groups have benefited from the improvement in road safety.

Road safety by road type

In Luxembourg most fatal crashes occur on rural roads. These crashes can be attributed, to a large extent, to high speed or drink-driving.

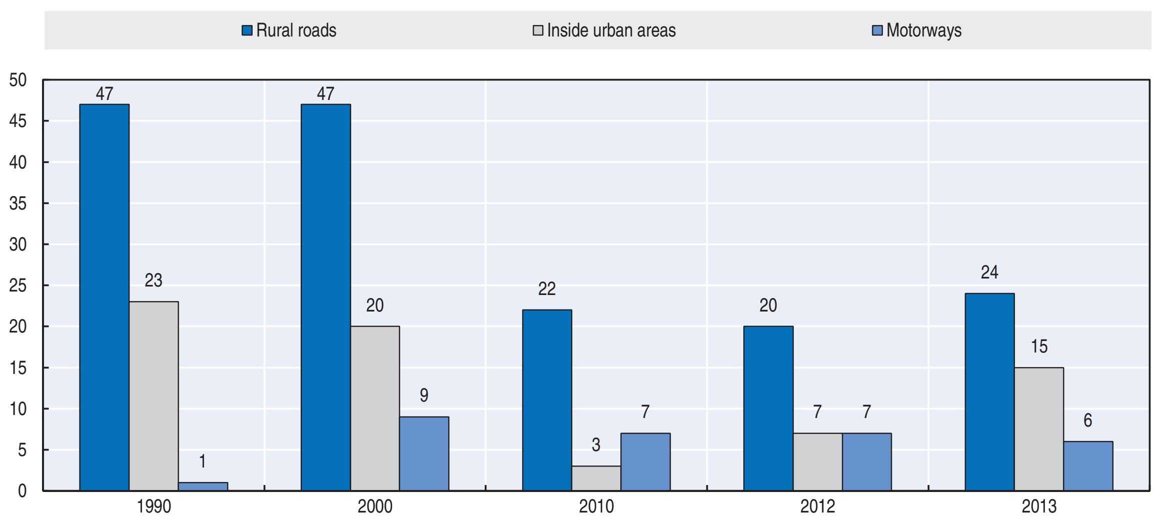
Economic costs of traffic crashes

There is no information available.

Table 24.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	1	1	0	1	1	Figures too small for meaningful comparison			
6-9	2	1	0	0	0				
10-14	1	1	0	0	1				
15-17	2	1	0	2	0				
18-20	11	5	6	3	1				
21-24	8	11	4	3	4				
25-64	34	45	19	16	29				
≥ 65	11	10	3	9	0				
Total	***71***	***76***	***32***	***34***	***45***	***32.4%***	***40.6%***	***-40.8%***	***-36.6%***

Figure 24.2. **Road fatalities by road type**



Recent trends in road user behaviour

Impaired driving

Drink driving

In Luxembourg, the maximum authorised blood alcohol content is 0.5 g/l, and 0.2 g/l for novice and professional drivers.

An alcohol-related crash is defined as an injury crash where at least one of the involved drivers or pedestrians has a blood alcohol content of more than 0.5 g/l.

In 2014, 19% of the fatal crashes were classified as alcohol-related.

Drugs and driving

The maximum blood drug content authorised for the following drugs is: THC, 2 ng/mL; amphetamine, 50 ng/mL; Methamphetamine, 50 ng/mL; MDMA, 50 ng/mL; MDA, 50 ng/mL; morphine, 20 ng/mL; cocaine, 50 ng/mL; benzoylecgonine, 50 ng/mL.

In 2014, as in 2013, one fatal crash was classified as drug-related.

Distraction

The use of hand-held phones while driving is forbidden. A new law with tougher sanctions was adopted in April 2015. The use of hands-free devices while driving is authorised since 2009.

In 2013, according to police records, one fatal crash was due to distraction by electronic devices.

Fatigue

In 2013, according to police records, two fatal crashes were due to fatigue.

Speed

The table below summarises the main speed limits in Luxembourg. There has been no change in the legislation concerning speed limits for the last 10 years.

Table 24.4. **Passenger car speed limits by road type, 2015**

Urban roads	50 km/h
Rural roads	90 km/h
Motorways	130 km/h 110 km/h (in rain)

Seat belts and helmets

Seat belt use has been compulsory in front seats since 1975 and in rear seats since 1992. The use of child restraints is compulsory since 1992. In 2003, the rate of seatbelt use was around 80% in the front seats of passenger cars.

Helmets are compulsory for all motorcycle and moped riders since 1976. The compliance rate is unknown.

National road safety strategies and targets

Organisation of road safety

The Department of Transport in the Ministry of Sustainable Development and Infrastructure is in charge of road safety.

Road safety strategy for 2011-20

In 2014, a roundtable gathered all national road transport actors to elaborate an action plan to improve road safety. Priorities include:

- fighting against speeding
- safety of vulnerable road users
- strengthening of the demerit point system introduced in 2002
- road safety campaigns to raise awareness of pollution and risky behaviours
- implementation of automatic speed controls
- improvement of the road infrastructure.

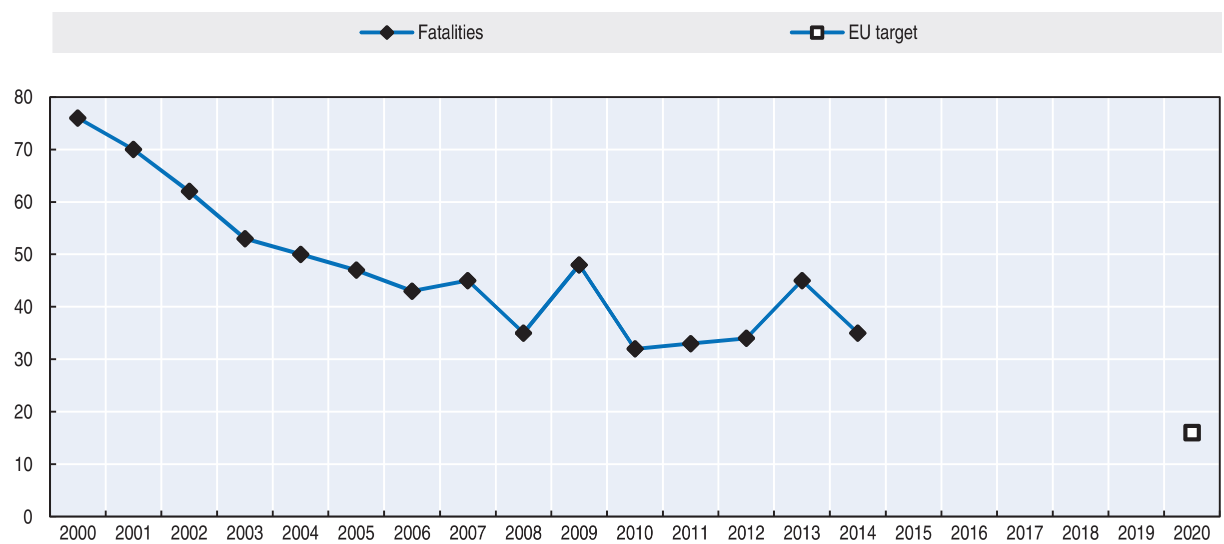
Road safety targets

Luxembourg adopted the European Union (EU) target to halve the number of fatalities by 2020. The target was defined by analysing the reasons and circumstances under which fatal and serious injury crashes occur.

Monitoring

To meet the EU target, there should be no more than 16 fatalities by 2020. It should be noted that in 2010 – which is the base year for the EU target – the number of road fatalities in Luxembourg was very low (32 deaths), which makes the achievement of the target even more challenging.

Figure 24.3. **Trends in road fatalities towards EU target**



Recent safety measures (2012-14)

Road safety management

Speed management

- Speed cameras and section control systems are progressively being implemented.
- In 2014, the Ministry of Sustainable Development and Infrastructure issued a guideline on traffic calming in urban areas: Guide on lowering motorised traffic speeds within an urban area (*www.mt.public.lu/presse/communiques/2013/05/14apais/apais_trafic.pdf*).

Road users

- More severe sanctions for the non-use of seat belt will be introduced.
- Parliament is considering a new law punishing impaired driving more severely (demerit point system).

Infrastructure

- A new working group to analyse and improve cycling networks was created within the Ministry of Sustainable Development and Infrastructure.

- In 2014, the Ministry of Sustainable Development and Infrastructure issued new guidelines on pedestrian crossing in urban areas *www.mt.public.lu/presse/communiques/2014/04/22stats/CCE_pass_pietons.pdf*.
- Special warning signs were installed on the entire road network around hazardous locations for motorcyclists.

Websites

- Road safety Luxembourg: *www.securite-routiere.lu*.
- Ministry of Sustainable Development and Infrastructure: *www.mt.public.lu*.
- STATEC: *www.statistiques.publiques.lu*.

Chapter 25

Malaysia

*This chapter presents the most recent crash data for Malaysia, as well as an update on the country's road safety strategy and recently implemented safety measures.**

* Data included in this report are provided by MIROS unless otherwise noted, and have not yet been validated by IRTAD. For more information please contact: allyana@miros.gov.my.

In 2014, Malaysia launched a new road safety plan, aligned with the Global Decade of Action for Road Safety, which aims at halving the predicted number of fatalities by 2020. Motorcycles are the key to success, as they make up half of the motorised fleet and nearly two-thirds of road deaths.

Road safety data collection

Definitions applied in Malaysia

- Road fatality: Death resulting from a road crash within 30 days after the crash.
- Seriously injured person: Person injured as a result of a road crash as referred to section 320 of the Penal Code.
- Slight injuries: Any injury that does not fit under death or serious injury.

Data collection and processing

The Royal Malaysian Police (RMP) is the agency responsible for collecting crash data. In Malaysia, all road crashes must be reported to the police. Since 1992 police have used a standardised form, POL27, to collect all relevant information for each crash. The form covers information on vehicles involved, environment, injury, location and background of the crash as well as information on the victims. Malaysia has begun work to evaluate underreporting.

Data and information reported in the POL27 form are manually transferred into the computerised Police Reporting System (PRS), a third generation database that covers not only road traffic data but also other crime-related data.

The Malaysian Institute of Road Safety Research (MIROS) developed in 2008 a system called M¬ROADS to simplify data use by automating the data query request. M-ROADS serves as an intelligence system to provide road safety stakeholders with accurate, continuous and comprehensive information on road accidents. M-ROADS builds on input from existing nationwide road accident data collected by the traffic police to generate analysis and findings.

Most recent safety data

Road crashes in 2014 – provisional data

Based on provisional data by the Royal Malaysian Police, there were 6 674 road deaths in 2014, a 3.5% decrease compared to 2013. This is the largest reduction in the number of road fatalities in the past 10 years.

Road crashes in 2013

Based on police data, there were 6 915 road fatalities in 2013, two fewer than in 2012. The number of injury crashes fell by 25% and the overall number of traffic casualties by 19%. The lack of progress in reducing the number of fatalities is mainly due to one severe bus crash in which 38 persons died.

Motorcyclist riders are the most affected by road crashes. In 2013, they represented 62% of all fatalities while car drivers and passengers represented 20% of fatalities.

Trends in traffic and road safety (1990-2014)

Traffic

Since 2000 the number of registered vehicles has more than doubled, with motorised two-wheelers representing nearly half of the fleet. The volume of traffic has followed the same trend with a 10% increase just for the year 2013.

Road safety

Crashes and casualties

Between 2004 and 2012, fatalities increased every year. For the first time a decrease was observed in 2013. The number of reported injured road users (serious and slight) and injury crashes have shown a marked declining trend. This information is based on police recorded data, and it is likely that there is a large underreporting for injury crashes.

Between 2000 and 2013, fatalities increased by 15%, which can be partly associated with the rapid rise of motorisation in the country, as the number of registered vehicles doubled during the same period.

An impact analysis of Malaysia's safety interventions shows that the road safety programme which started in 1998 was able to significantly reduce traffic deaths.

Rates

The mortality rate is high (23 deaths per 100 000 inhabitants in 2013). However, the risk in terms of deaths per distance travelled or per registered vehicle has decreased significantly since 2000, due to the large rise in motorisation in Malaysia.

Between 2000 and 2013, the death rate in terms of deaths per 100 000 inhabitants declined by 11%, as a result of a rapid growth in population. Risks expressed in deaths per billion vehicle-kilometres and in deaths per 10 000 registered vehicles both decreased by more than 40%.

Table 25.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	4 048	6 035	6 872	6 917	6 915	0.0	0.6	14.6	70.8
Injury crashes	25 766	44 165	21 397	17 522	12 985	-25.9	-39.3	-70.6	-49.6
Deaths per 100 000 inhabitants	22.7	25.9	24.0	23.4	23.1	-1.5	-3.9	-10.8	1.7
Deaths per 10 000 registered vehicles	9.0	5.7	3.4	3.0	2.9	-4.3	-14.3	-48.8	-67.6
Deaths per billion vehicle kilometres			16.2	13.4	12.2	-8.9	-24.8		
Traffic data									
Registered vehicles (thousands)		10 599	20 189	22 702	23 706	4.4	17.4	123.7	
Vehicle kilometres (millions)				517 194	567 291	9.7			
Registered vehicles per 1 000 inhabitants *including motorised two wheelers*		456	706	769	792	2.9	12.1	73.7	

Road safety by user group

In 2013, motorcycles represented 49% of the fleet but accounted for 62% of road deaths. Between 2000 and 2014 the number of motorcyclists killed increased by 19%.

In 2014, the situation improved for all road users except pedestrians.

Figure 25.1. **Road safety and traffic data index 2000 = 100**

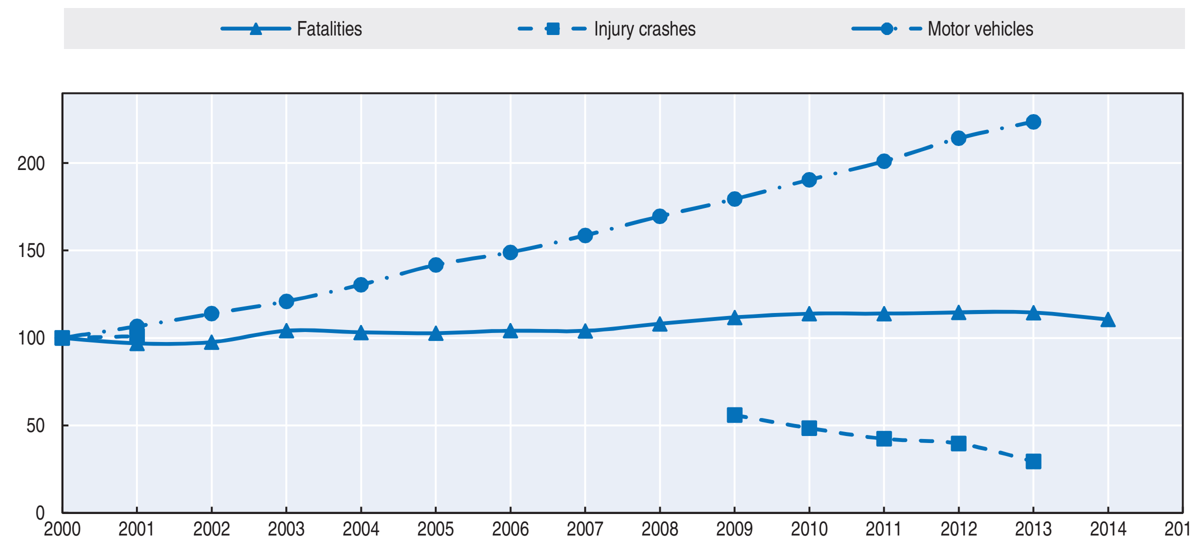
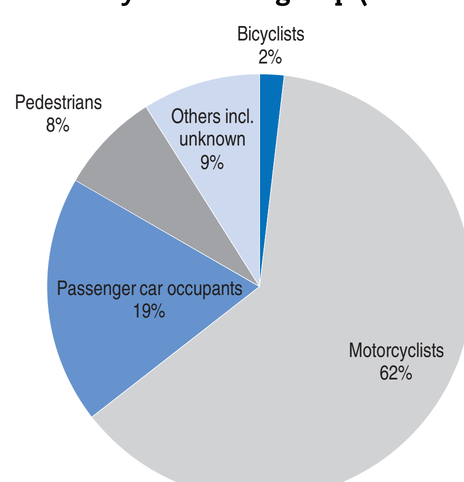


Table 25.2. **Road fatalities by road user group**

	2000	2010	2012	2013	2014	2013 % change from			
						2013	2012	2010	2000
Bicyclists	247	192	156	159	124	-22.0	-20.5	-35.4	-49.8
Motorcyclists	3 519	4 036	4 178	4 294	4 179	-2.7	0.0	3.5	18.8
Passenger car occupants	1 253	1 421	1 435	1 399	1 258	-10.1	-12.3	-11.5	0.4
Pedestrians	721	626	530	455	515	13.2	-2.8	-17.7	-28.6
Others	295	579	618	608	598	-1.6	-3.2	3.3	102.7
Total	***6 035***	***6 872***	***6 917***	***6 915***	***6 674***	***-3.5***	***-3.5***	***-2.9***	***10.6***

Figure 25.2. **Road fatalities by road user group (share of total fatalities) 2014**



Road safety by age group

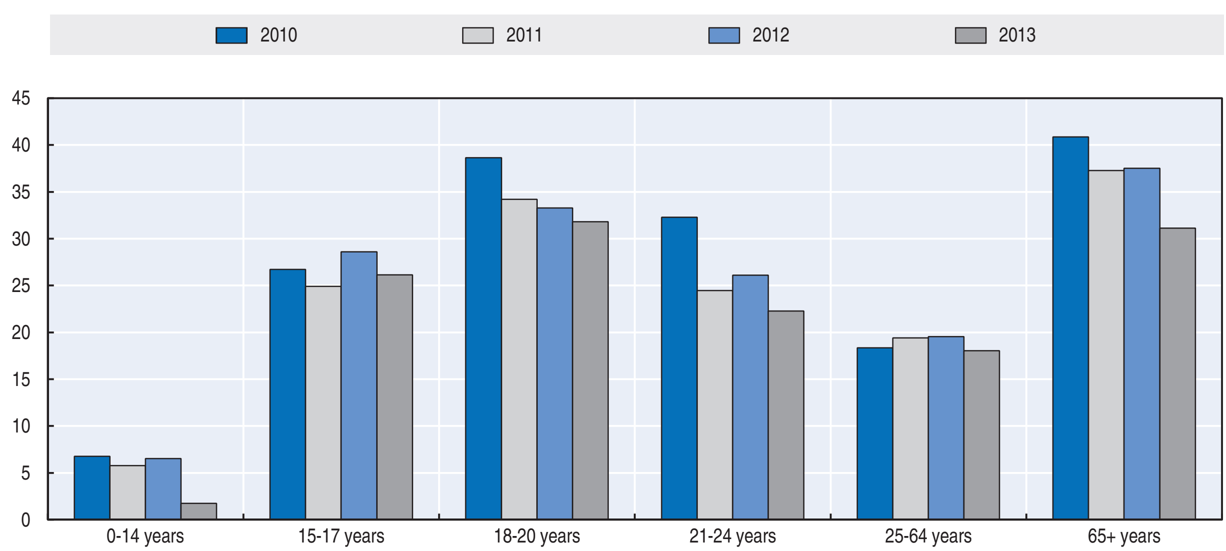
Over the past 10 years the fatalities distribution by age show the highest fatalities among young persons aged 16 to 25.

Table 25.3. **Road fatalities by age group**

Age	2012	2013	2014	2014 % change from	
				2013	2012
0-5	24	59	75	27.1	212.5
6-10	59	47*	66	40.4	11.9
11-15	385	296*	326	10.1	-15.3
16-20	1 032	960	1 131	17.8	9.6
21-25	1 116	1 139	891	-21.8	-20.2
26-30	789	856	855	-0.1	8.4
31-65	2 897	2 890	2 716	-6.0	-6.2
≥ 65	615	668	614	-8.1	-0.2
Total	***6 917***	***6 915***	***6 674***	***-3.5***	***-3.5***

The young (18-20) and the elderly (above 65) have the highest fatality rate, about 30 deaths per 100 000 inhabitants.

Figure 25.3. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group



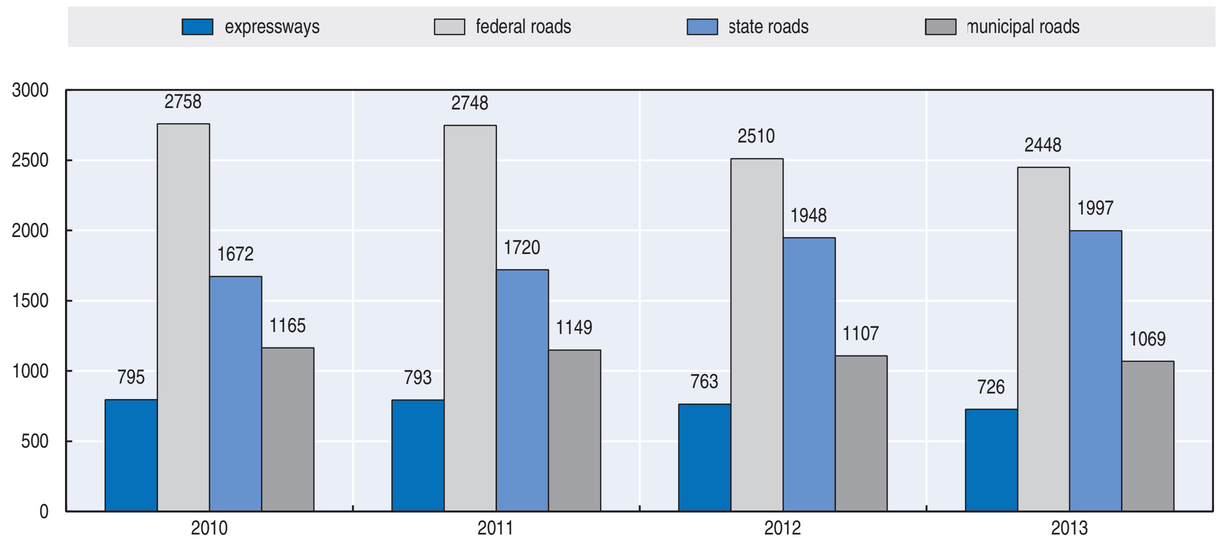
Road safety by road type

In Malaysia, roads are classified in five categories: Motorways, federal roads, state roads, municipal roads and others. The number of fatalities on federal roads is the highest, followed by state roads.

Economic costs of traffic crashes

Traffic crashes represent a significant cost for the Malaysian society. Based on a willingness-to-pay estimation, traffic crashes cost each year around 1.6% of the national

Figure 25.4. **Road fatalities by road type**



gross domestic product. The statistical value of life in Malaysia is RM 1.3 million, around EUR 330 000 (Nor et al., 2003; Mohd Yussof et al., 2011).

Recent trends in road user behaviour

Impaired driving

Drink driving and drugs and driving

In Malaysia, according to the Road Traffic Act, it is an offence to drive a vehicle with a blood alcohol over the legal limit of 0.8 g/l (Road Transport Act, 1987).

Islam is the state religion in Malaysia and around 60% of the population is Muslim. Alcohol is available at licensed outlets for the consumption of non-Muslim citizens. Police-reported data indicates that drink driving is not an issue in Malaysia, with less than 0.5% of drivers in fatal crashes tested positive for blood-alcohol content.

However, a retrospective sectional study based on post-mortem files from the Department of Forensic Science of the Kuala Lumpur Hospital of 391 drivers killed in crashes in a four year period revealed that 23% were positive for alcohol, 11% were positive for drugs and 2.3% were positive for both drugs and alcohol. Among illicit drugs, the opiate group (5.4%) was at the top of the list of drugs detected among fatally injured drivers. The distribution was 2.8% positive for amphetamines, 1.0% for cannabis and 0.8% for ketamine. This study is representative of the situation in Kuala Lumpur only, and not that of the whole country (Norlen et al., 2012).

Distraction

It is prohibited to drive while using a hand-held mobile phone. According to the law, “no driver, whilst driving a motor vehicle on a road, shall use, or attempt to use, a hand-held telephone or any other communication equipment”. However, there is no official record on the number of crashes due to mobile phone use.

Fatigue

Information on fatigue is not available from the national crash database collected by the police. However, MIROS carries out in-depth crash investigations on some crash cases.

From 2011 through 2013, a total of 167 cases were investigated by MIROS. Based on these in-depth investigations, it was found that fatigue was the fifth cause of road crashes.

Table 25.4. **Crash contributing factors in Malaysia, 2011-13**

Main crash contributing factors based on in-depth investigation of 167 cases	Number	%
Risky driving	75	29
Speeding	68	26
Conspicuousness	55	21
Road defects	27	10
Fatigue	17	7
Brake defects	6	2
Tyre defects	4	2
Driving under the influence	3	1
Safety, health and environment	2	1
Overloading	2	1

In 2008, MIROS completed a research on fatigue among commercial bus drivers in Malaysia which showed that the prevalence of fatigue among them was 38% (MIROS, 2008).

Speed

Based on the MIROS study on contributing factors, speeding is one of the main causes of road crashes. The table below summarises the main speed limits in Malaysia.

Table 25.5. **Passenger car speed limits by road type, 2014**

Urban roads	50 km/h
Rural roads	90 km/h
Motorways	110 km/h

A study undertaken in 2011 (Jamilah et al., 2011) shows that the compliance by Malaysian drivers to the 90 km/h posted speed limit on rural roads varies between 54% and 75%.

Seat belts and helmets

Seat belt use has been compulsory in front seats since 1978 and in rear seats since 1 January 2009.

The compliance rates among drivers and front passengers are, respectively, about 85% and 75%. Awareness of the regulation is high. The compliance rate for rear seats was 40% shortly after the law came into force in 2009 but is now declining. Following intense enforcement activities in February 2012 the seat belt wearing rate for drivers increased to 91%. The seat belt wearing rate for front seat passengers was 83%, but only 11% for rear seat passengers. In 2014, the seat belt wearing rate decreased for both drivers and passengers. The compliance rate among drivers and front passengers were 82% and 68%, respectively, and the seat belt wearing rate was 9% (Wahida et al., In Press).

Helmet wearing has been compulsory for motorcycles since 1973. However, there is still an alarmingly high rate of motorcyclist fatalities due to head injuries. In general, the helmet wearing rates are higher in urban areas than in rural areas. The overall compliance rate is about 74% (Firdaus et al., In Press).

Table 25.6. **Seat belt wearing rate by car occupancy and road type**

%

	2009	2012 (intensive enforcement)	2014
Front seat			
• drivers	85	91	82
• passengers	75	83	68
Rear seat passengers			
Adults	40 (after law came into force)	11	9

National road safety strategies and targets

Organisation of road safety

The Road Safety Department of the Ministry of Transport is the lead agency for road safety in Malaysia. The Malaysian Institute of Road Safety Research provides support by conducting road safety research to assist in elaborating strategies to reduce road traffic deaths.

The other main stakeholders involved in road safety in Malaysia are principally the Royal Malaysian Police, the Public Work Department, the Road Transport Department, the Malaysian Highway Authority, the Ministry of Transport, the Ministry of Health, the Ministry of Education, the Land Public Transport Commission and other road related agencies. In addition, several non-governmental organisations are actively involved in road safety in Malaysia.

Road safety strategy for 2014-20

A new road safety plan was launched in 2014 and covers the period 2014-20. The Plan is aligned with the Global Decade of Action for Road Safety and designed to:

- increase efforts to reduce the number of traffic casualties
- support the recommendations of the United Nations (UN) in the success of the Decade of Action
- gain political support and adequate resources for highway security initiatives.

It is based on the five Pillars of the UN Decade of Action Plan:

- road safety management
- safer roads and mobility
- safer vehicles
- safer road users
- post-crash response.

Road safety targets

The plan has adopted the target set by the Global Decade of Action for Road Safety 2011-20, to reduce the *predicted* number of road deaths in 2020 by 50%.

Based on a report by MIROS, in the absence of a comprehensive road safety programme, there would be 8 760 road fatalities in 2015 and 10 716 in the year 2020. The target is therefore to have less than 5 358 deaths by 2020. This corresponds to an effective reduction of 22% in the number of road deaths when compared to 2010 level.

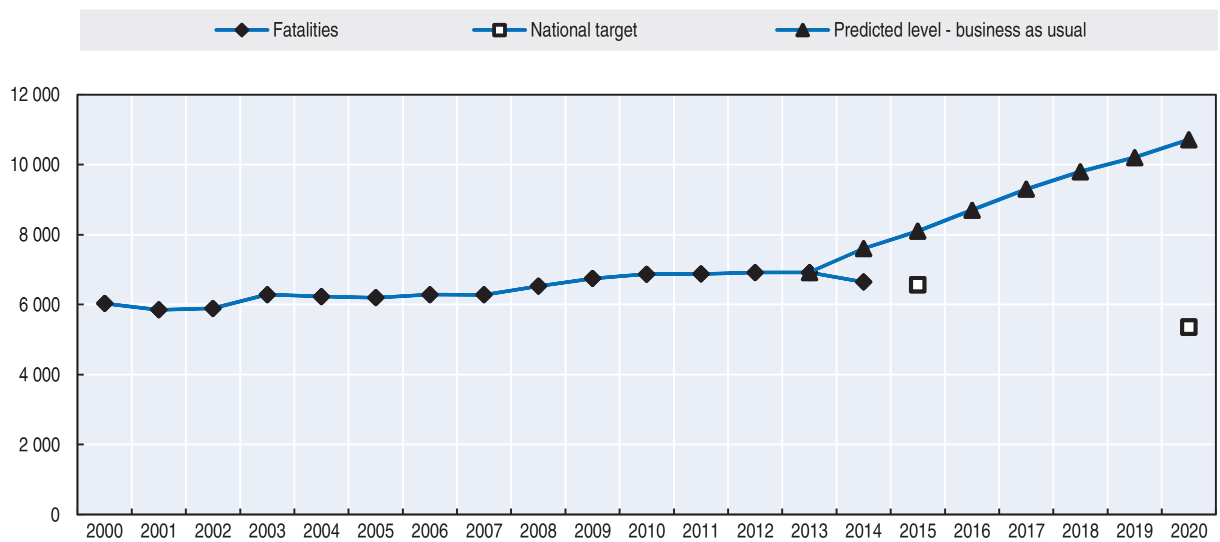
Table 25.7. **Fatalities target**

	2015	2020
Predicted number of fatalities (business as usual)	8 760	10 716
Fatalities targets with the implementation of the plan	6 570	5 358

Monitoring

The road safety plan progress is monitored by key performance indicators aligned with the recommendations of the Global Plan for the Decade of Action for Road Safety.

Figure 25.5. **Trends in road fatalities towards national target**



Evaluation of the past road safety strategy 2006-10

The 2006-2010 road safety strategy had set a number of objectives, in particular to reduce the fatality risk to 10 deaths per 100 000 inhabitants and to 2.0 deaths per 10 000 registered vehicles.

Although neither main target was achieved, other achievements were made during this period and are expected to yield results in the 2014-20 strategic plan. These include:

- The Road Safety Department was created as a lead agency, and it has played an important role in co-ordinating road safety efforts conducted by various agencies.
- The road safety research centre MIROS was created in 2007 as a research institute covering the three main road crash factors, human behaviour, road and environment and vehicle safety. MIROS conducts research to inform policy making and has been involved in planning and developing the Malaysian Road Safety Plan 2014-20.
- Road safety education was introduced in primary schools. An independent injury surveillance study shows a significant reduction in the number of road crashes among children in their second and fourth year of school in districts that benefited from this programme (Kulanthayan et al., 2011).

Recent safety measures (2012-14)

Road safety management

Community-Based Programmes

- A six-month community based programme was carried out in two districts in Putrajaya where there is a high rate of motorcyclist fatalities due to failure to wear or improper use of safety helmet. The programme involved social marketing campaigns, education and enforcement activities with a view to increase higher compliance with proper helmet wearing. The programme led to higher compliance in the district benefiting from this programme as compared to districts without the programme. Helmet wearing increased from 70% to 86% for drivers and from 64% to 82% for motorcycle passengers (Yusof, 2013).

ISO 39001:2012 Road Traffic Safety Management Systems

- The International Organisation for Standardization standard ISO 39001:2012 specifies requirements for a road traffic safety management system to enable an organization that interacts with the road traffic system to reduce death and serious injuries related to road traffic crashes. Malaysia began implementing ISO 39001:2012 with four organisations (the Royal Malaysian Police, a vehicle inspection body, a logistic company and an energy provider).

Road users

Automated Enforcement System

- After a long preparatory phase, the programme of using cameras to enforce speeding and red light violations was implemented in September 2013. The programme began at 14 locations. Before implementation, compliance with speed limits on weekdays was on average 63%; it increased to 91% after camera installation. The prevalence of driving through a red light was at 4.3% before the camera installation and decreased to 2.2% after the camera was installed. The programme promises to continue to encourage safer driver behaviours and should contribute future reductions in crashes and casualties.

Infrastructure

Authorised Left Turn

- This measure allows vehicles to turn left at intersections with traffic signals, while the traffic light is red, if the conditions are safe. Vehicles drive in the left lane in Malaysia, so left turns do not cross a lane of oncoming traffic. There are certain criteria for choosing the right signalised intersection for this purpose. This policy was launched in October 2012 by the Kuala Lumpur Municipality. To date, seven intersections authorise left turns on red.

Vehicles

Safety Star Grading for Bus Operators

- In 2007, MIROS formulated the Code of Practice on Safety, Health and Environment for the Transportation Sector to address issues pertaining to road transport activities. It was integrated in 2010 into the Occupational Safety and Health Industry Code of Practice for Road Transport Activities to regulate and provide guidance for employers and employees on the proper and effective methods of handling occupational safety and health issues in road transport activities.

- To complement 2010 Code of Practice, MIROS introduced in 2013 the Safety Star Grading for Bus Operators. This is a consumer-based programme aimed at providing the general public an indicator on the safety performance of bus operators to make an informed choice on their transport operator. It also benefits the bus industry to improve its image and reputation, and spur improvement in the safety operations. This programme was launched 30 July 2013 by the Deputy Transport Minister, who concurrently announced the assessment results for the first express bus companies which had volunteered for assessment. Three of the 11 companies that participated were awarded with safety star grading. (Ilhamah et al., In Press)

New Car Assessment Programme (NCAP)

- MIROS is the lead agency for the ASEAN New Car Assessment Programme. The programme aims at developing and maintaining a vehicle safety database to rank the make and type of vehicle in terms of safety performance. MIROS's full scale crash laboratory facility is in operation since May 2012. NCAP awards a safety star rating to new cars based on safety performance in a crash test. This consumer-based programme will assist consumers to choose a safer car. The programme is supported by Automobile Associations from Malaysia, the Philippines and Singapore. In January 2013, ASEAN NCAP published results for seven popular models in the region.

Recent and ongoing research

- Motorcycle lanes

Three research studies were undertaken to assess the effectiveness of non-exclusive motorcycle lanes, which are relatively cheaper to create than exclusive lanes. One study found that 16% of motorcyclists did not use the provided facilities and another 2% misused the facilities. A second study found that when the motorcycle lane width was 2-2.5 metres and coupled with a 1 meter clear zone, motorcycle lane use increased. The third study calculated that crash risks were from zero to 1.25 crashes per kilometre per year for a non-exclusive motorcycle lane (Syed Tajul Malik Syed et al, in press; Alvin Poi, in press, Allyana, 2014).

- Impact Studies of Automated Enforcement System (AES) Implementation

Four studies were carried out to assess the effectiveness of automated enforcement system cameras. The studies were related to observation of compliance with speed limits and traffic lights as well as the perception and acceptance of road users towards the system. (Allyana et al., 2014; Hawa Mohammed Jamil et al., 2014)

- Obstructive Sleep Apnea among Commercial Vehicle Drivers in Malaysia

This research work highlighted highlight the prevalence of Obstructive Sleep Apnea among truck drivers and express bus drivers in Malaysia and efforts are being undertaken to address the issue. (Ameer Batcha Wahida et al., 2013).

- The Effect of Rear Seat Belt Advocacy and Law Enforcement in Reducing Injuries among Passenger Vehicle Occupants
- This paper assesses the effectiveness of encouraging and enforcing rear seat belt use in reducing injuries among passenger car occupants in Malaysia (Rohayu et al., 2013.)

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Chapter 26

Morocco

*This chapter presents the most recent crash data for Morocco, as well as an update on the country's road safety strategy and the recently implemented safety measures.**

* Morocco joined the International Road Traffic and Accident Database (IRTAD) group in 2014 as an observer country. The data in this report, unless otherwise noted, were provided by the National Committee for the Prevention of Traffic Crashes (CNPAC) and have not been validated by IRTAD. For more information please contact: boulaajoul@cnpac.gov.ma; bardan@cnpac.gov.ma.

With 100 registered vehicles per 1 000 inhabitants, motorisation is in its infancy in Morocco. While motorisation doubled between 2000 and 2013, road deaths increased just 1.4% in those years, and they declined by 8% in 2013 and by 8.7% in 2014. Pedestrians and users of two-wheeled vehicles remain the most affected group, accounting for 53% of fatalities. In urban areas, pedestrians and motorcyclists represented 78% of fatalities in 2013.

Road safety data collection

Definitions applied in Morocco

- Road fatality: Any person killed immediately or dying within 30 days as a result of a road crash.
- Seriously injured person: Any person injured in a road crash requiring hospitalisation for six days or more.
- Slightly injured person: Any person injured in a road crash requiring medical treatment or hospitalisation of less than six days.

Data collection

In Morocco, crash data are collected at the scene of the crash by police: The gendarmerie in rural areas and the national police in urban areas.

Police are expected to attend all injury or fatal crashes. Data related to accidents with only material damage are not recorded.

Crash information is filled in on a form similar to that used in France. This form contains information on the circumstances of the crash, the location, the casualties, etc. It is planned to progressively introduce Global Information System information into police reports.

Data are consolidated at the national level by the Directorate of Road Transport and Road Safety, part of the Ministry of Equipment, Transport and Logistics, and are entered into a database administered by the same entity since the 1970s.

Police are in contact with hospitals to complete their reports in case of injuries; however there is no detail on the specific level of injuries such as classifications using the International Classification of Diseases 10 system.

The level of underreporting is not known. In its 2013 global status report (WHO, 2014), the World Health Organization estimated that in 2010 the total number of road fatalities was about 5 700, while the reported number was 3 778. This estimate suggests that police reports cover 70% of road fatalities.

Most recent safety data

Road crashes in 2014 – provisional data

In 2014, there were 3 381 reported road deaths, a 11.7% decrease when compared to 2013. The number of serious injuries decreased by 15%, whereas the number of crashes increased by 0.3% and the number of slightly injured persons increased by 0.7%.

Road crashes in 2013

In 2013, there were 3 832 reported road fatalities, corresponding to a decrease of 8% compared to 2012.

Trends in traffic and road safety (1990-2014)

Traffic

Motorisation is growing quickly in Morocco. Between 2000 and 2013, the number of motorised vehicles nearly doubled. However, with 100 registered vehicles for 1 000 inhabitants, motorisation is in its infancy, and one can expect a large increase in the vehicle fleet in coming years. This will require the implementation of a wide range of road safety measures to avoid an explosion in the number of traffic crashes.

Road safety

Crashes and casualties

The number of police reported road fatalities peaked in 2011, with 4 222 persons killed.

Between 1990 and 2013, the number of reported road fatalities increased by 38%. Following an increasing trend, the number of road fatalities recorded a noticeably lower figure in 1996 (2 807 fatalities), when compared to the five previous years. This was attributed to an important effort in enforcement and a strong mobilisation of different road safety services.

From 1996 until 2004, when a National Road Safety Strategy was adopted, the number of road fatalities increased. During implementation of the national strategy (2004-13), the number of fatalities fluctuated. Measures taken as part of the strategy included:

- speed control
- black spot treatment
- construction of pedestrian and bicycle paths
- awareness campaigns for speed, seat belt and helmet use, fatigue and distraction, etc.
- reform of vehicle inspection
- reform of driving license exam
- introduction of a penalty point system.

Pedestrians and users of two-wheeled vehicles remain the most affected group, recording more than half (53%) of the total fatalities, while passenger car occupants account for 22% of fatalities. In urban areas, 78% of victims of traffic crashes are pedestrians and drivers of two-wheelers.

Crash data show that 30% of deaths are recorded during the holiday period of July, August and September.

Rates

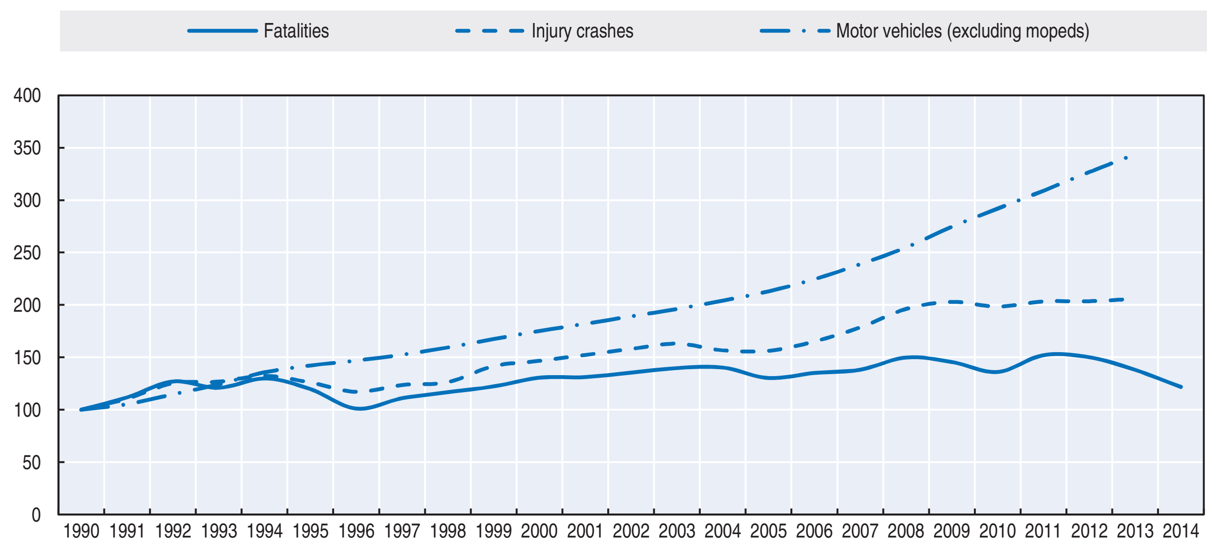
In 2013, the mortality rate was 11.6 deaths per 100 000 inhabitants; while the fatality risk was 11.7 per 10 000 registered vehicles. These rates are high when compared with OECD countries.

Table 26.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	2 777	3 627	3 778	4 167	3 832	-8.0	1.4	5.7	38.0
Injury crashes	32 992	48 350	65 461	67 151	67 926	1.2	3.8	40.5	105.9
Deaths per 100 000 inhabitants	11.5	12.7	11.8	12.8	11.6	-9.0	-1.8	-8.7	1.2
Deaths per 10 000 registered vehicles	29.0	21.7	13.5	13.3	11.7	-12.4	-13.7	-46.0	-59.8
Traffic data									
Registered vehicles[1] (thousands)	956	1 675	2 791	3 124	3 280	5.0	17.5	95.8	243.1
Registered vehicles per 1 000 inhabitants	40	59	88	96	100	3.9	13.8	69.2	151.6

1. Registered vehicles excluding mopeds.
Source: CNPAC.

Figure 26.1. **Road safety and traffic data index 1990 = 100**



Source: CNPAC.

Road safety by user group

Vulnerable road users (pedestrians, cyclists and motorcyclists) represent more than half of fatalities. Pedestrians are the main victims of traffic crashes, representing 26% of all casualties, followed by car occupants (22%) and motorcyclists (21%).

Since 1990, the situation has deteriorated for all user groups, and especially for motorcyclists, for whom fatalities have more than doubled despite a slight improvement in 2013. This dramatic increase parallels a very sharp increase in the motorcycle fleet in Morocco in the same period (+108%).

Between 2000 and 2013, pedestrian fatalities decreased by 11% and cyclists fatalities decreased by 3.4%, while motorcycle and passenger car fatalities increased by 96% and 22% respectively.

Road safety by age group

In 2013, the reduction in fatalities benefited all age groups, but the highest reduction concerned children aged 6-17, for whom fatalities decreased by more than 28%, from 400 in 2012 to 286 in 2013.

Table 26.2. **Reported road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Bicyclists	124	233	219	246	225	-8.5	2.7	-3.4	81.5
Motorcyclists	371	414	714	823	811	-1.5	13.6	95.9	118.6
Passenger car occupants	568	692	890	917	842	-8.2	-5.4	21.7	48.2
Pedestrians	987	1 132	995	1 138	1 004	-11.8	0.9	-11.3	1.7
Others incl. unknown	727	1 156	960	1 043	950				
Total	***2 777***	***3 627***	***3 778***	***4 167***	***3 832***	***-8.0***	***1.4***	***5.7***	***38.0***

Source: CNPAC.

Table 26.3. **Road fatalities by age group**

Age	2012	2013	*2013 % change from 2012*
0-5	168	155	-7.7
6-9	149	99	-33.6
10-14	139	105	-24.5
15-17	112	82	-26.8
18-20	189	177	-6.3
21-24	362	347	-4.1
25-64	2 513	2 383	-5.2
> 65	426	400	-6.1
Total	***4 167***	***3 832***	***-8.0***

Source: CNPAC.

Road safety by road type

More than two-thirds of crashes occur in built up areas, but the most severe crashes occur on rural roads where two-thirds of fatalities occur. Crashes outside urban areas are often related to speeding, leading to more severe consequences.

In 1990, the total length of motorways was less than 100 km and accounted for 2% of fatalities. In 2013, the total length of motorways amounted to 1 400 km and accounted for 7% of fatalities. In 2013, in urban areas, pedestrians and motorcyclists represented 78% of fatalities.

Economic costs of traffic crashes

Traffic crashes represent significant costs for the Moroccan society. In 2013, it was estimated that crashes cost EUR 1.6 billion. Based on estimates from the World Bank, crashes account for 2% of Morocco's Gross Domestic Product.

Recent trends in road user behaviour

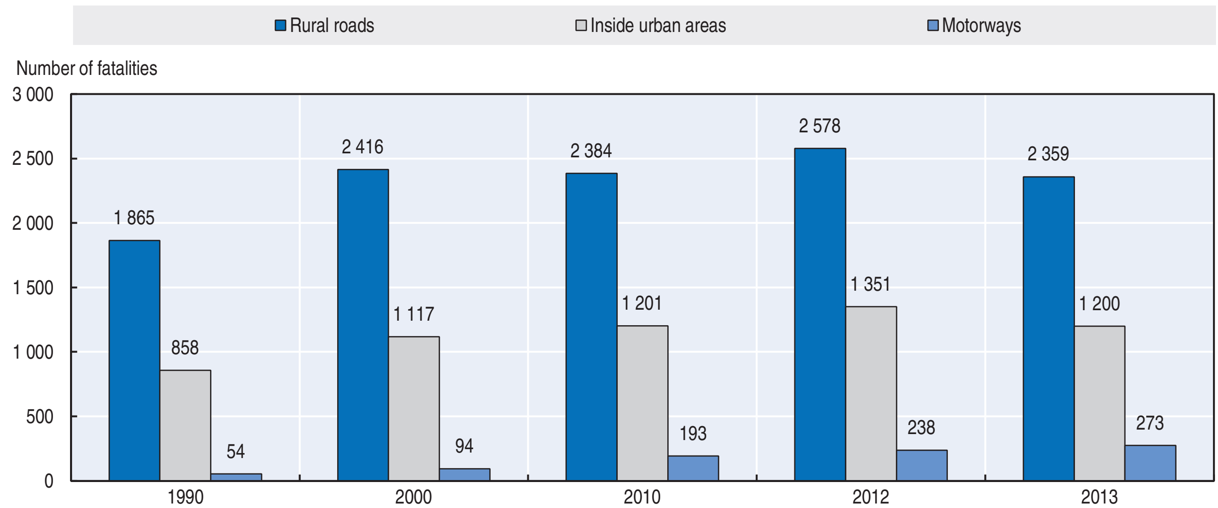
Impaired driving

Drink driving

Since October 2010, the Moroccan Road Code fixed the maximum permissible Blood Alcohol Content to 0.2 g/l when measured by blood sample and 0.1 mg/l when measured by breath testing.

In 2013, alcohol use was cited as a contributing factor in 2.3% of all crashes.

Figure 26.2. **Road fatalities by road type**



Source: CNPAC.

Drugs and driving

According to the Road Code, it is forbidden to drive under the influence of illicit drugs. This measure is not yet enforced.

Distraction

The use of hand-held phones while driving is forbidden. The use of hands-free devices while driving is authorised. In 2011, it was estimated that 12% of drivers were using a mobile phone while driving.

Fatigue

In 2013, it was estimated that about 1.2% of crashes were due to fatigue.

Speed

The table below summarises the main speed limits in Morocco.

Table 26.4. **Passenger car and truck speed limits by road type, 2014**

	General speed limit Passenger cars	General speed limit trucks > 3.5 t
Urban roads	60 km/h	60 km/h
Rural roads	100 km/h	90 km/h
Motorways	120 km/h	100 km/h

Source: CNPAC.

Seat belts and helmets

Seat belt use has been compulsory for front seats in rural areas since 1977, and since 2005 for front seats in urban areas and rear seats in rural areas. According to an observational study conducted in 2011, the wearing rate was 49% for drivers and 46% for front seat passengers.

Since 1976, all riders of motorised two-wheelers are required to wear a helmet. In 2011, the helmet wearing rate was 43% for drivers and 8% for passengers.

National road safety strategies and targets

Organisation of road safety

The agency responsible for the management of road safety is the Directorate of Road Transport and Road Safety in the Ministry of Transport, Infrastructure and Logistics.

In 2006, several committees dedicated to road safety were created: the Interministerial Committee for Road Safety chaired by the Chief of the Government; the Permanent Committee for Road Safety chaired by the Minister of Transport, Infrastructure and Logistics; and the Regional Committees for Road Safety. The Interministerial Committee is responsible for validation of national road strategies, co-ordination, monitoring the implementation of action plans and evaluation. The Permanent Committee for Road Safety has the role of Technical Secretariat for the Interministerial Committee. Among the members of this committees are: the Ministry of the Interior, Ministry of Justice, the Ministry of Health, Ministry of National Education, the Ministry of High Education and Scientific Research, the police, the Gendarmerie and the National Committee for Traffic Accidents Prevention.

There is a project to transform the National Committee for Traffic Accidents Prevention into a road safety lead agency.

Road safety strategy for 2011-2020

The previous National Road Safety Strategy covered the period 2004-13. The World Bank provides assistance in the preparation of a new road safety strategy that will cover the period 2016-25. Strategic orientations for the interim period 2014-15 are based on the same nine pillars as the former strategy:

- high level co-ordination
- legislation
- surveillance and vehicle inspection
- training of drivers and driving license systems
- infrastructure
- emergency and rescue
- communication and sensitisation
- education
- research and development.

Road safety targets

The former strategy did not set quantified targets.

Monitoring

Monitoring of the implementation of the strategy is ensured through regular meetings of the Interministerial Committee for Road Safety.

Evaluation of past road safety strategy

The previous National Road Safety Strategy that covered the period 2004-13 is now being evaluated as part of the World Bank technical assistance to Morocco on preparation of a new road safety strategy.

Recent safety measures (2012-14)

Road safety management

- All stakeholders in road safety brought into co-ordination committees.

Road users

- Automated speed enforcement system enhanced.
- Communication campaigns implemented on specific topics: Speed, vulnerable road users, seat belts, helmet use, use of mobile phone while driving.

Infrastructure

- Infrastructure improved with identification and elimination of black spots, installation of protective barriers and construction of bicycle paths.
- Road infrastructure and road signs harmonised.

Vehicles

- Buses equipped with anti-sleep driving alarm and alcohol ignition interlock system.
- Technical inspection of vehicles modernised and number of technical inspection centres increased.

Post-crash measures

- Ambulance fleet modernised and improved.
- Emergency medical rescue system (SAMU *[Service d'Aide Medical Urgente]*) and mobile medical emergency services (SMUR *[Service Mobile d'Urgence et de Réanimation]*) created in regional hospital centres.

Recent and ongoing research

- Black spots identified in the cities of Tangier and Tetouan.
- Road-user behaviour measured through roadside surveys: Seat belts and helmets, hand-held mobile phone use, crossing through a red traffic light or a stop sign, etc.

References

WHO (2014), *Global status report on road safety 2013,* World Health Organization, Geneva.

Websites

- Comité National de Prévention des Accidents de la Circulation (CNPAC): *www.cnpac.ma*.
- Ministry of Transport: *www.mtpnet.gov.ma*.

Chapter 27

Netherlands

*This chapter presents the most recent crash data for the Netherlands, as well as an update on the Dutch road safety strategy and recently implemented safety measures.**

* Statistics in the Netherlands distinguish between *reported* and *real* numbers of casualties. The former category covers casualties reported by the police. Real numbers are higher, as they take into account data available from sources such as hospitals and death certificates. This report uses the actual number of fatalities unless there is a specific reference to "reported" numbers.
All data stem from SWOV, the Ministry of Infrastructure and the Environment and IRTAD unless otherwise noted. For more information please contact: niels.bos@swov.nl.

The Netherlands is among the safest countries, with 3.4 road fatalities per 100 000 inhabitants. In 2013, fatalities were reduced 22% to 570, and the goal for 2020 is fewer than 500. Bicycles account for a fourth of all trips made by Dutch, and 8% of total distance travelled. Motor vehicle crashes cause fewer serious injuries than bicycle crashes, and the emphasis of road safety policy is now on vulnerable road users.

Road safety data collection

Definitions applied in the Netherlands

- Road fatality: Death resulting from a road crash within 30 days of the crash.
- Seriously injured: Person admitted to hospital for an injury with a Maximum Abbreviated Injury Scale score of two or more (MAIS2+).
- Slightly injured: Other injury, not admitted or admitted with a Maximum Abbreviated Injury Scale score of one (MAIS1).

Data collection

In the Netherlands, Statistics Netherlands works together with the Ministry of Infrastructure and the Environment *(Rijkswaterstaat)* to match police-reported fatalities with other records including court files and death certificate records to arrive at the actual number of road traffic fatalities. Both the police-reported number and the real number are published annually since 1996. This report uses the actual number of fatalities unless there is a specific reference to "reported" numbers. In 2013, the police number was 84% of the real number. For more information: *www.swov.nl/UK/Research/cijfers/Cijfers_Registratiegraad-UK.htm*.

Police reporting of road crashes does not meet the requirements of the Institute for Road Safety Research (SWOV, *Stichting Wetenschappelijk Onderzoek Verkeersveiligheid*) and the Ministry of Infrastructure and the Environment. A national information system for the police implemented in 2009 led to lower data quality and a smaller number of reported crashes. Eventually new procedures are intended to improve the police data.

Research on serious traffic injuries shows that the number of police-reported hospitalised casualties is not a good indicator. SWOV links the Dutch police data to hospital records and the MAIS score is affixed based on the International Classification of Diseases numbers used by hospitals. The estimated real number of serious injuries is now based on the data from both police and hospital databases, and the definition of a serious injury is based on the MAIS, not the police report. Based on this method, the Netherlands is also able to report on MAIS2 or MAIS3+.

Ambulance data are being made available for traffic safety research (years 2009-14). There are different reporting systems and external causes are not always recorded.

At the National Road Safety Congress on 24 April 2014, the Dutch Association of Insurance companies, the national police and road safety data consultant Via launched the

STAR Safety Deal. Eleven national stakeholders signed an agreement to facilitate crash reporting by road users. The STAR initiative aims to launch a smartphone app in the summer of 2015, enabling road crash reports by individuals, supported and (partly) verified by police or an insurance company.

Most recent safety data

Road crashes in 2014 – final data

In 2014 there were 570 road fatalities, the same number as in 2013.

Road crashes in 2013

In 2013, 570 people lost their lives in road traffic crashes. That is 80 fewer than in the previous year, and represents a drop of over 12%. The reduction is considerably higher than the European average of 8%. In particular, there were fewer fatalities among motorcycle riders, passengers in cars, cyclists and pedestrians.

The number of serious injuries was estimated at 18 800 which indicates a decrease of 4%.

Trends in traffic and road safety (1990-2013)

Traffic

Between 1990 and 2013, the number of motorised vehicles increased by more than 60% and the overall vehicle distance travelled by more than 30%. Passenger car mobility has decreased among younger drivers during recent years, levelling the rate of growth.

Since 2000, the proportion of mobility across the main transport modes has remained almost unchanged (KiM, 2013). In 2012, half of all trips were made by car, a quarter by bicycle, one in five by foot and one in 20 by public transport. Of the total distance travelled, the car accounts for nearly 75%, public transport for 13% and bicycles for 8%. About half of distance travelled is for visits to family or friends and for entertainment or recreational purposes.

From 2000 to 2012, bicyclists travelled 14% more. The largest share of this growth has been from electric bicycles, which have rapidly increased in popularity (KiM, 2013, 2014). The distance travelled by regular bicycles remained almost unchanged compared to the population size. Senior citizens travelled more by bicycle. There are more senior citizens, and they bicycle more. Distances per bicycle trip have increased due to better services offered to cyclists, the expansion of urban areas and the rising popularity of electric bikes. The current estimate (data 2013) is that 10% of Dutch people own electric bikes, and for people aged 65 and over, that proportion is 25%. E-bike users travel twice as far as those in the same age group riding regular bicycles.

Road safety

Crashes and casualties

Between 1990 and 2013, the number of fatalities decreased by 61%. From 2000 to 2013, the number of fatalities fell by 51% (numbers from 1990-95 were adjusted to compensate for underreporting).

Weijermars et al. (2014a) studied the major road safety development in the Netherlands in the period 2000-12 and underlying contributory factors. On the favourable side, the number of actual fatalities in the period of 2000-13 decreased from 1 166 to 570.

Less favourable developments were that the fatality rate among cyclists did not decrease significantly and the number of fatalities among the elderly decreased at a lower rate than for other age categories. Also, the number of seriously injured developed less favourably than the number of fatalities. The number of casualties in crashes in which no motorised vehicles were involved more than doubled between 2000 and 2011.

The traffic system changed considerably in the period of 2000-12. The design of the underlying road network improved and the enforcement for a number of unsafe activities (speeding, alcohol use, failing to use seat belts and helmets) was structurally intensified. Moreover, The European New Car Assessment Programme (Euro NCAP) for passenger cars played a major role in stimulating the production of safe vehicles. Passive vehicle safety systems such as airbags and seat belts played an important role in reducing injuries, and active safety systems for car bonnets and exterior airbags help protect pedestrians and cyclists in case of a crash. Improvements in the medical care, including more regionalisation, mobile medical teams and air ambulances, have further contributed to the decrease in fatalities. The national road safety policy emphasis has shifted to vulnerable road users (Weijermars et al., 2014b).

High risk behaviour included fatigue (10% to 15% of all serious crashes), alcohol consumption (20% of the fatalities), drugs and medicines, speeding (30% of the fatalities), distraction (5-25% of crashes), hazardous vehicle-spacing behaviour, emotions and aggression and red light running. The number of minor alcohol-related violations decreased substantially in the period of 2000-12. Reliable data about other traffic behaviour is not sufficiently available to discuss developments. Behavioural measures since 2000 have mainly focussed on enforcement of speeding, alcohol and red light running. National and local road safety campaigns put increasing attention on fatigue, distraction, cycling lights, aggression and drugs and medicines in traffic (Weijermars et al., 2014b).

Mortality rates

In 2013, there were 3.4 road fatalities per 100 000 inhabitants. Between 2000 and 2013, the mortality rate, expressed in terms of deaths per 100 000 inhabitants, fell by 54%.

Table 27.1. **Road safety and traffic data – numbers reported by police**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	1 376	1 082	537	562	476	-15.3	-11.4	-56.0	-65.4
Deaths per 100 000 inhabitants	9.2	6.8	3.2	3.4	2.8	-15.6	-12.4	-58.4	-69.3
Deaths per 10 000 registered vehicles	2.3	1.4	0.6	0.6	0.5	-15.6	-13.9	-65.0	-78.7
Deaths per billion vehicle kilometres	14.3	9.3	4.3	4.3	3,7	-14.9	-11.0	-59.8	-73.8
Traffic data									
Registered vehicles[1] (thousands)	5 911	7 641	9 340	9 573	9 612	0.4	2.9	25.8	62.6
Distance travelled (million kms)	96.355	116.299	127.928	127.912	127.358	-0.4	-0.4	9.5	32.2
Registered vehicles per 1 000 inhabitants	397	482	563	572	573	0.1	1.7	18.9	44.3

1. Registered motor vehicles excluding mopeds.

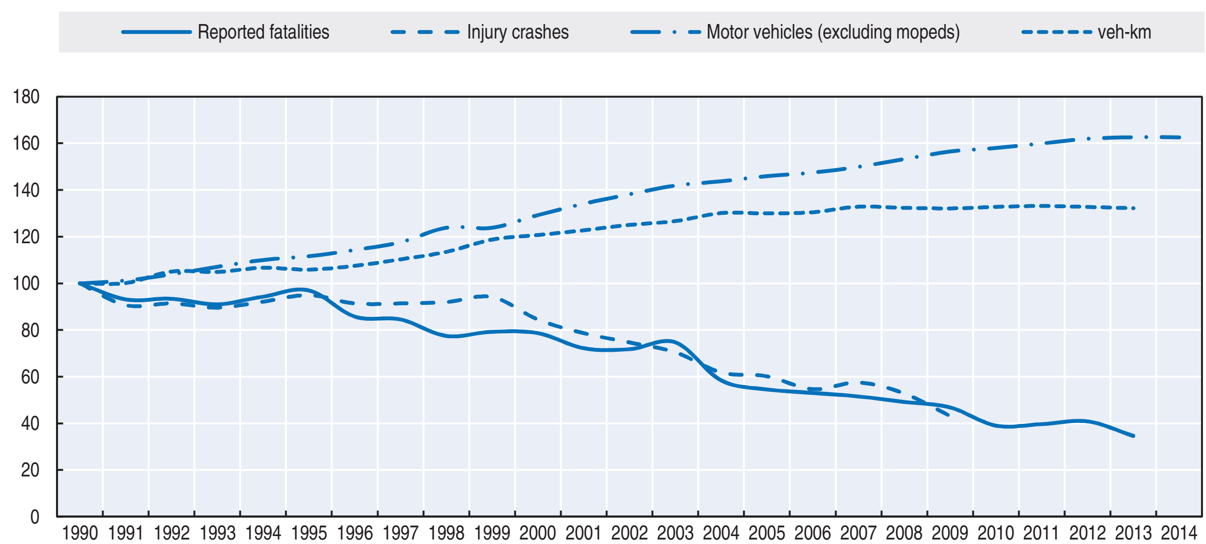
Road safety by user group

Over the long term all user groups, but especially car occupants, have benefited from safety improvements.

Table 27.2. **Road safety data - real numbers**

	2000	2010	2012	2013	2013 % change from		
					2012	2010	2000
Real safety data							
Fatalities	1 166	640	650	570	-12.3	-10.9	-51.1
Injured persons with score MAIS3+	5 220	5 700	6 400	6 500	1.6	14.0	24.5
Deaths per 100 000 inhabitants	7.3	3.9	3.9	3.4	-12.6	-12.0	-53.8
Deaths per 10 000 registered vehicles[1]	1.5	0.7	0.7	0.6	-12.7	-13.5	-61.1
Deaths per billion vehicle kilometres	10.0	5.0	5.1	4.5	-12.7	-13.5	-61.1

Figure 27.1. **Road safety and traffic data index 1990 = 100**



In the period 2000-13, all crashes involving a passenger car showed a sharp drop in the number of fatalities. The number of pedestrians and moped riders killed decreased by more than 50%. The number of cyclists killed fell by 21%.

Regarding injuries, many persons are injured in crashes without the involvement of a motor vehicle. While in some countries these victims are not considered as road traffic victims, their number in the Netherlands exceeds the number of those seriously injured in motor vehicle crashes.

In 2013 the number of fatalities fell for all user groups. There was a significant drop of 46% among motorcycle riders, and the reduction was most noticeable among 30-60 year old motorcyclists. The number of cyclists killed in traffic fell by 8%. As in previous years, the highest number of fatalities was for people travelling in passenger cars, but a decrease of 17% was also recorded for this group. More than half of car occupant fatalities were in single vehicle crashes.

In 2013 the real number of seriously injured (MAIS2+) was 18 800. Half of the seriously injured resulted from bicycle crashes (bicycle alone, bicycle-bicycle, bicycle-pedestrian and pedestrian-bicycle). Special attention is now being given to this growing group of injured persons.

Table 27.3. **Road fatalities by road user group – real data**

	2000	2010	2012	2013	2013 % change from		
					2012	2010	2000
Cyclists	233	162	200	184	-8	14	-21
Moped riders	104	43	44	48	9	12	-54
Motorcyclists	95	63	54	29	-46	-54	-69
Passenger car occupants	543	246	232	193	-17	-225	-64
Pedestrians	114	72	68	56	-18	-22	-51
Others	77	54	52	60	15	11	-22
Total	***1 166***	***640***	***650***	***570***	***-12.3***	***-10.9***	***-51.1***

Road safety by age group

The number of fatalities varies with age. Inexperienced riders and drivers are killed more often in traffic, as are vulnerable road users. In 2013, fewer people aged over 65 were victims of fatal road crashes. However, with 230 fatalities in 2013, they remain a vulnerable group, especially when cycling.

Table 27.4. **Road fatalities by age group – real data**

Age group	2000	2010	2012	2013	2013 % change from		
					2012	2010	2000
0-5	17	4	8	3	-63	-25	-82
6-9	15	5	5	2	-60	-60	-87
10-14	27	9	12	4	-67	-56	-85
15-17	57	20	15	14	-7	-30	-75
18-20	119	46	32	33	3	-28	-72
21-24	115	52	49	50	2	-4	-57
25-64	548	295	285	234	-18	-21	-57
≥ 65	268	209	244	230	-6	10	-14
Total	***1 166***	***640***	***650***	***570***	***-12.3***	***-10.9***	***-51.1***

Child safety

Compared to other age groups, relatively few children in the Netherlands aged 0-14 are killed in traffic. Casualties in this age group have diminished considerably over the past 20 years, more than in other age groups (SWOV, 2012a). This is due to a combination of measures in infrastructure, vehicles, safety devices and education. In absolute numbers, children aged 10-14 face the greatest safety risk cycling, mainly because at that age they began to more frequently participate in traffic as solo cyclists.

To further reduce the number of traffic casualties among children, additional measures are necessary, such as reducing driving speeds, separating slow and fast traffic, improving public information and improving the safety of vehicles. In the Netherlands measures to improve the safety of children in general and of cycling children in the last 10-15 years have included the following:

- mandatory lower driving speeds for motor vehicles at locations and times where many children are present
- annual campaigns aimed at car drivers, warning them that primary schools have begun again and that they should be alert to reduce speed near schools

- campaigns stimulating the voluntary use of bicycle helmets
- separation of slow and fast traffic with specific attention to separate cyclists, commercial vehicles and freight traffic at intersections
- education for children on how to act at intersections with freight traffic
- volunteer school crossing officers to help children pass dangerous crossings in traffic.

Figure 27.2. **Reported road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

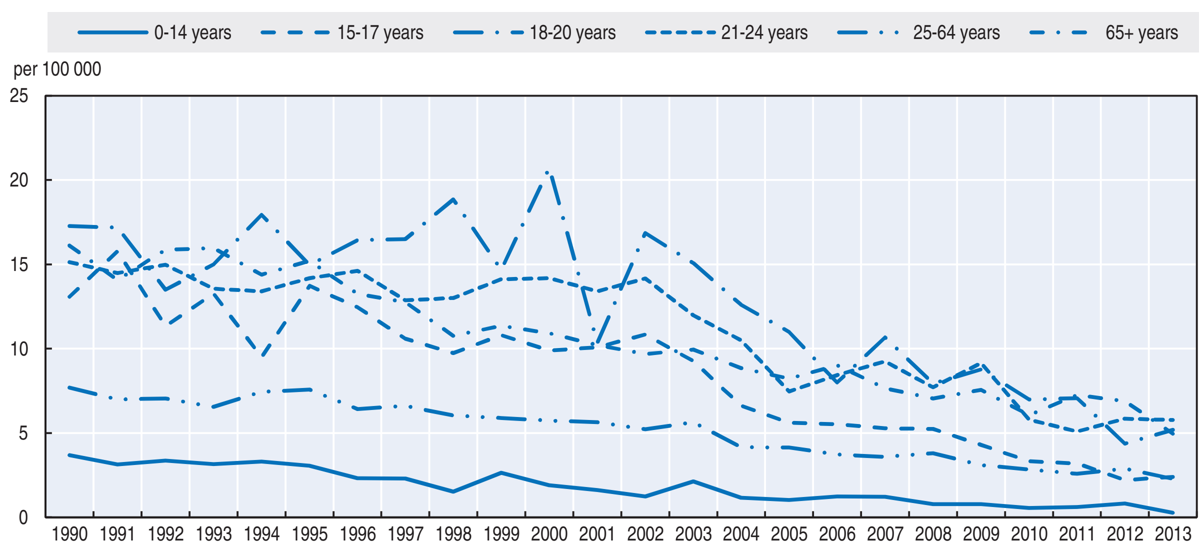
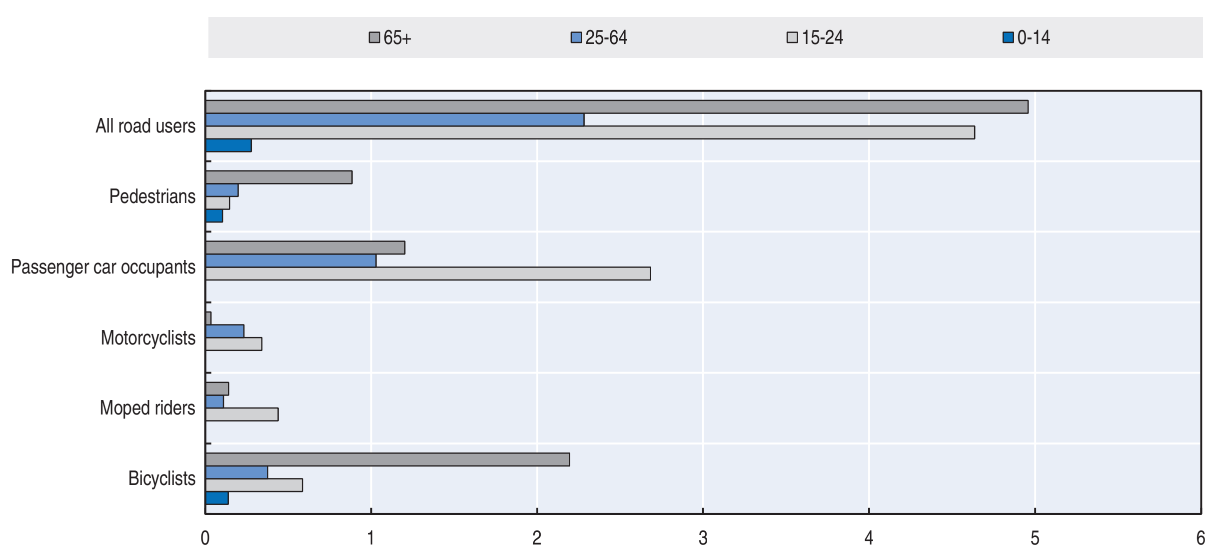


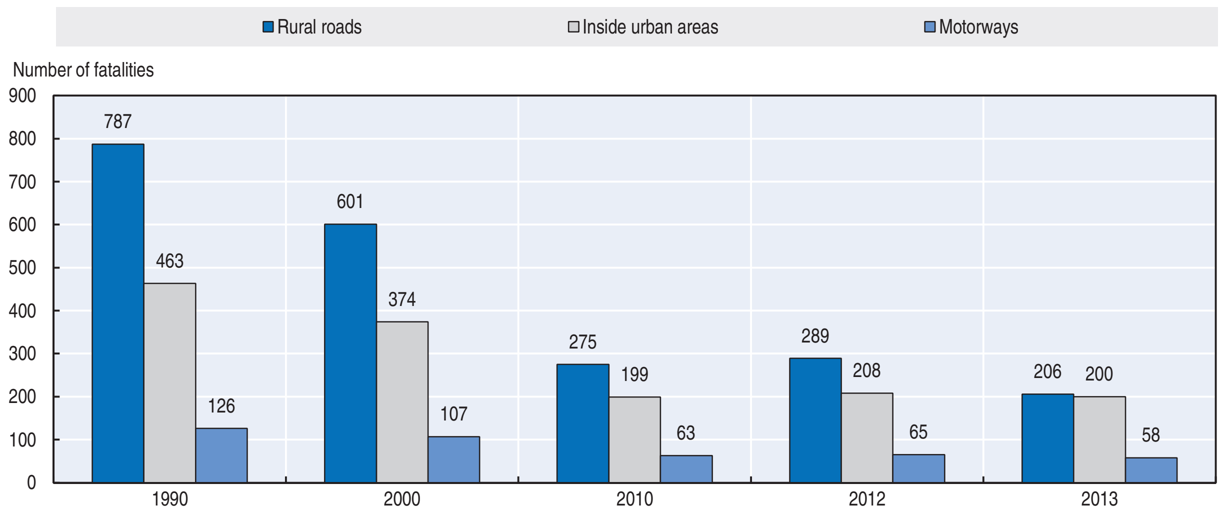
Figure 27.3. **Reported road death rate by age and road user group**
Fatalities per 100 000 inhabitants in 2013



Road safety by road type

In 2013, 43% of reported fatalities occur on rural roads, 42% on urban roads and 12% on motorways. The decrease in fatalities over the last 20 years has been achieved mainly through the improvement of rural roads. Traffic has significantly increased on motorways.

Figure 27.4. **Reported road fatalities by road type**



Economic costs of traffic crashes

Traffic crashes represent a significant cost for society, estimated in 2009 at around EUR 12.5 billion, or 2.2% of gross domestic product (SWOV, 2014). The following six categories have been included in the estimate:

- medical costs
- production loss
- loss of quality of life (based on a willingness-to-pay method)
- property damage
- settlement costs
- congestion costs.

Table 27.5. **Costs of road crashes, 2009**

	Unit	Total
Fatalities		EUR 1.9 billion
Serious Injuries (MAIS2+)		EUR 5.2 billion
Slight injuries		EUR 2.1 billion
Property/damage costs		EUR 3.9 billion
Total		EUR 13.1 billion
Total as % of GDP		2.2%

Recent trends in road user behaviour

Impaired driving

Drink driving

Until 2006, the BAC limit in the Netherlands was 0.5 g/l for all drivers, but in 2006 a lower limit of 0.2 g/l is applied for novice drivers during their first five years.

Alcohol related fatalities are defined according to the SafetyNet definition: Any death occurring within 30 days as a result of a fatal road crash in which any active participant was found with a blood alcohol level above the legal limit.

In the Netherlands, testing of a deceased person for recent use of psychoactive substances is prohibited. Police reports regarding the use of psychoactive substances by seriously injured road users is not reliable. Regional hospital studies found that in the period 2000-04, 28% of seriously injured drivers had a BAC of 0.5 g/l or more, and in the period 2007-09 this percentage was the same.

Drugs and driving

On 1 July 2015 legislation will come into effect to help control the use of drugs in traffic. This legislation entails legal limits being set for five different types of drugs. Furthermore, zero tolerance limits are proposed for combined use of drug-drug and drug-alcohol. Saliva testers and a test on physical features and behavioural characteristics will be made available to police in the Netherlands to enforce the proposed legislation.

Results of hospital studies show that approximately 10% of the seriously injured drivers were positive for illicit drugs. As for alcohol, Dutch legislation prohibits drug testing on a deceased person.

Distraction

Holding a phone while driving has been illegal in the Netherlands since April 2002. Additional legislation relevant to distracted driving is applicable in cases where behaviour that explicitly endangers road safety is directly observed.

In a large-scale Dutch national traffic survey in 2011 of more than 11 000 Dutch road users, 70% of car drivers reported never using a hand-held phone while driving, 28% reported doing so sometimes and 1% reported doing so frequently. In 2011, slightly more than 100 000 Dutch drivers were fined for hand-held phone use while driving, in 2012 about 64 000 drivers and in 2013 about 69 000 drivers. In 2012, the fine for hand-held phone use while driving was increased from EUR 180 to EUR 220.

Phone use in the Netherlands is estimated to have contributed to 3% to 4% of bicycle crashes involving injuries. This excludes listening to music.

Fatigue

A 2015 survey on fatigue among more than 1 500 Dutch car drivers showed that driver fatigue is a widespread problem. Nearly half of Dutch drivers (47%) reported that sleepiness negatively affected their driving performance, and 60% of car drivers said they continued to drive after they start to feel sleepy, and 10% continued driving even when the drive took more than one hour. Almost one quarter took no break when they started to feel sleepy. One in ten Dutch drivers said that they were aware of an increased driving risk from their sleepiness.

Speed

The introduction of new road types as part of the Start-Up Programme for Sustainable Road Safety (1997) has reduced speed limits on many roads. In 1998, 15% of urban roads had speed limits of 30 km/h or less. With the conversion of 50 km/h roads to 30 km/h in residential areas, by 2008 70% of urban roads had limits of 30 km/h or less. A similar development took place on rural roads (excluding state roads) where the usual limit is 80 km/h. In 1998, 3% of rural roads had a limit of 60 km/h, and by 2008, the percentage had risen to 60%. These infrastructure developments have reduced driving speeds substantially.

In 2010 driving speeds in built-up areas were monitored during 16 weeks encompassing different periods of an anti-speeding campaign in the Netherlands (Van Schagen et al., 2010). Small road-side radars were mounted on light poles on 20 locations, 10 for roads with a speed limit of 50 km/h and 10 for roads with a speed limit of 30 km/h. The average speed at the 30 km/h locations was well over the limit (36.1 km/h), while the average speed at 50 km/h locations was well below the limit (46.6 km/h). Substantially more speed violations occurred at 30 km/h locations (70% of the vehicles) than on 50 km/h locations (33% of the vehicles). Speeding measurement in 2011-12 showed similar findings (Duivenvoorden et al., 2013).

On motorways, environmental measures to reduce emissions and noise were introduced in 2006 on about 3% of the network, which entailed decreasing speed limits from 120 km/h or 100 km/h to 80 km/h.

As of 1 September 2012, speed limits were raised to 130 km/h on about half of motorways (except where speed limits were lowered due to environmental concerns). There is as yet no data on the effects of this measure.

The table below summarises the main speed limits in the Netherlands.

Table 27.6. **Passenger car speed limits by road type, 2015**

Urban roads	50 km/h
Rural roads	80 km/h
Motorways	130 km/h

Seat belts and helmets

Seat belt use has been compulsory in front seats since 1975 and in rear seats since 1992. At the last national seat belt measurement in the Netherlands in 2010, the rate of seat belt use was above 95% in front and rear seats in passenger cars. For vans (87%) and trucks, the rate of use was lower. No seat belt measurements have been performed since 2010.

Table 27.7. **Seat belt wearing rate by car occupancy and road type**

%

	1990	2000	2002	2006	2010
Front seats					
General		79	87	94	97
Urban roads (driver)	59	74	83	93	96
Rural roads (driver)	78 (in 1991)	86	91	94	97
Rear seats					
General	19	32	52	73	82
Child restraint use	-	-	45	72	68

In 2006, a series of new traffic laws resulted in a considerable improvement of the safe transport of children up to 135 cm tall. In 2002, less than half of the children observed in cars (45%) were transported with sufficient protection; in 2010 this had improved to 68%. Insufficiently protected means either unprotected transport (e.g. travelling in a seat without a seat belt, in an unattached baby carrier, or being seated on a passenger's lap) or transport with a protection device that does not meet the legal requirements (e.g. a seat belt where a child restraint device should be used).

Helmet wearing has been compulsory on motorcycles since 1972 and on mopeds (up to 50 cc, maximum speed 45 km/h) since 1975. A helmet is not compulsory on light mopeds (up to 50 cc, maximum speed 25 km/h) and cycles.

The percentage of riders wearing a helmet depends on the vehicle type: nearly all motorcycle riders wear helmets. In 2008, 96% of moped riders, but very few light moped riders, wore helmets. The use of moped helmets by passengers has increased and in 2008, 86% wore them. No national monitoring of helmet wearing has occurred since 2008.

National road safety strategies and targets

Organisation of road safety

In the Netherlands, the Ministry of Infrastructure and the Environment (Directorate General Mobility – Roads and Traffic Safety section) is the central agency for road safety, responsible for overseeing and co-ordinating all road safety activities. In particular, it is responsible for:

- co-ordination of intergovernmental working processes and road safety decision making at the level of central and regional government and co-ordination of national mass media campaigns
- periodic review of legislation, rules and standards against best practice; recommendations for improvement; monitoring and evaluation; establishing and supporting data systems used to monitor road safety
- compilation and dissemination of national statistics, co-operating with Ministry of Infrastructure and the Environment, Statistics Netherlands and SWOV.

Road safety strategy for 2008-2020

Road safety policy in the Netherlands is guided by a philosophy of sustainable road safety, based on several key concepts, including that the human being is the reference standard and prevention is preferable to a curative approach. The policy follows five safety principles: road functionality; homogeneity of mass and/or speed and direction; physical and social tolerance; recognition and predictability of roads and behaviour; and state of awareness.

In 2008, the Road Safety Strategic Plan 2008-2020 (SPV) was developed by the then Ministry of Transport and received support in Parliament. SPV is based on three cornerstones: co-operation, an integral approach and sustainable safety. Continuation of measures that have proven successful is ensured. Measures to reduce the risk of vulnerable road users and a tough approach on traffic offenders are among 12 areas of emphasis. Mobility demands and the social context of road users are taken into account.

In 2012, the SPV was revised in accordance with its four-yearly evaluation conducted by SWOV. The Policy Stimulus Road Safety Initiative contains extra measures aimed at road safety improvement for cyclists, elderly road users, infrastructure, and road users in general.

Road safety targets

The current targets in the SPV for 2020 are a maximum of 500 road fatalities and a maximum of 10 600 MAIS2+ road injuries. If current developments and efforts continue, the target for 2020 with respect to fatalities seems feasible. Without additional safety measures it will be very difficult to achieve the target for serious road injuries.

Monitoring

The plan is assessed every four years and adapted if necessary. As an aid to this four-yearly assessment, SWOV has forecasted the numbers of fatalities and serious road injuries that are to be expected in 2020. While making the forecast, SWOV checked whether the starting points for the SPV were still applicable and how the implementation of intended SPV measures is being carried out. Updating the strategy is a collective process: see *www.strategiedagverkeersveiligheid.nl/*.

Figure 27.5. **Trends in road fatalities towards national target**

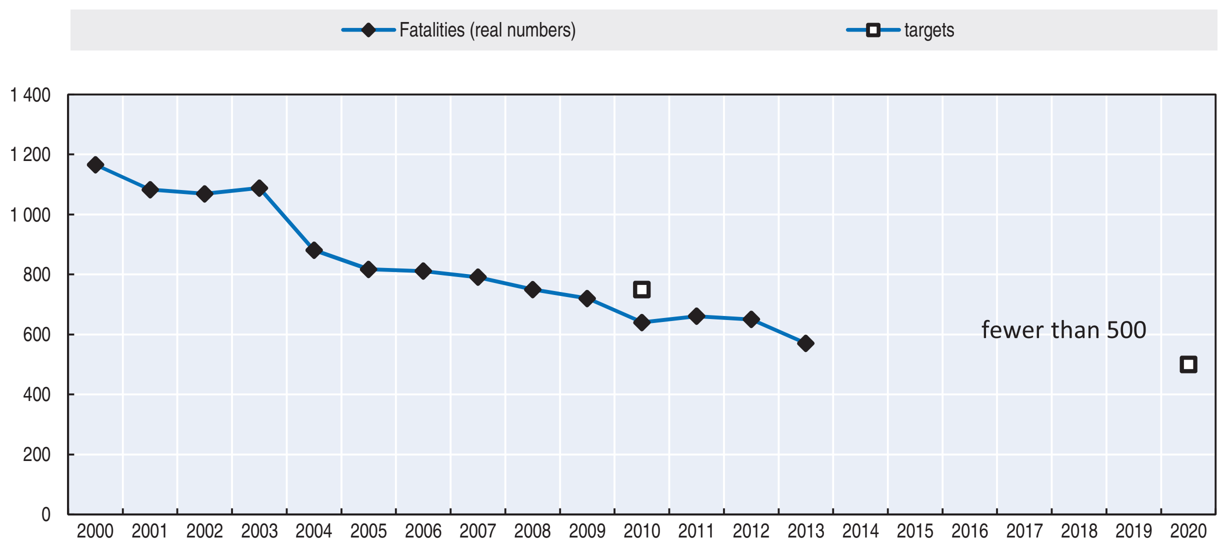
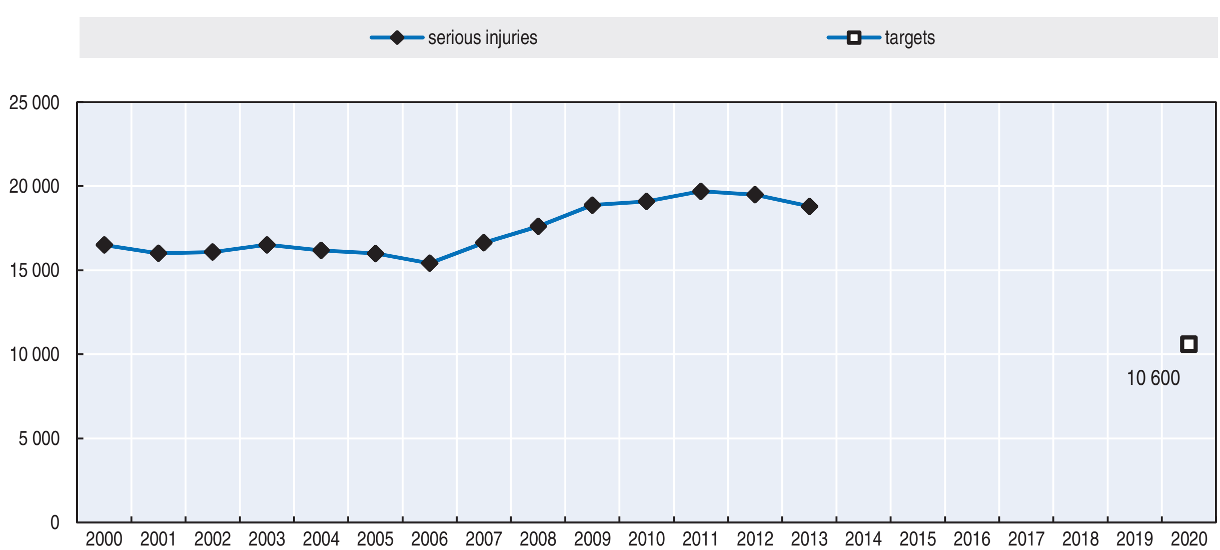


Figure 27.6. **Trends in seriously injured towards national target**



Evaluation of past road safety strategy

In 2009, SWOV published a report that reviewed the total road safety strategy in the period 1998-2007 (SWOV, 2009). This is the most comprehensive review of the effectiveness of the national road safety strategy and its underlying measures in the Netherlands.

Recent safety measures (2012-14)

Road safety management

- Mandatory inquiries into fatal crashes on the Trans European Transport Network are effective as of 1 January 2014.

Road users

Speed management

- The new limit of 130 km/h on motorways was introduced in September 2012 on 60% of the motorway network. On a third of this length the limit is dynamic, with 130 km/h allowed only during evening and night. On roads with environmental or safety concerns the 120 km/h limit was maintained. Preliminary analysis shows hardly any change in the level of safety. See *www.rws.nl/actueel/verhoging_maximumsnelheid*.

Education and licensing

- A six-year trial of accompanied driving "2toDrive" started in November 2011. This allows young people to start driving lessons at age 16½ and obtain their driving licence at 17 upon passing a standard driving test. Then, until they are 18, they will be able to drive only when accompanied by an experienced driver who meets certain requirements in terms of driving experience and behaviour. After age 18 they can drive unaccompanied. SWOV is conducting an extensive evaluation into the effects of 2toDrive. Preliminary results are available at: *www.swov.nl/rapport/R-2013-09.pdf* and: *www.swov.nl/rapport/R-2014-15.pdf*.
- Licensing for driving tractors will be changed 1 July 2015. The category T will be introduced after 2015, replacing the T-certificate. This concerns agricultural and forestry tractors and motor vehicles with a limited speed. In anticipation of the new category, theoretical and practical examinations to obtain the T certificate have already been changed to emphasise driving on public roads and road safety.

Cycling safety

- The Policy Stimulus Road Safety contains extra measures aimed at cyclists. It requires municipalities to survey road safety bottlenecks for cyclists and to make plans for improvement containing behavioural measures as well as infrastructural measures. To monitor progress in this domain all municipalities were asked to complete a survey on their cycling policies. (Weijermars et al. 2014b).

Mopeds

- The proper place for slow mopeds (speeds no higher than 25 km/h) is an issue: Should they use cycling paths or roadways in urban areas.

Infrastructure

- Provincial authorities have long range traffic, transport and mobility plans in which infrastructure measures play an important role. Weijermars et al. (2014) looked at 2010-13 infrastructure improvements within four Dutch provinces. Provincial infrastructure safety measures include reconstruction of risky intersections, construction of roundabouts, safer roadsides, upgrading or downgrading roads to achieve more credible speed limits, more recognisable and uniform road markings, safer cycling facilities, safer cycling crossings, safer cycling paths, more proactive monitoring of unsafe practices, and better integration of maintenance and infrastructure improvement activities.

- In March 2008, the Dutch Government announced that all two-star roads, based on the European Road Assessment Programme system, would be raised to three-star or better. Work began in 2010 and it is anticipated that the national network will have no road scoring lower than three-stars by 2020.
- The Ministry of Infrastructure and the Environment has invested in improving road safety on the national roads network and implemented three infrastructure improvement programmes: safer road shoulders, reconstruction of intersections and construction of roundabouts.

Vehicles

- The development of passive vehicle safety systems and the increasing penetration rate of safety technologies play an important role in reducing injuries. Fairly new are active bonnet safety systems and airbags on the outside of the body of the vehicle to protect pedestrians and cyclists in case of a crash.

Post crash measures

- Trauma care is undergoing regionalisation and Mobile Medical Teams have been introduced, four of which have an air ambulance at their disposal (Weijermars et al., 2014a). These and further improvements in the medical care have contributed to the decrease in the number of fatalities in the period 2000-12.

Recent and ongoing research

- Protecting pre-license teens from road risk, *www.swov.nl/rapport/Proefschriften/Divera_Twisk.pdf*.
- Proactive instrument to make policy choices for the layout of roads and the road network. *www.swov.nl/rapport/R-2014-10A.pdf*.

A lot of attention goes to cycling safety:

- The Forgiving Bicycle Road The project is geared to the physical capabilities and limitations of senior citizens. The Forgiving Bicycle Road initiative aims to elicit desirable cycling behaviour in an intuitive way, and when necessary encourage the correction of mistakes and minimisation of injuries.
- Elderly cyclists on e-bikes: *www.bast.de/DE/FB-U/Publikationen/Veranstaltungen/U-Ageing-2014/Downloads-Papers/Twisk.pdf?__blob=publicationFile&v=2* and: *http://bicycle.tudelft.nl/schwab/Publications/vlakveld2014speed.pdf*.
- Safety e-bikes and classic bikes: *http://bicycle.tudelft.nl/schwab/Publications/schepers2014accident.pdf*.
- Effects mobile phone use cyclists: *www.rug.nl/research/portal/files/15671863/AAP_DeWaardWesterhuisLewisEvans2015.pdf* and *www.sciencedirect.com/science/article/pii/S1369847813001320*.
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Chapter 28

New Zealand

*This chapter presents the most recent crash data for New Zealand, as well as an update on the country's road safety strategy and recently implemented safety measures.**

* All data stem from New Zealand Ministry of Transport and IRTAD unless otherwise noted. For more information please contact w.jones@transport.govt.nz or l.mortimer@transport.govt.nz.

New Zealand is a proponent of the Safe System approach to road safety, applying research to specific problems such as high-risk roads for motorcycles, speed limits based on road design and crash rates, and how to improve safety for very high risk young drivers. The 254 road deaths in 2013 represent a 32% improvement over 2010. Although 2014 fatalities increased by 16%, they had declined by 18% from 2012.

Road safety data collection

Definitions applied in New Zealand

- Road fatality: Any person killed immediately or dying within 30 days as a result of a road crash.
- Serious injuries: Fractures, concussion, internal injuries, crushings, severe cuts and lacerations, severe general shock necessitating medical treatment, and any other injury involving removal to and detention in hospital, as recorded in police records.
- Minor injuries: Injuries such as sprains and bruises.

Data collection

New Zealand road crashes are usually attended by police officers. Police complete traffic crash reports, which are forwarded to the New Zealand Transport Agency to be coded and the information entered into the Crash Analysis System.

Fatal crashes are all reported. When a traffic crash results in injuries, the law requires that the crash be reported, but comparisons with hospital data indicate that only about two-thirds of such crashes are reported to the New Zealand Transport Agency.

Most recent safety data

Road crashes in 2014 – provisional data

Provisional data for the year 2014 show a significant 16% increase in fatalities. This increase needs to be analysed in the light of the good results of 2013 (-18% in road fatalities).

While fatalities increased in 2014, the number is still in line with a long-term pattern of decreasing road trauma.

Road crashes in 2013

In 2013, the number of road fatalities decreased by 18% and the number of injury crashes decreased by 3% from 2012.

The 2013 road toll was the lowest since 1952. A number of important measures were adopted in 2013, including: mandatory requirement for child restraint use for child passengers under seven years of age; a new road safety campaign called "Drive Social"; and the lowering of the blood alcohol limit to 0.5 g/l of blood from 0.8 g/l was announced to come into effect in 2014.

Trends in traffic and road safety (1990-2014)

Traffic

Between 1990 and 2013, the number of motorised vehicles increased by 49%. Since 2000, the number of registered vehicles increased by 26% and the overall vehicle kilometres driven by 19%. However, since 2007, there has been a marked slowdown in the growth of road traffic.

Figures for 2014 indicate that the vehicle fleet has increased by nearly 3% from 2013.

Road safety

Crashes and casualties

Between 1990 and 2013, the number of fatalities decreased by 65%. Fatalities declined by 45% between 2000 and 2013. The reported number of injury crashes has increased since 2000, which can be partly attributed to better crash reporting by the police after 2001. However, injury crashes have decreased over the last six years.

New Zealand has made substantial changes to land transport policy since 1990 to reduce road trauma. Main measures include:

- graduated driving licence system and a photo licence
- compulsory breath testing
- speed cameras
- new drug driving laws
- increased penalties for serious offences
- increased minimum driving age from 15 to 16 years
- lowered blood alcohol concentration – to zero for drivers less than 20 years of age and to 0.5 g/l for drivers 20 and over.

The development and subsequent implementation of the "Safer Journeys" strategy adopted in 2010 and based on the Safe System approach has been a major change in the way to address road safety. (See *Road safety strategy* section below).

Rates

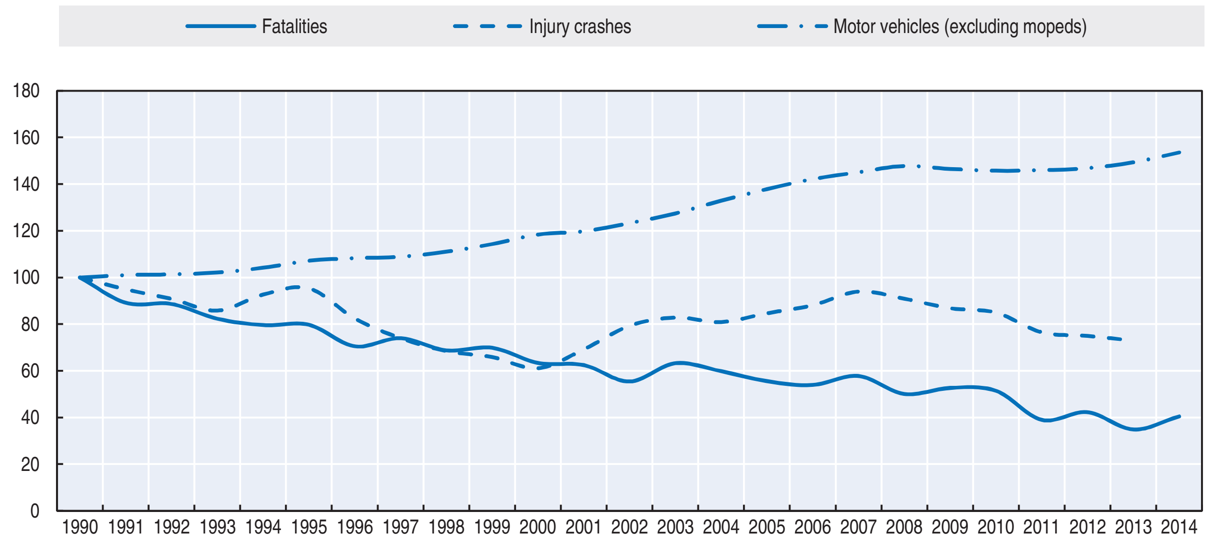
Between 1990 and 2013, the mortality rate, expressed in terms of deaths per 100 000 population, decreased by 73%. In 2013, it was at 5.7.

Table 28.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	729	462	375	308	254	-17.5	-32.3	-45.0	-65.2
Injury crashes	12 818	7 830	10 886	9 604	9 348	-2.7	-14.1	19.4	-27.1
Deaths per 100 000 population	21.4	12.0	8.6	6.9	5.7	-18.2	-33.8	-52.6	-73.4
Deaths per 10 000 registered vehicles	3.3	1.8	1.2	1.0	0.8	-18.9	-33.9	-56.4	-76.7
Deaths per billion vehicle kilometres		13.6	9.4	7.7	6.3	-18.4	-33.0	-53.9	
Traffic data									
Registered vehicles[1] (thousands)	2 198	2 602	3 204	3 227	3 282	1.7	2.4	26.1	49.3
Vehicle kilometres (millions)		33 856	39 980	40 012	40 415	1.0	1.1	19.4	
Registered vehicles per 1 000 population	645	674	733	728	734	0.8	0.1	8.8	13.9

1. Registered vehicles excluding mopeds.

Figure 28.1. **Road safety and traffic data index 1990 = 100**



Road safety by user group

All user groups, but especially vulnerable road users, have benefited from improvement. Between 1990 and 2013, the number of cyclists killed decreased by 70%, and the number of pedestrians killed by 71%. For the latter group most of the gains were achieved between 1990 and 2000.

In 2000-13, all user groups – except motorcyclists – benefited from a decrease in the number of fatalities. The number of motorcyclists killed increased by 26% compared to 2000, due in part to an increase in motorcycle ownership and to the increasing power of motorcycles being purchased.

Table 28.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Bicyclists	27	19	10	8	8	0.0	-20.0	-57.9	-70.4
Motorised two wheeler users	114	31	50	50	39	-22.0	-22.0	25.8	-65.8
Passenger car occupants	465	358	259	205	167	-18.5	-35.5	-53.4	-64.1
Pedestrians	104	35	35	33	30	-9.1	-14.3	-14.3	-71.2
Others	19	19	21	12	10	-16.7	-52.4	-47.4	-47.4
Total	***729***	***462***	***375***	***308***	***254***	***-17.5***	***-32.3***	***-45.0***	***-65.2***

Road safety by age group

Since 1990, the reduction in fatalities has benefited all age groups; however, the improvement for the elderly was much smaller than the other age groups. The elderly are particularly vulnerable as pedestrians.

The fatality rate of young people aged 18-20 is very high (16 deaths per 100 000 inhabitants), three times as much the rate of the average population.

Table 28.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-14	52	41	18	14	6	-57.1	-66.7	-85.4	-88.5
15-17	65	36	26	12	13	8.3	-50.0	-63.9	-80.0
18-20	108	34	41	28	30	7.1	-26.8	-11.8	-72.2
21-24	131	42	46	21	20	-4.8	-56.5	-52.4	-84.7
25-64	290	232	175	160	128	-20.0	-26.9	-44.8	-55.9
≥ 65	65	76	69	70	54	-22.9	-21.7	-28.9	-16.9
Total	***729***	***462***	***375***	***308***	***254***	***-17.5***	***-32.3***	***-45.0***	***-65.2***

Child safety

In 2013, the mandatory requirement for child restraint use was extended from the age of four and under to the age of six and under.

In the last 10 years, a number of measures have been developed to focus specifically on the safety of children below 18. The Safe System approach to road safety since 2010 placed a stronger focus on younger drivers than previously, and a number of measures have been introduced since then. New Zealand has always focused on the safety of children and young people: In 1987 New Zealand was among the first countries in the world to introduce Graduated Driver Licensing as a mechanism to ensure novice drivers were able to develop appropriate skills and experience before obtaining a full licence.

Actions for children and young people include:

- adopting a permanent 4 km/h speed enforcement tolerance in school zones (the usual enforcement tolerance is 10 km/h) (2007)
- requiring that drivers give way to pedestrians who are obviously waiting to cross at a pedestrian crossing (2009)
- raising the minimum driving age from 15 to 16 years
- requiring child restraint use for child passengers up to age seven, and older until they reach the height of 148cm (2013)
- limiting drivers under 20 years old to zero alcohol
- making the restricted driving licence test harder
- placing a five-year time limit on learner and restricted driver licences to encourage movement through the graduated driver licence system
- supporting actions to prevent driveway accidents involving children. (Although these incidents are not included in road crash statistics because they are not on public roads, the government supported the efforts of SafeKids NZ.)

Road safety by road type

Improvements over the last 30 years have been faster on urban roads and motorways.

In 2013, 72% of fatalities occurred on rural roads. There was only one fatality on the motorway network.

Economic costs of traffic crashes

In New Zealand, the social cost of a road crash or a road injury includes the following components:

Figure 28.2. **Road death rates by age group**
Fatalities per 100 000 population in a given age group, 1990-2013

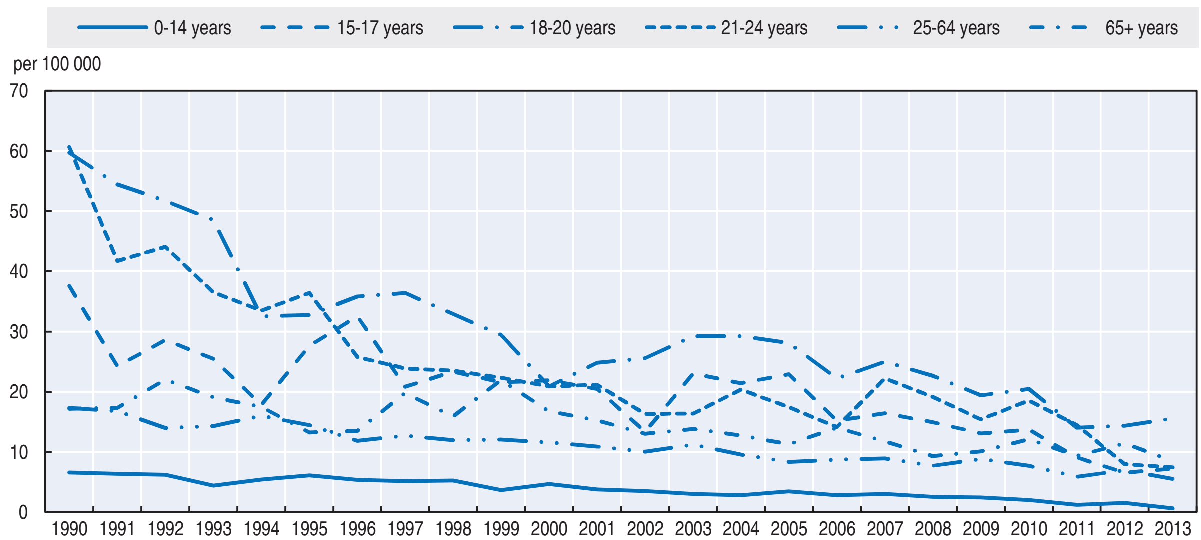
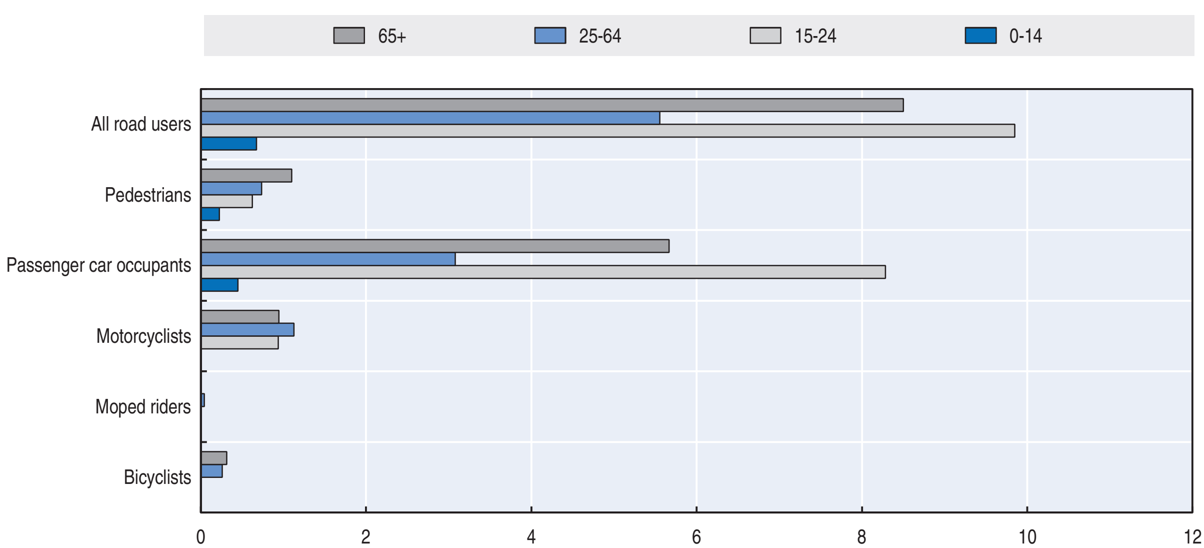


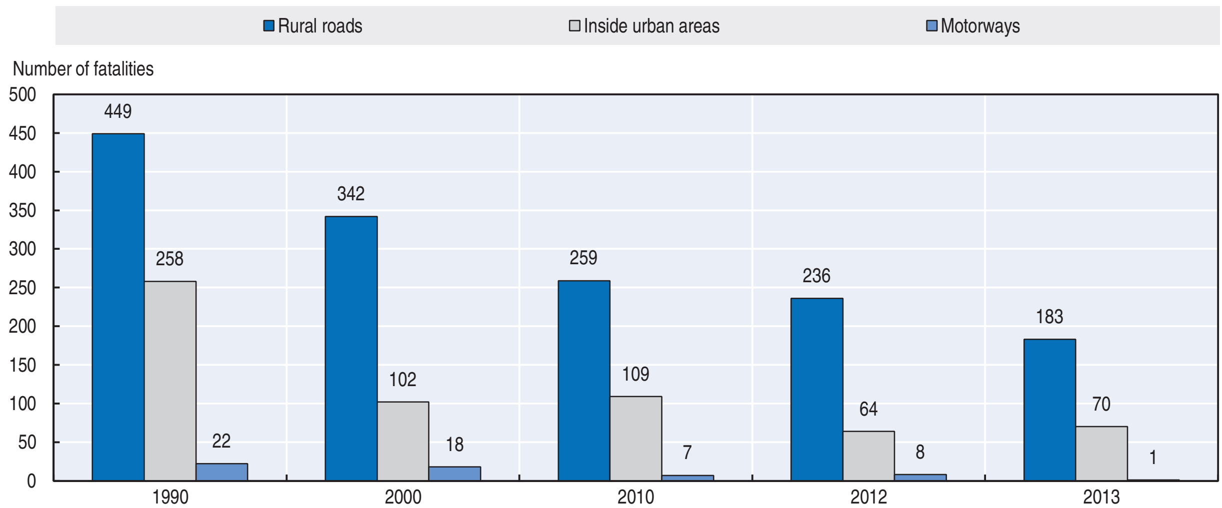
Figure 28.3. **Road death rate by age and road user group**
Fatalities per 100 000 population in 2013



- loss of life and life quality
- loss of output due to temporary incapacitation
- medical costs
- legal costs
- vehicle damage costs.

Social cost components are either measurable or can be estimated in dollar terms. A "willingness-to-pay" valuation technique is used to express pain and suffering from loss of life or life quality in dollar terms. Various methodologies have been developed to estimate the value of other social cost components.

Figure 28.4. **Road fatalities by road type**



The New Zealand Ministry of Transport released its report "Social Cost of Road Crashes and Injuries 2014" in December 2014. The report estimates the total cost of 2013 injury crashes reported by police, hospitals and the Accident Compensation Corporation at NZD 3.14 billion, down by 8.6% from 2012. The improvement is attributable to the 19% reduction in fatalities, despite a 0.4% increase in the estimated total number of serious and minor injuries.

Full information is provided at: *www.transport.govt.nz/assets/Uploads/Research/Documents/Social-Cost-June-2014-update.pdf*.

Recent trends in road user behaviour

Impaired driving

Drink driving

In 2014 New Zealand lowered the Blood Alcohol Content (BAC) level from 0.8 g/l to 0.5 g/l. Drivers with a BAC over 0.8 g/l must appear in court; BAC between 0.5 g/l and 0.8 g/l result in a fine and demerit points. In 2011, a zero drink-drive limit was introduced for drivers under 20. The earlier limit was 0.3 g/l.

Alcohol related road deaths are those in which any motor vehicle driver was found with a blood alcohol level above the legal limit, or where the reporting officer suspected alcohol was a contributing factor. Over a quarter of road fatalities are attributed to an alcohol related crash.

Table 28.4. **Road deaths in alcohol related crashes**

Road deaths in alcohol related crashes	2000	2005	2010	2012	2013
Number of deaths in alcohol crashes	103	106	119	93	67
Proportion of total road traffic deaths	22%	26%	32%	30%	26%

Drugs and driving

Drugs related crashes include crashes where the reporting officer suspected drug use was a contributing factor based on the crash investigation. In 2013, there were 14 road deaths (6%) for which the presence of drugs was found.

A number of recent studies have been undertaken on the issue of drugs and driving.

Table 28.5. **Road deaths in drug related crashes**

Road deaths with drugs	2000	2005	2010	2012	2013
Number with alcohol and drugs	4	14	9	10	4
Number with drugs no alcohol	6	9	25	9	10
Total number with drugs	10	23	34	19	14
Proportion of total road deaths	2%	6%	9%	6%	6%

Distraction

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. Based on police records, fatal crashes due to the use of cell phone are not frequent. Mobile phone use continues to be a problem with 60% of New Zealand drivers admitting to using their phone while driving. Publicity campaigns addressing the problem are being introduced in 2015.

Table 28.6. **Road deaths due to the use of cell phone while driving**

	2000	2005	2010	2012	2013
Deaths with cell phone	2	10	6	3	0

Fatigue

In 2013, fatigue was identified as a contributing factor for 13% of the road deaths.

Table 28.7. **Road deaths in a fatigue related crash**

	2000	2005	2010	2012	2013
Deaths with fatigue	70	51	56	46	32
Proportion of deaths with fatigue	15%	13%	15%	15%	13%

Speed

The tables below illustrate the main speed limits in New Zealand and the percentage of drivers above the speed limit. Much progress has been accomplished since 2001 in reducing the number of violations. However, more than 50% of drivers exceed the 50 km/h limit in urban areas, which is worrying for ensuring the safety of vulnerable road users.

Table 28.8. **Passenger car speed limits by road type, 2014**

	General speed limit	Comments
Urban roads	50 km/h	The general urban limit is 50 km/h but specific sections may have higher or lower limits
Rural roads	100 km/h	The general open road speed limit is 100 km/h but specific rural roads may have lower limits.
Motorways	100 km/h	

Table 28.9. **Percentage of drivers above the posted speed limit**

Speed (survey unimpeded speeds)	2005	2010	2013	2013	2014
% exceeding open road 100 km/h limit	36	29	25	25	22
% exceeding urban 50 km/h limit	63	58	53	56	52

Table 28.10. **Deaths in crashes where speed* was a contributing factor**

	2005	2010	2012	2013
Number of deaths with speed	133	131	85	83
Proportion of deaths with speed	33%	35%	28%	33%

* Speed here is "travelling too fast for conditions", not necessarily above the speed limit.

Seat belts and helmets

Seat belt use has been compulsory in front seats since 1972 and in rear seats since 1979.

In November 2013, the mandatory use of child restraints in vehicles was extended by two years, with all children required to be correctly secured in an approved restraint until they reach the age seven.

Based on a roadside survey conducted in 2014, the rate of seat belt use is about 97% in front seats, 92% for adults in rear seats, and 93% for children in appropriate child restraints. In the three years 2011 to 2013, 31% of road crash fatalities were not wearing a safety belt.

Helmet wearing has been compulsory on motorcycles since 1956 if travelling over 50 km/h, and since 1973 at all speeds. Compliance is virtually 100%. Helmet wearing has been compulsory on mopeds (up to 50 cc, maximum speed 45 km/h) since 1973.

A helmet has been compulsory on bicycles since 1994.

Table 28.11. **Seat belt wearing rate by car occupants and helmet wearing by cyclists**

%

	2005	2010	2012	2014
Seat belts used/Helmets worn				
Adult front seat	95	96	96	97
Adult rear seat	86	88	-	92
Child restraint – under 5 years	89	93	92	93
Bicycle helmets	91	93	92	

National road safety strategies and targets

Organisation of road safety

Road safety in New Zealand is managed through five transport partners. The Ministry of Transport is the government's principal transport policy adviser and has a dedicated team for road safety policy. The Ministry is the lead agency for road safety.

The New Zealand Transport Agency is a Crown agency responsible for the planning and funding of land transport. It produces road safety campaigns and implements road safety policy, integrating road safety aspects into road design and maintenance.

The New Zealand Police are responsible for road policing and enforcement. The Accident Compensation Corporation provides "no fault" cover for anyone in New Zealand who is injured in or by a motor vehicle on a public road. It has a major role in accident prevention activities.

Local government is responsible for developing, maintaining and operating the network of local roads, including setting of speed limits and delivering public transport infrastructure and services. Decisions about construction, maintenance and management of the road networks must consider safety.

In 1993, road safety policy development was separated from delivery with the creation of a new entity called the Land Transport Safety Authority, now called the New Zealand Transport Agency. Around the same time, traffic policing was merged into the New Zealand Police.

Road safety strategy for 2010-20

"Safer Journeys" is New Zealand's Road Safety Strategy 2010-20, which was released in March 2010. The strategy's vision is a safe road system increasingly free of death and serious injury, and introduces the Safe System approach to New Zealand. It does not include a general fatality target, but several sub-targets and performance indicators.

The government released a 2011-12 Action Plan outlining actions to help achieve the Safer Journeys' objectives. The action plan assigns responsibility to specific agencies, and progress is monitored by the National Road Safety Committee. A second action plan for 2013-15 will be completed in 2015 and a third action plan is under preparation for 2016-20. An interim evaluation will be completed in 2015 and the findings will help guide development of the third action plan.

Since the release of the Safer Journeys strategy, actions have improved the safety of young drivers and motorcyclists and targeted drink-drivers and other high-risk drivers. Progress has also been made on improving the safety of roads and roadsides.

Road safety targets

The Road Safety Strategy 2010-20 does not include a general fatality target, but several sub-targets and performance indicators.

Monitoring

Crash outcomes and road user behaviours that relate to Safer Journeys focus areas are regularly monitored.

Evaluation of past road safety strategy

Road Safety to 2010 was adopted in 2002 and expired in 2011. It provided a direction for road safety in New Zealand and described the results the government wanted to achieve by 2010. New Zealand set overall road safety goals in relation to social costs, deaths and hospitalisations to the end of year 2010.

Recent safety measures (2012-14)

Road safety management

Safe System

- A series of "Signature projects" started in 2014 for challenging public and private, national and regional issues. These projects involve cross-sector effort in the following areas:

  - ❖ Improving road safety for international and domestic visitors to the lower South Island and help maintain New Zealand's reputation as a safe tourist destination.
  - ❖ Improving safety on rural roads with high personal risk.
  - ❖ Supporting "risky" young drivers to enter and progress through the Graduated Driver Licensing System to reduce their risk of a crash and to reduce their high level of offences from driving unlicensed or in breach of licence conditions.
  - ❖ Making infrastructure improvements and introducing activities in the busy Mangere urban area to promote walking and cycling.
- A Safe System film was released in November 2014 to change approaches to and understanding of road safety. *www.saferjourneys.govt.nz/about-safer-journeys/the-safe-system-approach#video*.
- Some 400 sector professionals around New Zealand were trained in the Safe System approach to road safety.

Driving licence

- An amendment to the Land Transport (Driver Licensing) Rule 1999 came into effect in October 2012 to strengthen motorcycle rider training and licensing while introducing a power-to-weight restriction for novice motorcycle riders.
- The minimum age for applying for a driving licence was raised to 16.
- The restricted driving licence test was made more difficult in 2012 to encourage novice drivers to undertake 120 hours of supervised practice before driving solo.
- Time limits of five years were applied to learner and restricted driver licences in 2014.
- The New Zealand Transport Agency and the Accident Compensation Corporation are working on a joint project to replace the current on-line Practice programme that helps people to earn their restricted licence. The New Young Driver initiative, currently in the design phase, will cover the stages of the Graduated Driver Licence from pre-learner through to a full licence.

Speed management

- A speed management programme called Safer Speeds includes a new framework to align travel speeds with road function, design, safety and use. Geospatial data provides mean speeds and traffic volumes for every public road in New Zealand, which can be analysed with accident rates. The static speed camera network is being expanded from the current 56 sites to 200 sites in the next two years using new digital speed cameras.
- An innovative new approach to behaviour change called "Change the Conversation on Speed" was developed, with work to begin in 2015.
- A trial of variable speed limits near rural schools was recently completed. Results indicate that variable speed limits are an effective tool for managing the risk of crashes involving turning vehicles. Work is underway to develop criteria for wider use of such speed limits.

Road users

Child restraints

- On 1 November 2013, new child restraint laws came into effect. The mandatory use of child restraints in vehicles was extended by two years, with all children required to be correctly secured in an approved restraint until their seventh birthday.

Impaired driving

- The New Zealand government lowered the blood alcohol limit for driving from 0.8 g/l to 0.5 g/l for drivers aged over 20 years of age on 1 December 2014.
- In 2012, new legislation included the following measures:
  - Zero drink-drive limit for drivers under 20, and fines and demerit points for drivers under 20 years who have a blood alcohol concentration between zero and 0.3 g/l.
  - Zero blood alcohol limit for a minimum of three years for repeat drink drivers, or drivers subject to an alcohol interlock, following the completion of their disqualification or interlock.

Cycling safety

- A Cycling Safety Panel was created in response to a 2013 Coronial Inquiry which investigated 13 cycling fatalities. The panel of 10 experts in the fields of cycling, transport and human behaviour made 35 recommendations for central and local government. Many of the recommendations are already being addressed through either the Safer Journeys programme or the transport planning and investment process, such as development of complete urban cycle networks and nationally consistent design guidance for cycle facilities. Safer speeds for cyclists are being addressed through the Safer Speeds programme. The government is now considering the remaining recommendations, including mandatory minimum passing distances and side under-run protection on trucks.

Enforcement

- New legislation in 2012:
  - Doubled the maximum prison term for dangerous driving (including drink and drug driving) causing death.
  - Introduced the ability for police to extend a 28-day licence suspension for up to three continuous periods for cases in which charges cannot be brought against a driver within 28 days.

Infrastructure

- A classification system for the entire road network categorises roads according to their function and sets a consistent and predictable level of service for each category. This can help drivers understand what to expect and how to behave on different categories of road.
- A demonstration ("Signature") project has been completed on roads with a particularly high level of motorcycle accidents, using high risk motorcycle threshold signs, motorcycle safety billboards and other safety improvements.
- Investment in operations and maintenance associated with safety improvements will be prioritised to ensure optimal road safety.
- In 2013 a high-risk intersection programme was developed and launched. The 100 highest risk intersections were identified. By the end of 2014, 29 intersections had been upgraded and the remaining 71 were planned or in the planning stages.
- A booklet entitled "Making Roads Motorcycle Friendly" was produced in 2014 by the New Zealand Transport Agency and the Motorcycle Safety Advisory Council, and it was distributed through sector workshops early in 2015.

- Investigative work was carried out during 2014 by Auckland Transport on their urban arterial routes, which will be used to update the Safer Journeys for Motorcycling Guide.

Vehicles

- Since 2013, New Zealand has been investigating options to encourage less safe vehicles to exit the vehicle fleet. Cost benefit analysis indicated that it was not cost effective to provide incentives. The project is now assessing actions that support the natural attrition of less-safe vehicles. These include:
  - Providing targeted advice on easy exit and replacement choices for vehicles that don't pass an annual inspection.
  - Providing personalised information with relicensing letters that explain easy replacement and exit options for people with less-safe vehicles that have travelled over 200 000 km.
  - A campaign identifying less-safe vehicles.
- Electronic Stability Control (ESC) is mandatory on all new and used imported vehicles progressively from 1 July 2015. By 2020, every light vehicle entering the New Zealand fleet will have ESC.
- A Vehicle Standards Map describes the vehicle technologies and performance standards that government transport officials believe have the greatest potential to improve the safety and resource efficiency of vehicles in New Zealand. Transport officials will use the map to help decide which vehicle features should be promoted or mandated. The map will also keep stakeholders such as road users and the vehicle industry up to date with vehicle policy developments.

Recent and ongoing research

The following are safety research projects undertaken in 2014 under NZTA's research programme:

- Safer Speeds: public acceptance and compliance, published December 2014.
- Survey methods for driver mobile phone use, published October 2014.
- New Zealanders attitudes towards drug-driving and suggested counter measures, published June 2014.
- New Zealand Transport Agency Research Report – The prevalence and impairment effects of drugged driving in New Zealand – is expected to be completed by the end of 2015.

Websites

- New Zealand's road safety strategy to 2020: *www.saferjourneys.govt.nz*.
- KIWIRAP: *www.kiwirap.org.nz*.

Chapter 29

Nigeria

*This chapter presents the most recent crash data for Nigeria, as well as an update on the country's road safety strategy and the recently implemented safety measures.**

* The Federal Road Safety Corps (FRSC) joined the International Road Traffic and Accident Database group as an observer in 2014. Data included in this report have not been validated by IRTAD. All data stem from Federal Road Safety Corps (FRSC) unless otherwise noted. For more information please contact: ACM Kayode Olagunju Ph.D, ky.olagunju@frsc.gov.ng.

There is wide fluctuation in the yearly number of crashes and casualties, mainly due to a non-systematic recording of road crashes. Efforts to digitise the processing of crash records are expected to contribute to a better reporting system and more accurate monitoring of road crash trends. Speeding accounted for 32% of identified causes of crashes in 2013, followed by loss of control and dangerous driving. The use of motorcycles for commercial purposes has been banned in some major cities due to the high fatality rate from motorcycle crashes.

Road safety data collection

Definitions applied in Nigeria

- Road crash: Collision involving one or more vehicles or a moving vehicle and a stationary vehicle or object or pedestrian resulting in a death, injury, damage to a vehicle or loss of physical property.
- Road fatality: Death of a person within 30 days of the crash.
- Injury crash: Crash that results in a person or persons sustaining severe or minor injuries but not leading to death.

Data collection

Road safety data in Nigeria is collected at the scene by road safety personnel who had been on patrol or were called to the scene via the toll-free emergency call centre or by other means. Police personnel also collect crash data during investigations.

Previously, data information officers of the Federal Road Safety Corps (FRSC) collected, collated and forwarded data to sector commands at the state level. Sector commands collected and forwarded collated data from local level to zonal headquarters. Zonal commands forwarded validated crash data to road safety headquarters for analysis.

Now, the Federal Road Safety Corps digitises the data collection process with computers and hand-held tablets at the scene of a crash, and data arrives directly into the FRSC data portal.

The National Crash Report Information System was inaugurated in April 2014 to harmonise all traffic crash data in Nigeria from different agencies including the police, the Ministry of Health (hospital data), the vehicle inspection unit and state traffic agencies.

Gaps still exist in the data collection as not all crashes are recorded, especially in places not regularly covered by the patrol teams of the FRSC and the police. To address this issue, data information officers regularly visit these areas and collect missing data, but this is expensive.

The World Health Organization estimates the actual number of road fatalities could be up to 10 times higher than figures reported to FRSC (WHO, 2014).

Most recent safety data

Road crashes in 2014 – provisional data

In 2014, 5 996 road fatalities were reported to FRSC, indicating an improvement of 8% compared to road fatalities reported in 2013.

Road crashes in 2013

In 2013, on the network covered by FRSC, there were 6 450 reported road fatalities, a 6% increase when compared to 2012. More than 40 000 persons were reported injured.

Speeding accounted for 32% of identified causes of crashes in 2013, followed by loss of control and dangerous driving.

Trends in traffic and road safety (1990-2014)

Traffic

Mobility in Nigeria is mainly by road, which has led to the overdependence on road infrastructure and much pressure on it. The railway system is disorganised, although rail services have improved on some parts of the network. Air travel is costly and not an option for mass transportation. The government needs to invest heavily in improving road conditions.

Vehicle ownership has increased. Motorised three-wheelers are increasingly used for commercial transport, and motorcycle use is increasing.

Road safety data

There is wide fluctuation in yearly number of crashes and casualties, mainly due to a non-systematic recording of road crashes. It is expected that the efforts currently deployed to digitise the processing of crash records will contribute to a better reporting system and more accurate monitoring of road crash trends.

Road safety by user group

The increase in the motorcycle fleet has led to an increase in crashes involving motorcycles. The use of motorcycles for commercial purposes has been banned in some major cities due to the high fatality rate resulting from motorcycle crashes.

Road safety by age group

All operators of motorcycles and vehicles must be appropriately licensed. The motorcycle licence (A) is differentiated. The minimum age to acquire a driving licence is 18.

Road safety by road type

Roads are classified as federal, state and local government roads. Urban roads occur under all three categories. Nigeria does not yet have detailed information on road crashes by road category.

Except in some major cities, there is little safety provision for pedestrians.

Recent trends in road user behaviour

Impaired driving

Drink driving

The maximum authorised blood alcohol content (BAC) is 0.5 g/l. Based on FRSC reports, around 1% of fatal crashes are due to drink driving. The Federal Road Safety Commission (Establishment) Act of 2007 is currently being amended to further strengthen the law on drink driving. The BAC will be amended to a maximum BAC of 0.2 g/l for novice drivers (less than 1 year driving experience) and 0.0 g/l for commercial drivers. This will be implemented as soon as the submitted amendment in the law is passed by the National Assembly and signed into law by the President.

Patrol teams test any driver suspected of drink driving.

Drugs and driving

It is estimated that impaired driving due to the consumption of drugs was responsible for 1% of fatal crashes in 2013.

Distraction

It is estimated that the use of mobile phones while driving was a contributing factor in 0.4% of fatal crashes in 2013.

In Nigeria, it is forbidden to drive while using a mobile phone, including hands-free devices.

Fatigue

In 2013, it was estimated that fatigue was the main contributing factor in 2% of fatal crashes.

Speed

The table below summarises the main speed limits in Nigeria. In 2013, inappropriate or excessive speed was the main contributing factor in 32% of fatal crashes.

Beginning in June 2015 all commercial vehicles must have speed limiters installed. Communication started early in 2015 and the measure will be enforced by the end of 2015.

Table 29.1. **Passenger car speed limits by road type, 2015**

	General speed limit Passenger cars	Comment
Urban roads	50 km/h	45km/h for tankers/trailers and vehicles with trailers
Rural roads	80 km/h	80 km/h for taxis and buses 60 km/h for trucks 50 km/h for motorcycles, tankers/trailers; 45 km/h for trucks with trailer
Motorways	100 km/h	90 km/h for taxis and buses 70 km/h for trucks 60 km/h for tankers/trailers 45 km/h for trucks with trailers

Seat belts and helmets

Seat belt use has been compulsory in front seats and rear seats since 1997; however, enforcement regarding seat belts in front seats only started in 2002. Enforcement regarding the use of seat belts in rear seats will start in 2015.

According to FRSC 80% of front seat passengers and drivers wear a seat belt; while on rear seats less than 1% of passengers are buckled.

Table 29.2. **Seat belt wearing rate by car occupancy and road type**

%

	2000	2013
Front seats		
General	< 5	80
Rear seats		
Adults	< 1	< 1

All riders of motorised two-wheelers are required to wear safety helmets. The helmet-wearing rate by riders of motorised two-wheelers is 60%.

There is no mandatory law on helmet use for cyclists.

National road safety strategies and targets

Organisation of road safety

The responsibility for road safety is vested in the Federal Road Safety Corps, the lead agency established by the federal government. The agency is a paramilitary organisation, established in February 1988 and funded through budgetary allocation. A commission supervises the corps of officers and staff that carry out day-to-day activities. The functions of the Federal Road Safety Corps include:

- preventing and minimising road traffic crashes
- clearing obstructions on the highways
- educating drivers, motorists and other road users on the proper use of the roads
- providing attention and care to victims of road traffic crashes
- conducting research into causes of crashes and putting results of such research into use
- enforcing traffic rules
- issuing drivers licences
- managing vehicle registration
- advising the federal and state governments, including the Federal Capital Territory Administration and relevant governmental agencies, on measures to improve road safety.

Road safety strategy for 2014-18

The Nigerian Road Safety Strategy (NRSS 2014-18) is under development. It has been considered by the Federal Executive Council, which constituted an Interministerial Committee under the chairmanship of the Minister of National Planning to fine-tune the document. Endorsement was delayed beyond the end of 2014 due to presidential and other elections. Endorsement by the National Economic Council, comprising federal and state chief executives, was anticipated in the second quarter of 2015.

The strategy is based on the United Nations Plan for the Decade of Action for Road Safety and its five strategic pillars.

- road safety management
- safer roads and mobility

- safer vehicles
- safer road users
- post crash care and response.

Road safety targets

The strategy is driven by three main objectives:

- A reduction of 50% in the number of fatal road traffic crashes by 2015 from levels before 2007, as recommended in the Accra Declaration of February 2007.
- Aligning operational strategies to achieve the nation's vision of becoming one of the top 20 countries with the safest roads in the world by the year 2020.
- Meeting the target suggested by the United Nation's Decade of Action, to reduce by half the number of fatalities in 2020 in comparison to the 2010 level.

Monitoring

Performance towards these main goals is monitored through key performance indicators, including:

- monthly report on the number of drivers trained at no cost to themselves (driver training is usually a paid service, but under this arrangement apprehended offenders are trained without any cost)
- monthly report on the number of drivers arrested for traffic law violations and number of successful drivers licence applicants
- monthly report on number of road safety audits conducted
- monthly report of the number of drivers tested for alcohol
- monthly report on the number of drivers driving above the speed limits
- monthly record of road traffic collisions relating to speed violation
- monthly report of sporadic checks conducted at motor parks
- monthly report of the number of schools implementing the standard school bus policy, which has requirements such as the colour of a school bus and training for drivers and operators.

Recent safety measures (2012-14)

Road safety management

- Raised capacity for the work force involved in road safety.
- Enhanced Information and Communication Technology capacity of the FRSC.
- Continuation of the assistance programme of the World Bank providing manpower and operational equipment to conduct a road safety assessment on six major corridors.
- Continued inter-agency co-operation through the Nigerian Road Safety Partnership. This led to establishment of a road safety unit within the Nigeria Defence Academy in which students will benefit from road safety courses.
- Amended laws to strengthen road safety, such as the lower BAC limits for novice drivers and a total ban for commercial drivers.

- Increased enforcement activities, including:
  - Special nationwide patrol operations targeted at such specific issues as overloading, vehicle conditions and use of phones while driving.
  - Operation Zero Tolerance patrols against drink-driving carried out during Christmas/ New Year and other festive periods.
  - Increased presence of FRSC patrol vehicles and motorbikes on the highways.

Road users

- Improved regulatory and enforcement capacity by the FRSC.
- Road safety education in primary and junior secondary schools, in co-operation with Total Nigeria Plc and Shell plc.
- Organisation of the first bicycle week in November 2013 to showcase benefits of cycling for the environment, health, social interaction, traffic congestion, transport cost and quality of life.

Vehicles

- Introduction of speed limiting devices on all commercial vehicles as of 1 June 2015.
- Free safety checks for all vehicles. Defects are identified and brought to the attention of the owners for remedial action without the issuance of tickets. More than 230 000 vehicles have been checked so far.
- Computerised vehicle inspection centres have been introduced in many states of Nigeria to check the road worthiness of vehicles.

Post crash measures

- Establishment of an emergency call centre with nationwide coverage. A toll free emergency number (122) was launched in 2012 for road users to request assistance in case of an emergency, contributing to the efficiency of the rescue service.
- Establishment of emergency ambulance points (called ZEBRA) along major corridors.
- Addition of more ambulances into the operations of the FRSC.

Recent and ongoing research

- Federal Road Safety Corps (2014), *Flying vehicles on Nigerian roads*. The aim of the research is to survey the average speed of various categories of vehicles on some Nigerian roads for informed intervention on reducing speed related crashes.

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Chapter 30

Norway

*This chapter presents the most recent crash data for Norway, as well as an update on the Norwegian road safety strategy and recently implemented safety measures.**

* All data stem from Public Roads Administration unless otherwise noted. For more information please contact: guro.ranes@vegvesen.no.

After four years of large declines in traffic fatalities, in 2013 Norway had 187 road deaths, a 29% increase over 2012. Because of the favourable trend in the previous four years, a small set-back in the development of fatalities could be statistically expected, but the final results for 2013 were much higher than expected. The long term trend remains positive and in 2014 road deaths decreased again, by 21%, to 148.

Road safety data collection

Definitions applied in Norway

- Road fatality: Person killed in a traffic crash or from injuries within 30 days after the crash.
- Seriously injured: Person suffering life threatening injuries, or injuries that lead to lasting injury, or other larger injuries that are not life-threatening.
- The police do not use the Maximum Abbreviated Injury Scale of three or more (MAIS3+) to classify serious injuries, but this will be done in the future when such injury data is provided by hospitals. In the meantime, Norway will transform data on serious injuries to MAIS3+.

Data collection

Crash data are collected by the police and consolidated at the national level by Statistics Norway and the Public Roads Administration.

Less severe crashes and injuries are often not reported to the police, and may therefore be under-represented in the figures. This concerns in particular light injuries and single bicycle crashes. At the moment injury data is collected by police, but there are plans to use hospital data in the future.

Most recent safety data

Road crashes in 2014 – final data

In 2014, there were 148 road deaths in Norway, a 21% decrease when compared to 2013.

Road crashes in 2013

In 2013, there were 187 road deaths in Norway, a 29% increase when compared to 2012. This development followed four consecutive years of declining numbers of fatalities, from 255 road deaths in 2008 to 145 in 2012, the lowest since 1950. Because of the favourable trend in the previous four years, a small set-back in the development of fatalities could be statistically expected, but the final results for 2013 were much higher than expected.

There is no obvious explanation for the large increase in fatalities from 2012 to 2013, no single big event that can explain the change. The long term trend remains positive.

Trends in traffic and road safety (1990-2014)

Traffic

In 2012, around 43 900 million vehicle-kilometres were registered on Norwegian public roads. About 44% of these were on the national roads, 36% on county roads and 20% on municipal roads. On national and county roads, heavy goods vehicles (HGV) account for 10-11% of the traffic.

Since 1990, total vehicle-kilometres have increased by 58% on public roads.

Road safety

Crashes and casualties

The number of road deaths peaked in 1970; since then there has been a general downward trend with yearly fluctuations.

Since 2000, the number of road deaths decreased by 45% and the number of injury crashes by 37%. The long-term trend is positive, especially among young drivers. The number of children killed and seriously injured (0-6 and 7-15) has decreased dramatically since 1990.

Between 2008 and 2012, the number of fatalities decreased by more than 40%. There is no single reason for this very positive development, but the result of a systematic, long-term and fact based approach. There were positive developments on indicators like speed, seat belt wearing, lane barriers and other key factors with known effects on severe traffic accidents. Important measures were taken including:

- penetration in the fleet of cars with 5 star EuroNCAP ratings for top levels of both passive and active safety measures
- reduced speed limits, a speeding campaign, and speed cameras resulting in reduced mean speed of traffic on high volume roads
- new motorways and two/three lane roads with physical barriers to prevent head-on crashes
- seat belt campaign resulting in increased use of seat belts.

Rates

In 2013, the mortality rate was 3.7 road deaths per 100 000 inhabitants. Norway reached its lowest level of mortality in 2012 with a rate of 2.9 fatalities per 100 000 inhabitants.

Road safety by user group

Since 2000, road safety improvements have benefited pedestrians and car occupants the most, while there has been less progress for cyclists.

In 2013, there was a sharp increase in the number of fatalities that concerned mainly car occupants and motorcyclists.

Road safety by age group

Safety improvements benefited all age groups, in particular the children and young people, but there has been a much slower decrease for older people. Young people still have a fatality rate almost twice that of the average population.

Table 30.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from 2012	2010	2000	1990
Reported safety data									
Fatalities	332	341	208	145	187	29.0	-10.1	-45.2	-43.7
Injury crashes	8 801	8 440	6 360	5 893	5 320	-9.7	-16.4	-37.0	-39.6
Deaths per 100 000 inhabitants	7.8	7.6	4.3	2.9	3.7	27.3	-13.5	-51.4	-52.8
Deaths per 10 000 registered vehicles	1.5	1.3	0.6	0.4	0.5	26.9	-16.3	-59.1	-65.2
Deaths per billion vehicle kilometres	12.0	10.5	4.9	3.3	4.3	29.1	-12.9	-59.4	-64.4
Traffic data									
Registered vehicles[1] (thousands)	2 205	2 661	3 326	3 514	3 571	1.6	7.4	34.2	62.0
Vehicle kilometres (millions)	27 755	32 547	42 561	43 952	43 913	-0.1	3.2	34.9	58.2
Registered vehicles per 1 000 inhabitants	521	594	685	705	707	0.3	3.3	19.0	35.7

1. Registered vehicles excluding mopeds.

Figure 30.1. **Road safety and traffic data index 1990 = 100**

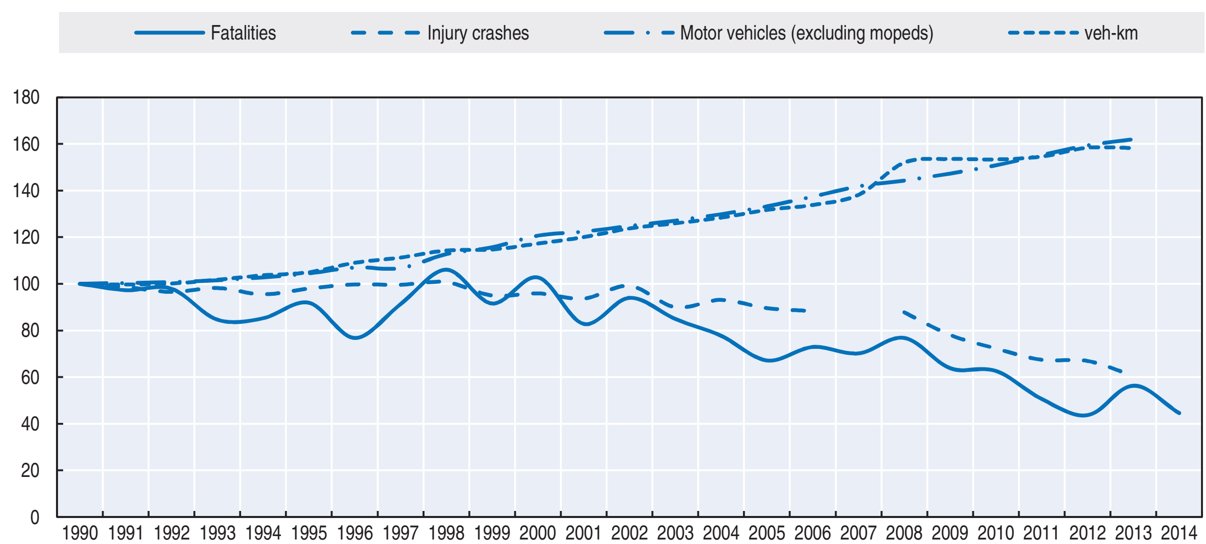


Table 30.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from 2012	2010	2000	1990
Bicyclists	17	13	5	12	10	-16.7	100.0	-23.1	-41.2
Moped users	14	6	0	4	3	-25.0	n.a.	-50.0	-78.6
Motorcyclists	25	40	26	17	21	23.5	-19.2	-47.5	-16.0
Passenger car occupants	214	225	125	72	99	37.5	-20.8	-56.0	-53.7
Pedestrians	55	47	24	22	18	-18.2	-25.0	-61.7	-67.3
Others	7	10	28	18	36	n.a.	n.a.	n.a.	n.a.
Total	***332***	***341***	***208***	***145***	***187***	*29.0*	*-10.1*	*-45.2*	*-43.7*

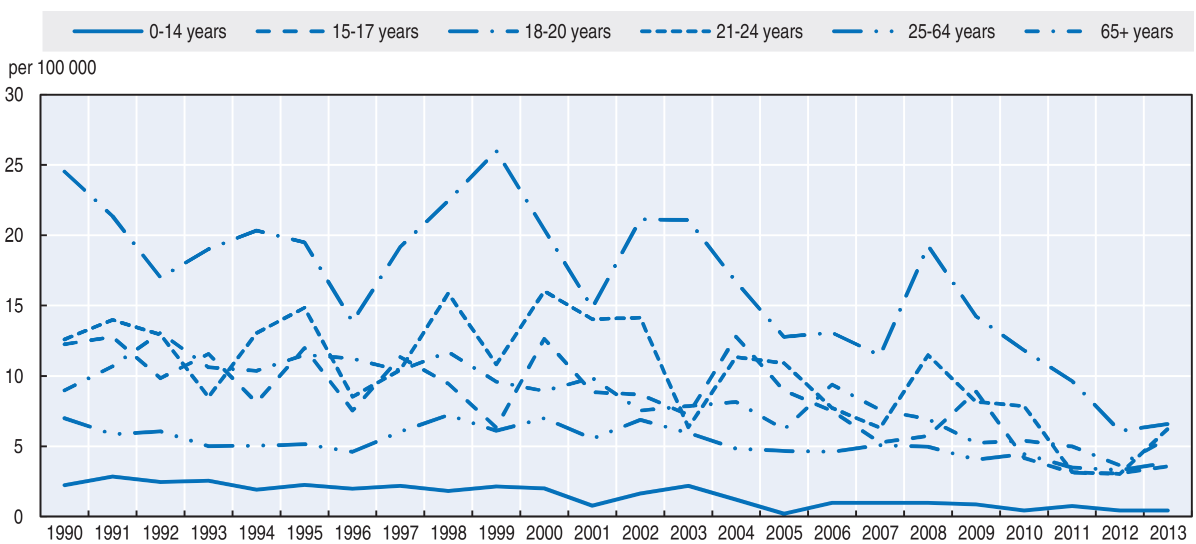
Road safety by road type

In 2013, approximately 85% of road fatalities occurred outside densely populated areas. Of these, 44% were killed in head-on crashes and 41% in run-off-the road crashes.

Table 30.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from 2012	2010	2000	1990
0-5	9	8	1	3	1	*Figures too small for meaningful comparisons*			
6-9	3	6	0	1	0				
10-14	6	4	3	0	3				
15-17	23	20	8	6	7	*16.7*	*-12.5*	*-65.0*	*-69.6*
18-20	49	33	23	12	13	*8.3*	*-43.5*	*-60.6*	*-73.5*
21-24	34	36	19	8	17	*112.5*	*-10.5*	*-52.8*	*-50.0*
25-64	146	165	115	87	102	*17.2*	*-11.3*	*-38.2*	*-30.1*
≥ 65	62	61	39	28	44	*57.1*	*12.8*	*-27.9*	*-29.0*
Total	***332***	***341***	***208***	***145***	***187***	*29.0*	*-10.1*	*-45.2*	*-43.7*

Figure 30.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2014



Economic costs of traffic crashes

Traffic crashes represent a significant cost for the Norwegian society, estimated in 2012 at around EUR 1.93 billion (excluding property damage costs). Costs are calculated by a willingness-to-pay approach.

Table 30.4. **Costs of road crashes, 2012**

	Unit cost EUR	Total EUR
Fatalities		630 million
Hospitalised people		790 million
Slight injuries		510 million
Property/damage costs		*Not included*
Total		1.93 billion

Recent trends in road user behaviour

Impaired driving

Drink driving

The legal maximum blood alcohol content is 0.2 g/l. The number of drivers impaired due to alcohol seems to be fairly stable or slightly reduced. Thirteen of the fatal crashes in 2013 were due to drunk drivers.

Drugs and driving

The legal maximum content of illegal drugs is equivalent to 0.2 g/l alcohol. The number of impaired drivers due to drugs seems to be fairly stable.

Distraction

In Norway, the law stipulates that mobile phones must be correctly attached to the instrument panel in the vehicle, as close as possible to the driver. Hands-free devices can be used. There are no good estimations on the number of fatal crashes due to the use of mobile phones, but research shows that this is a factor to be watched carefully.

Fatigue

In-depth studies show that fatigue and sleepiness was the cause of 15% of all fatal crashes in Norway in 2013.

Speed

Studies in Norway show that excessive speed or high speeds incompatible with road conditions like snow, ice, fog or rain are an important element in fatal crashes and their consequences

The table below summarises the main speed limits in Norway. The average speed, on all roads except those limited at 100 km/h, has decreased since 2008.

Table 30.5. **Passenger car speed limits by road type, 2015**

Urban roads	50 km/h	Residential streets often limited at 30 km/h
Rural roads	80 km/h	
Motorways	90, 100, 110 km/h	

Seat belts and helmets

Seat belt use has been compulsory in front seats since 1975 and in rear seats since 1985.

The seat belt wearing rate was 95% in 2013. There is no monitoring of seat-belt use in rear seats, but it is estimated to be 7-8 percentage points lower.

Child restraint is compulsory for children under 135 cm in height. For children over 135 cm child restraint should be used if available. In Norway it is recommended that children under the age of four should be seated facing backward.

An analysis of fatal crashes in 2013 estimates that 33% of car occupants killed were not wearing a seat belt.

Table 30.6. **Seat-belt wearing rate by car occupancy and road type**

%

	2000	2010	2013
Front seat			
General	88	91	95
Urban roads	92	91	94
Rural roads	80	94	96
Rear seats			
Adults	84		

All riders of motorised two-wheelers are required to wear helmets. The helmet-wearing rate by riders of motorised two-wheelers is close to 100%.

There is no mandatory helmet-use law for cyclists. Helmet use by cyclists over the age of 12 is 52%. In 2013, three of the 10 cyclists killed on the roads did not wear a helmet.

National road safety strategies and targets

Organisation of road safety

Traffic safety policy is co-ordinated by the Norwegian Public Roads Administration (NPRA). In addition to NPRA, the police, the public health and education administrations, together with leading non-governmental organisations, are the main national stakeholders. At regional and local levels, counties and municipalities play a very important role. The Norwegian road safety policy relies on this broad and collaborative approach, a common and shared strategy and co-ordination among all stakeholders.

Norway's parliament adopted Vision Zero in 2001. The first road safety strategy based on Vision Zero was implemented through the National Plan of Action for Traffic Safety 2002-11. Vision Zero remains at the core of all government actions in traffic safety, including the 2010-13 national plan of action for traffic safety.

The Norwegian Vision Zero involves all modes of transport. The main focus is to reduce crashes that can lead to fatalities and serious injuries. The highest priority is given to the reduction of head-on crashes, single-vehicle crashes and collisions with cyclists and pedestrians. Special attention is also paid to high-risk road users, such as young drivers, elderly road users and motorcyclists.

Road safety strategy for 2014-2024

The Road Traffic Safety Plan 2014-2017 was released in March 2014. The plan highlights the current road safety challenges in Norway and describes the measures that will be implemented during 2014-17 to move towards the national interim target of no more than 500 fatalities and severe injuries in 2024.

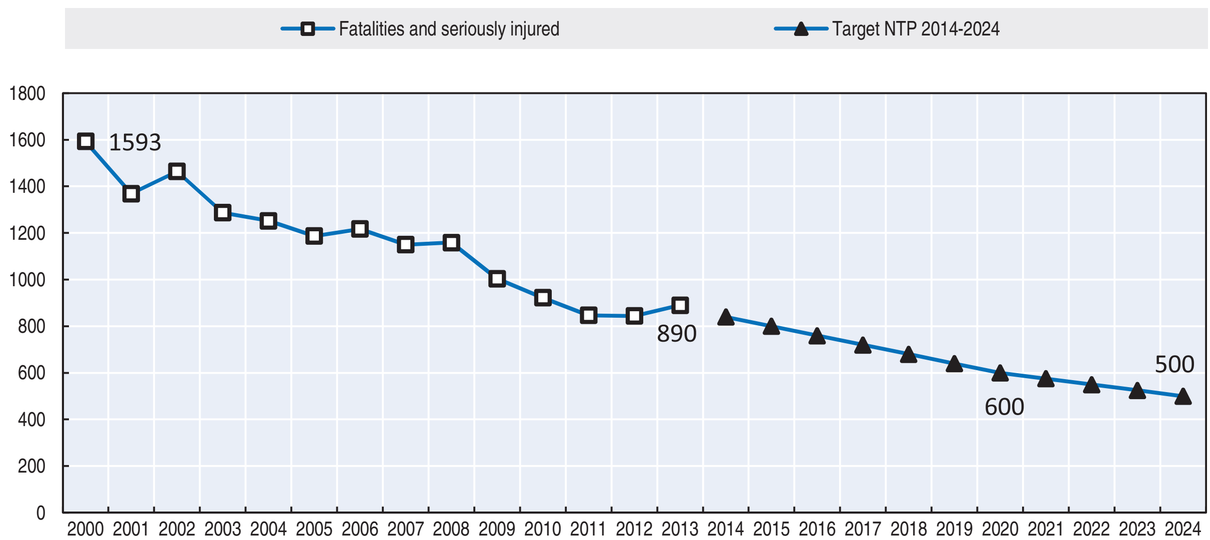
Road safety targets

Initially, the main goal of the plan was to halve the number of killed and seriously injured by 2024, or 445 casualties. A modelling exercise based on existing knowledge shows that it is possible to reach 630 fatalities and seriously injured by 2024. By taking into account the fact that it is not possible to assess the effect of all measures and that new technology may bring additional benefits, a new target was set of no more than 500 fatalities and seriously injured by 2024.

Monitoring

Developments concerning fatalities and the seriously injured are constantly monitored. In addition, the Norwegian Public Roads Administration is monitoring a set of safety performance indicators, related to speed, seat belt wearing and heavy vehicle safety standards.

Figure 30.3. **Trends in road fatalities and seriously injured towards national target**



Evaluation of past road safety strategy

On behalf of the Ministry of Transport and Communications, the Institute for Transport Economics analysed the factors behind the decline in the number of traffic fatalities and serious injuries in Norway from 2000 to 2012. It found that the increased penetration of safer vehicles and a trend towards reduced mean traffic speed were the main contributing factors (Hoye, et al., 2014).

Recent safety measures (2012-14)

The sections below describe the most important measures implemented since 2012. The 2014-24 plan includes a new set of 152 measures that will be progressively implemented.

Road users

- Safety campaigns were undertaken focusing on sharing the road, youth and speed.
- Important efforts were conducted on road user training.

Infrastructure

- Revised criteria were developed for securing areas surrounding roadwork.
- More fortified rumble strips were used.
- Existing roads were maintained and upgraded.
- More median safety barriers were made for freeways and roads.

Enforcement

- The public road administration and police made more use of automatic number plate recognition for more effective controls.
- Police increased the number of controls in the winter.

Recent and ongoing research

- **Evaluation of section speed control**: On behalf of the Norwegian Public Road Administration, the Institute of Transport Economics evaluated the effect of section speed control on crashes. The before-after empirical Bayes evaluation of 14 section control sites found a reduction in the number of injury crashes by between 12% and 22% and a statistically significant reduction of 49-54% in the number of killed or severely injured road users (Hoye, A., 2014).
- **Evaluation of the decline in fatalities and serious injuries in Norway from 2000 to 2012**. On behalf of the Ministry of Transport and Communications, the Institute of Transport Economics conducted a study "*What can explain the decline in the number of traffic fatalities and serious injuries in Norway from 2000 to 2012*". The two most important factors are the increased penetration of various safety features in cars, and the slower mean speed of traffic.

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Chapter 31

Poland

*This chapter presents the most recent crash data for Poland, as well as an update on the country road safety strategy and recently implemented safety measures.**

* All data stem from the Motor Transport Institute and IRTAD unless otherwise noted. For more information, please contact: justyna.wacowska-slezak@its.waw.pl.

According to police statistics, road fatalities in Poland numbered 3 202 in 2014, a reduction of 4.5%, following a 6% reduction in 2013. Half of road fatalities are in Poland are vulnerable road users, and pedestrians alone account for 34% of road deaths. A 2012 comparison of police statistics with hospital and other records by the Motor Transport Institute suggests that fatalities could be 3%-25% higher. This pilot study showed the need for further investigation. Poland is also preparing to change its record keeping on serious injuries to be compatible with other European and international standards.

Road safety data collection

Definitions applied in Poland

- Road fatality: Death caused by a road crash within 30 days of the crash.
- Seriously injured: A person who sustains a serious disability, an incurable disease or a chronic life threatening disease, permanent mental disease, complete or substantial permanent incapacity to work in current occupation, or permanent or substantial scarring or disfiguration of the body. The definition also includes persons who suffer other injuries that incapacitate them or cause a health breakdown for longer than seven days.
- Slightly injured: Person who experiences loss of health less than in the case of serious injury, whose health dysfunctions remain for less than seven days.
- Injury crash: Crash resulting in at least one injured or killed person.

Poland does not now rate serious injuries as having a score of three or more on the Maximum Abbreviated Injury Scale (MAIS3+). However, as the International Road Traffic and Accident Database (IRTAD) and the European Commission recommend the system, MAIS3+ will progressively be collected. Following agreements between the National Road Safety Council, the Ministry of Infrastructure and Development and the Ministry of Health, the National Institute of Public Health will be in charge of introducing MAIS 3+, starting with conversion of International Classification of Diseases (ICD10) codes into Abbreviated Injury Scale codes on the basis of hospital discharge data. This conversion will follow the process recommended by the European Commission on the basis of a mapping table developed by the Association for the Advancement of Automotive Medicine.

Data collection

The basic source of road crash data is the police database, which was set up in 1975 under the responsibility of the police Department of Road Traffic.

Information is gathered by police officers according to categories included in the Road Accident Card (e.g. description of the crash site, circumstances of the crash, behaviour of participants, type of injuries, etc.). Guidelines and definitions are described in Head Chief of Police Regulation No. 123 of 31 May 2012.

In 2012, the Motor Transport Institute conducted reviewed the police crash database and compared its data from years 2008-10 with public statistics from national health services and the national statistics office. The result was that the number of people killed in road crashes could be 3%-25% higher than official police data. This pilot study showed the need for further investigation.

Most recent safety data

Road crashes in 2014 – final data

There were 3 202 road fatalities in 2014, a reduction of 4.6% when compared with 2013. The number of people injured decreased by 3.4% and the number of injury crashes increased by 2.4%.

Road crashes in 2013

In 2013, injury crashes decreased by 3.2% to 35 847, in which 3 357 people were killed, a decrease of 6%, and 44 059 were injured, a decrease of about 4%.

The improvements concern mostly passenger cars occupants (-10.3%) and moped drivers (-24.4%). The number of pedestrians injured decreased by 1.5%.

Trends in traffic and road safety (1990-2014)

Traffic

Since 1990, the number of motorised vehicles has multiplied by more than 2.5. Most recently, the increase in the number of motor vehicles in Poland has been stable, without significant impact due to the economic crisis.

Road safety

Crashes and casualties

A peak in the number of fatalities was reached in 1991, with 7 901 deaths. In recent years (2000-13) the upward trend has broken, and since 1990 the number of fatalities has declined by 54% and injury crashes by 29%.

Since 1991, the following legislations and policies have been implemented in Poland:

- compulsory seat belt wearing for all car occupants
- appointment of National Road Safety Council
- national Road Safety Programme GAMBIT
- demerit point system
- compulsory use of child restraints
- severe penalties for drunk driving
- speed enforcement (including automatic speed enforcement)
- 50 km/h limit in built-up areas
- daytime running lights
- changes in drivers' education system
- implementation of the new law for cyclists
- implementation of the European Union (EU) directive on road safety management
- development of the National Road Safety Programme 2013-2020.

Rates

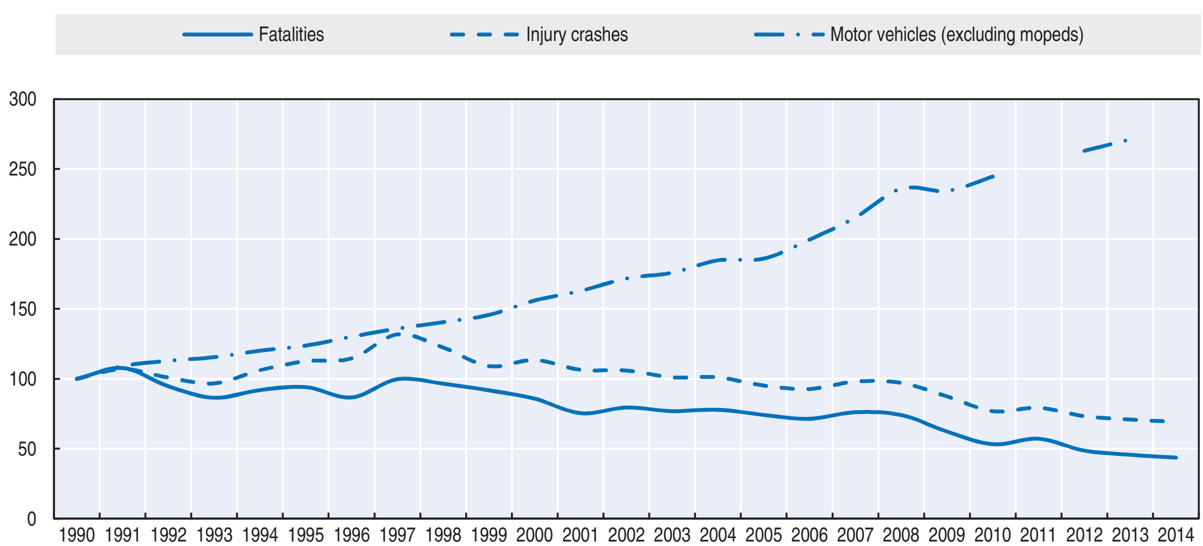
In 2013, Poland had a fatality rate, expressed in terms of deaths per 100 000 inhabitants, of 8.7.

Table 31.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	7 333	6 294	3 908	3 571	3 357	-6.0	-14.1	-46.7	-54.2
Injury crashes	50 532	57 331	38 832	37 046	35 847	-3.2	-7.7	-37.5	-29.1
Deaths per 100 000 inhabitants	19.3	16.4	10.2	9.3	8.7	-6.0	-14.9	-47.0	-54.8
Deaths per 10 000 registered vehicles	8.1	4.5	1.8	1.5	1.4	-8.9	-22.5	-69.3	-83.1
Traffic data									
Registered vehicles[1] (thousands)	9 041	14 106	22 115	23 775	24 521	3.1	10.9	73.8	171.2
Registered vehicles per 1 000 inhabitants)	238	369	579	617	636	3.2	9.8	72.6	167.7

1. Registered vehicles excluding mopeds.

Figure 31.1. **Road safety and traffic data index 1990 = 100**



Road safety by user group

Since 2000, all user groups except motorcyclists and moped riders have benefited from a decrease in the number of fatalities. The number of motorcyclists killed increased by nearly 50% in the last decade; however, they only account for 7% of total road fatalities.

Half of road fatalities are in Poland are vulnerable road users. Pedestrians make up 34% of all fatalities (in the European Union the share is 21%).

In 2013, the most significant reduction in the number of fatalities was observed for moped users and passenger car occupants – a decrease by 24% and 10% respectively. The number of killed motorcyclists decreased by 3%.

Road safety by age group

Since 1990, the reduction in fatalities has benefited all age groups.

Table 31.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	574	692	280	300	306	2.0	9.3	-55.8	-46.7
Moped users	288	75	83	82	62	-24.4	-25.3	-17.3	-78.5
Motorcyclists	749	178	259	261	253	-3.1	-2.3	42.1	-66.2
Passenger car occupants	2 237	2 709	1 853	1 615	1 448	-10.3	-21.9	-46.5	-35.3
Pedestrians	2 977	2 256	1 236	1 157	1 140	-1.5	-7.8	-49.5	-61.7
Others	508	384	197	156	148	-5.1	-24.9	-61.5	-70.9
Total	***7 333***	***6 294***	***3 908***	***3 571***	***3 357***	***-6.0***	***-14.1***	***-46.7***	***-54.2***

Since 1990, the highest reduction concerned the youngest group (0-14), for which fatalities fell from 471 in 1990, to 90 in 2013, a decrease of 80%.

Young people 18-24 have a fatality risk nearly twice as high as the general population.

Child safety

In 2013 children 0-14 represented 15% of the population and 2.5% of the road fatalities; this is one of the lowest recorded shares. In Poland children have a fatality rate of 15 killed per million inhabitants, six times lower than the average population, but higher than the rate of child fatality in the European Union. Around 50% of children killed are car occupants, 40% are pedestrians and 5% are cyclists.

Table 31.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	139	66	31	28	27	-3.6	-12.9	-59.1	-80.6
6-9	176	89	25	24	21	-12.5	-16.0	-76.4	-88.1
10-14	156	112	56	37	42	13.5	-25.0	-62.5	-73.1
15-17	223	245	122	86	82	-4.7	-32.8	-66.5	-63.2
18-20	455	443	280	250	226	-9.6	-19.3	-49.0	-50.3
21-24	636	583	392	335	327	-2.4	-16.6	-43.9	-48.6
25-64	4 493	3 751	2 293	2 150	1 980	-7.9	-13.7	-47.2	-55.9
≥ 65	1 055	1 004	676	655	647	-1.2	-4.3	-35.6	-38.7
Total	***7 333***	***6 294***	***3 908***	***3 571***	***3 357***	***-6.0***	***-14.1***	***-46.7***	***-54.2***

Road safety by road type

The decrease in fatalities over the last twenty years has been achieved mainly through the improvement of road safety on rural roads.

Motorways total 1 481 km in 2013, only 0.5% of the whole road network, and they account for 1% of fatalities. The motorway network has been significantly developed over the last few years.

Economic costs of traffic crashes

Costs of traffic crashes are calculated based on the capital approach. Traffic crashes represent a significant cost for society, estimated at around PLN 34 billion (around EUR 8.5 billion), or 2% of Gross Domestic Product. They account for more than the budget deficit in Poland.

Figure 31.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

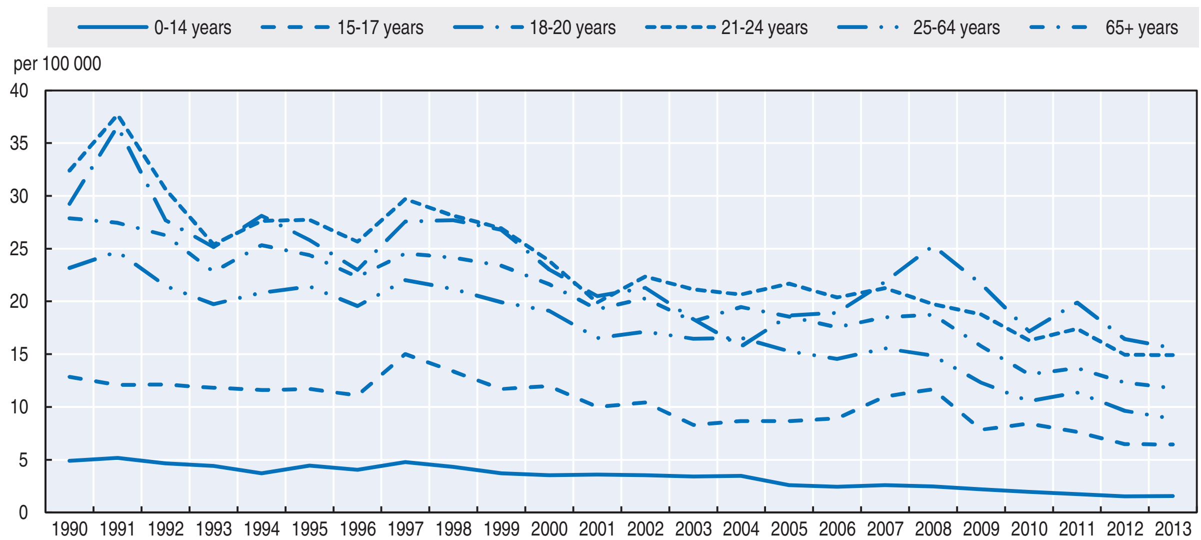
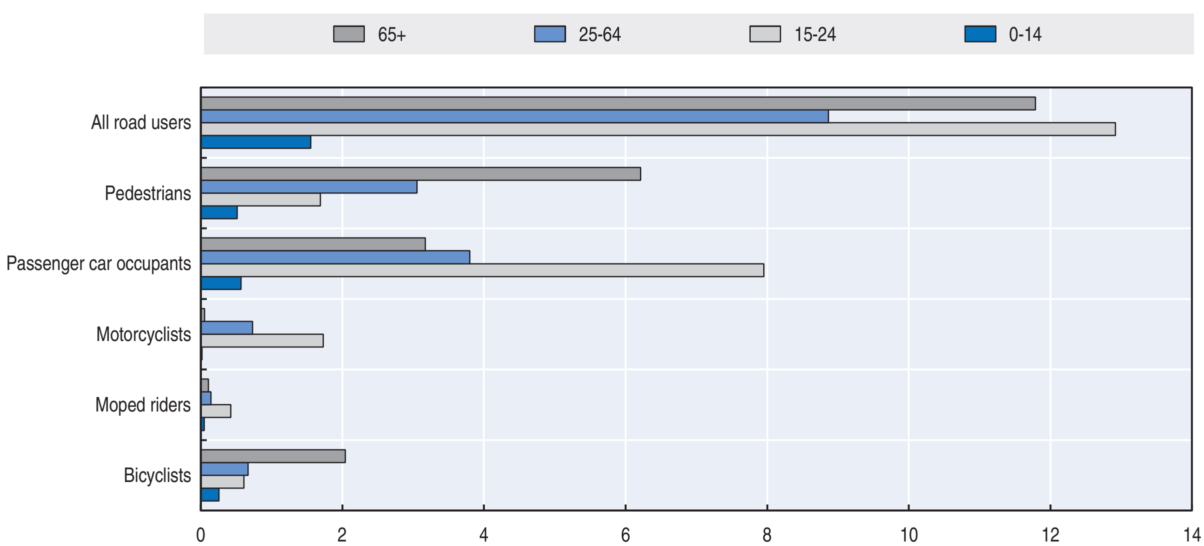


Figure 31.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants in 2013



Recent trends in road user behaviour

Impaired driving

Drink driving

The maximum authorised blood alcohol content (BAC) in Poland is 0.2 g/l for all drivers. Crashes are classified "alcohol related" if one of the crash participants has a BAC of 0.2 g/l or more.

In the last 10 years, the number of crashes caused by drivers under the influence of alcohol has decreased by 40%. According to police data, 9% of traffic fatalities are alcohol related.

Figure 31.4. **Road fatalities by road type**

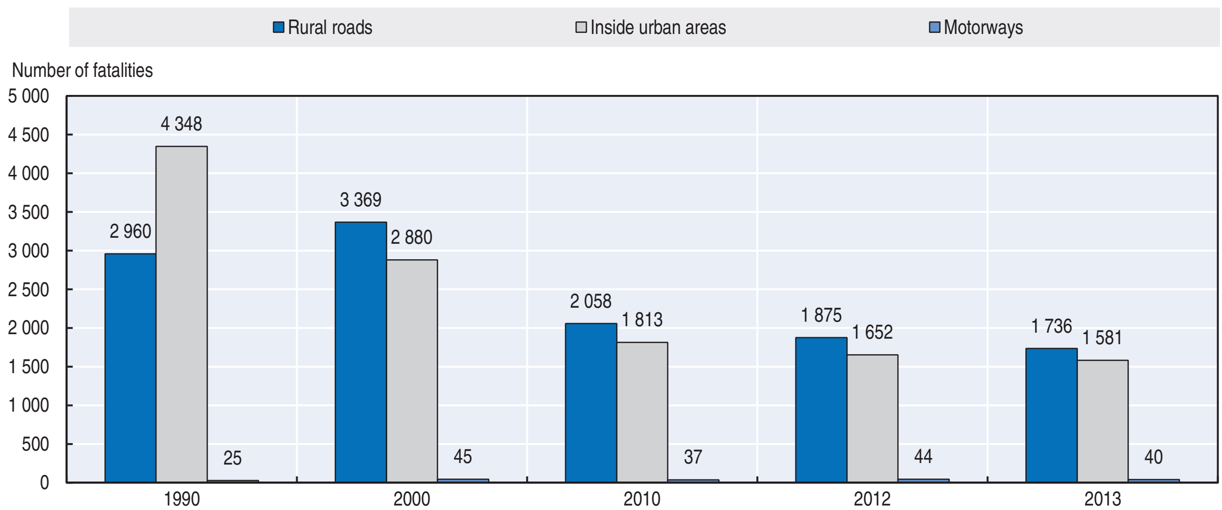


Table 31.4. **Costs of road crashes, 2013**

	Unit cost	Total
Fatalities	PLN 1.97 million	PLN 6 65 billion
Slight and serious injuries		PLN 26.82 billion
Property and damage crashes	PLN 19 000	PLN 0.70 billion
Total		34,2 billion PLN (around EUR 8.5 billion)
Total as % of GDP		2.1%

Source: Road and Bridge Research Institute for National Road Safety Council (2014).

In 2013, the number of alcohol-related crashes decreased by 10% from 2012.

Drugs and driving

In Poland, driving under the influence of alcohol and other psychoactive substances is forbidden.

According to the European DRUID (Driving under the Influence of Drugs, Alcohol and Medicines) research project, the prevalence of alcohol in the driving population of Poland – 1.9% – is lower than the EU average of 3.5%. The research indicated that the prevalence of illegal drugs in the EU is 1.9%, while in Poland it is 0.7%.

Distraction

The use of hand-held mobile phones while driving is forbidden in Poland, the use of hands-free phones is allowed.

Fatigue

There are no research findings on fatigue.

Speed

In the last 10 years, the number of fatal crashes involving speeding has decreased by 50%; however, speed remains one of the main causes of crashes in Poland and is a contributing factor in around 30% of fatal crashes. Speed enforcement efforts are constantly increasing. New regulations regarding automatic speed enforcement are being introduced into Polish law.

The table below summarises the main speed limits in Poland.

Table 31.5. **Passenger car speed limits by road type, 2015**

Urban roads	50 km/h between 5:00 and 23:00 60 km/h between, 23::00 and 5:00
Rural roads:	90 km/h
2-carriage expressway	120 km/h
Single-carriage express roads and dual-carriage roads with at least two lanes in each direction	100 km/h
Motorways	140 km/h

Seat belts and helmets

Seat belt use has been compulsory in front and rear seats since 1991.

Since 1997, children of 0-12 years old and below 150 cm in height have to be seated in a child restraint system adapted to their height and weight. This applies to all motor vehicles. Children must not be transported using a rearward-facing child restraint system in a front seat that is protected by an air bag. The child restraint wearing rate was 89% in 2014.

Table 31.6. **Seat belt wearing rate by car occupancy and road type**

%

	2011	2014
Front seat		
General	86	90
Urban roads	84	92
Rural roads	89	National roads: 93 Provincial roads: 90 County roads: 86
Rear seats		
Adults	65	71
Children (child restraint)	82	89

Source: Motor Transport Institute (2014a, 2014b).

Helmet wearing has been compulsory on motorcycles and mopeds since 1997. The helmet wearing rate by riders of motorised two-wheelers is nearly 100%.

Helmet use is not compulsory on bicycles.

National road safety strategies and targets

Organisation of road safety

The National Road Safety Council (NRSC; *Krajowa Rada Bezpieczeństwa Ruchu Drogowego*) was established on 1 January 2002 under the Act of Road Traffic Law as an auxiliary interministerial body for the Polish Council of Ministers for road safety issues. NRSC is chaired by the minister responsible for transport. The members of the NRSC are high level representatives of several ministries and governmental institutions. The executive unit is the Secretariat of NRSC, based in the Ministry of Infrastructure and Development. The

National Road Safety Council sets directions and co-ordinates activities of government administration in the area of road safety.

The main areas of the National Road Safety Council activities include:

- recommending guidance of state policy
- developing and appraising road safety programmes
- initiating research works, legal acts, international agreements and staff training programmes
- conducting international co-operation
- working closely with social institutions and NGOs
- instigating road safety education, publicity and promotion campaigns
- monitoring and evaluating road safety activities
- implementing the new law for cyclists.

Road safety strategy for 2013-20

The National Road Safety Council adopted in January 2013 a National Road Safety Programme for the period 2013-20, developed by the Secretariat of the National Road Safety Council and government bodies' experts. It is based on the Vision Zero approach.

Road safety targets

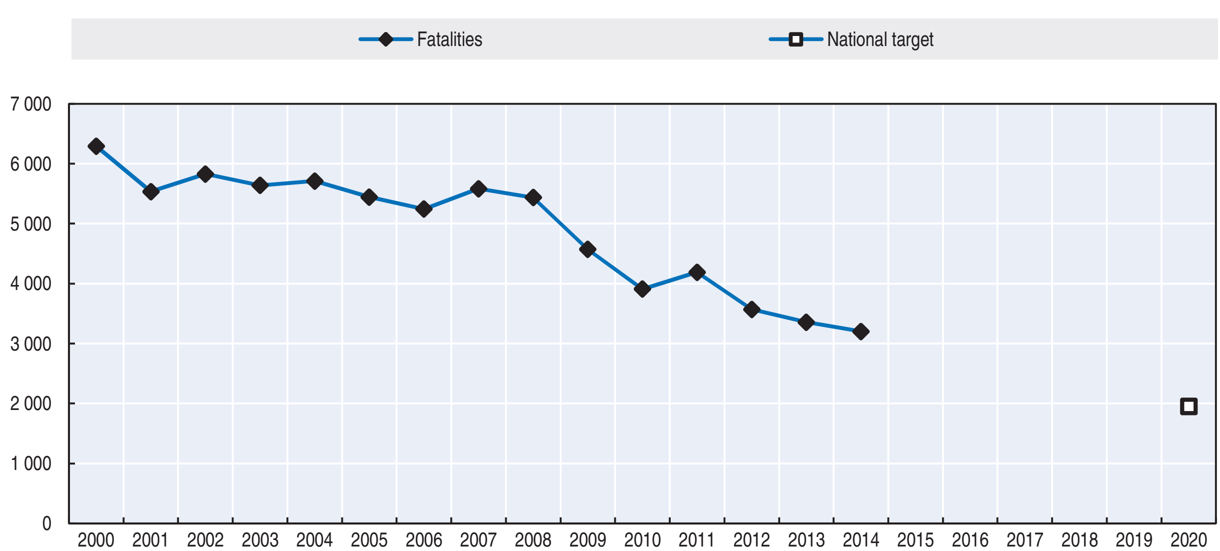
The 2013-20 programme targets include a 50% reduction in road deaths and a 40% reduction in people seriously injured by 2020, in comparison to 2010 levels.

The targets of the National Road Safety Programme are based on targets of the United Nations Decade of Action for Road Safety and EU recommendations.

Monitoring

The National Road Safety Council is in charge of monitoring. Interim reports are expected in 2015 and 2018.

Figure 31.5. **Trends in road fatalities towards national target**



Evaluation of past road safety strategy

In 2005, the Council of Ministers adopted the National Road Safety Programme for 2005-2013: GAMBIT 2005. It included a long-term vision of zero fatalities on Polish roads and the strategic target to decrease the number of fatalities in 2013 by 50% in comparison to 2003, or no more than 2 800. This target was not met, as 3 357 fatalities in 2013 were 80% higher than the target.

Recent safety measures (2012-14)

Road safety management

- Implementation of the EU Directive 2008/96/EC on Road Safety Management.
- Creation of the National Road Safety Observatory (2014).

Road users

Speed management

- In 2011, Poland started developing an automatic speed camera system. The new system is overseen by the Road Transport Inspection (GITD). In early 2013 the system had 611 fixed speed cameras (of which 375 were managed by the GITD and 236 by municipal guards. In addition, 29 GITD vehicles were equipped with onboard speed control cameras.

Impaired driving

- Beginning mid-2015, penalties for driving under the influence of alcohol will be increased. Apart from possible imprisonment or lifelong driving licence withdrawal, the courts will be able to oblige drivers to pay PLN 5 000 to a victims aid fund (recidivists will pay PLN 10 000) or PLN 10 000 directly to a victim. In addition, the act introduces the obligation of installing alcolocks in cars for drink driving offenders.

Seat belt and helmet use

- Observation studies on seat belt wearing rate (and child restraint system) are being regularly conducted for the Secretariat of National Road Safety Council.

Education and awareness

- Regular awareness campaigns are conducted on the use of seat belts and child restraint system.

Infrastructure

- Road Safety Audit is obligatory for all road design within the Trans-European Transport Network, based on Directive 2008/96/EC, and a training programme for auditors has been elaborated in Poland.

Vehicles

- Coaches and buses used for transportation of children during vacation time are subject to special inspections.

Post-crash measures

- A Post-Crash Care Action Plan for motorways managed by the General Directorate of National Roads and Motorways has been implemented.

Recent and ongoing research

- In 2015 the Motor Transport Institute joined the European two-year research project "SaferWheels" to investigate motorcycle crashes. Results are expected in 2017.

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- Ministry of Infrastructure and Development: *www.mir.gov.pl/*.
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Chapter 32

Portugal

*This chapter presents the most recent crash data for Portugal, as well as an update on the Portuguese road safety strategy and recently implemented safety measures.**

* All data stem from Autoridade Nacional de Segurança Rodoviária (ANSR) unless otherwise noted. For more information please contact transito@ansr.pt.

The serious economic crisis in Portugal contributed to significant reductions in road crash fatalities. In 2013, there were 637 road deaths in Portugal, an 11% decrease in comparison with 2012, and provisional data for 2014 indicate a further decrease of 6%. Compared to 2010, the number of road fatalities on motorways was more than halved. The economic downturn, introduction of tolls and speed enforcement reduced motorway traffic. At the same time, some drivers switched from formerly free motorways to alternative roads, raising the number of crashes and victims on them. Overall, Portugal surpassed a goal of 6.2 road deaths per 100 000 inhabitants two years ahead of the 2015 target.

Road safety data collection

Definitions applied in Portugal

- Road fatality: A person who died immediately after the crash or within the next 30 days. Until 2010, only fatalities within 24 hours after the crash were recorded. A correction factor of 0.26 was applied in the *IRTAD Database* to match the 30 days definition.
- Seriously injured person: A person hospitalised as a result of the crash for a period of 24 hours or more who did not die within 30 days of the crash.
- Slightly injured person: A person injured as a result of the crash who was not hospitalised or was hospitalised for less than 24 hours and who did not die within 30 days of the crash.

Data collection

In Portugal, the authorities responsible for reporting road crashes are the:

- Public Security Police (PSP) inside urban areas.
- National Republican Guard (GNR, *Guarda Nacional Republicana*) outside urban areas.

When the police officers attend a crash they must fill in the standard "Beav" road crash form. Statistics cover only crashes reported to the police.

The Beav registration forms are sent to the National Authority for Road Safety (ANSR, *Autoridade Nacional Segurança Rodoviária*), which is responsible for controlling the quality of data and inserting it into the national road accidents database. Controls consist of checking for duplications, incoherent data or errors.

In Portugal, the severity of an injury is registered by police on the Beav form. The national road traffic injury database uses only police reports and the number of seriously and slightly injured persons reported by police is not cross-checked with medical services.

A working group with representatives of ANSR, the General Health Directorate, the National Institute for Medical Emergency, the National Statistical Institute and the PSP and GNR is developing methodology to record serious injuries using the Maximum Abbreviated Injury Scale of three or more (MAIS3+) for 2014 data. The working group is also examining the best way to adjust the national road safety statistics after implementing the new definition.

Most recent safety data

Road crashes in 2014 – provisional data

Provisional data for 2014 (January to October) show a decrease of 6% in the number of fatalities compared to 2013 and an increase of 8% in serious injuries.

Road crashes in 2013

In 2013, there were 637 road deaths in Portugal, an 11% decrease in comparison with 2012. The number of injury crashes decreased by 2%. There was a very slight increase in the number of persons hospitalised.

Factors to explain this good performance include the fruit of the National Road Safety Strategy for the period 2008-2015 and the impact of the serious economic crisis in Portugal.

Trends in traffic and road safety (1990-2014)

Traffic

In Portugal no estimate is available for the evolution of traffic volume.

Between 1990 and 2013, the number of motorised vehicles more than doubled, rising from about 2.2 million vehicles in 1990 to 5.8 million in 2013 (+164%).

Road safety

Crashes and casualties

Since 1990, the number of road fatalities decreased by 78% and the number of injury crashes by 33%.

- **Between 1970 and 1989**, there was an average annual increase in road deaths of 3.5% and injury crashes of 3.9%. The number of fatalities reached a peak in 1975, with 3 372 persons killed.
- **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 rate of decline has accelerated, with an average annual decrease of 8.3% between 2000 and 2013.

Although it is not possible to provide a full explanation, several measures contributed to this significant decrease in the number of traffic casualties, including:

- treatment and reduction of black spots, implementation of traffic calming measures and construction of new roads, especially more than 3 000 km of motorways
- Road Code update regarding new traffic rules and penalties
- regular awareness campaigns on television, radio and press, focused on specific targets and issues
- increased enforcement, particularly attentive on speeding, drink driving, and use of seat belts especially on rear seats and child restraint systems
- improved passive safety features of vehicles
- advances in post-impact care.

Rates

In 2013, Portugal had a mortality rate, expressed in terms of road death per 100 000 inhabitants, of 6.1, one third of what it was in 2000.

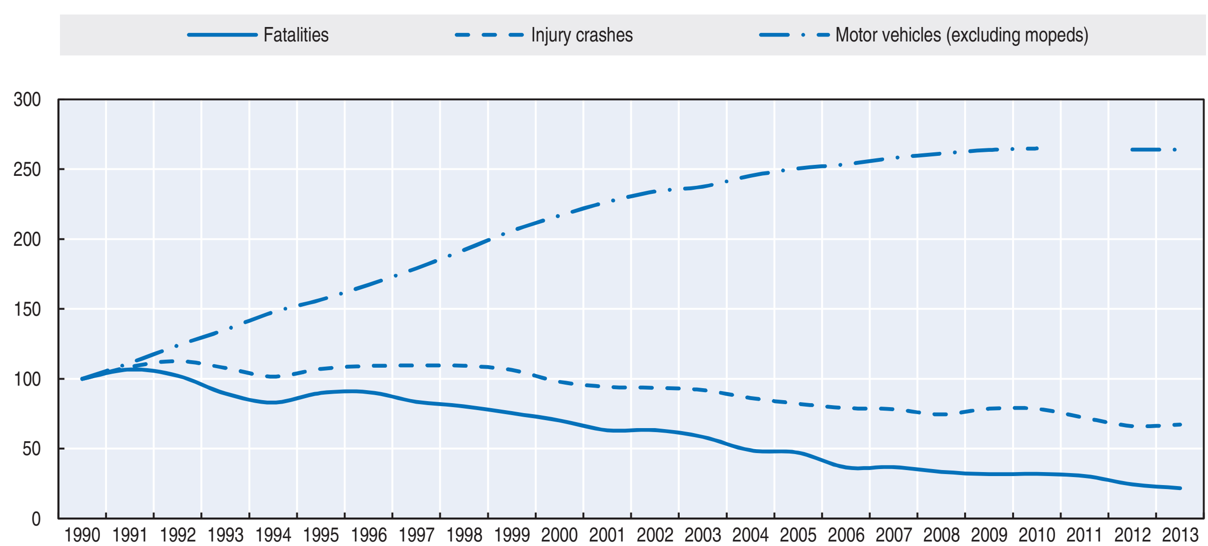
Regarding the fatality risk expressed by the number of fatalities per 10 000 motorised vehicles, the situation has also improved substantially, from 13.4 in 1990 to 1.1 in 2013.

Table 32.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	2 924	2 053	937	718	637	-11.3	-32.0	-69.0	-78.2
Injury crashes	45 110	44 159	35 426	29 867	30 339	1.6	-14.4	-31.3	-32.7
Injured persons hospitalised	12 165	6 918	2 475	1 941	1 946	0.3	-21.4	-71.9	-84.0
Deaths per 100 000 inhabitants	29.3	20.0	8.9	6.8	6.1	-10.8	-31.5	-69.7	-79.2
Deaths per 10 000 registered vehicles	13.4	4.3	1.6	1.2	1.1	-11.5	-32.0	-74.6	-91.8
Traffic data									
Registered vehicles[1] (thousands)	2 188	4 743	5 795	5 775	5 775	0.0	-0.3	21.8	163.9
Registered vehicles per 1 000 inhabitants	219	463	548	548	551	0.5	0.5	19.0	151.6

1. Registered vehicles excluding mopeds.

Figure 32.1. **Road safety and traffic data index 1990 = 100**



Road safety by user group

Since 1990, all user groups benefited from the improvements in road safety. The 93.5% improvement for moped rider fatalities must be analysed in conjunction with the lack of popularity of this type of vehicle.

In 2013, there was a marked (-26%) decrease in the number of motorcyclists killed.

Road safety by age group

Between 1990 and 2013, all age groups benefited from safety improvements, with fatality reduction above 90% for the youngest groups (0 to 20 years old). The older age groups

Table 32.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Bicyclists	120	62	31	30	29	-3.3	-6.5	-53.2	-75.8
Moped users	786	248	77	57	51	-10.5	-33.8	-79.4	-93.5
Motorcyclists	106	234	128	106	78	-26.4	-39.1	-66.7	-26.4
Passenger car occupants	898	809	367	255	214	-16.1	-41.7	-73.5	-76.2
Pedestrians	742	425	195	159	144	-9.4	-26.2	-66.1	-80.6
Others	272	275	139	111	121	9.0	-12.9	-56.0	-55.5
Total	***2 924***	***2 053***	***937***	***718***	***637***	***-11.3***	***-32.0***	***-69.0***	***-78.2***

(65+) have shown a slower decrease than the other groups; they also have a higher death rate than the general population, similar to those of young adults (21-24). The elderly are particularly vulnerable as pedestrians.

Child safety

In 2013, children aged from 0 to 14 years registered the lowest mortality rate, with four children killed per million inhabitants of that age (about 15 times less than the rest of the population).

In the last ten years (2004 to 2013) the number of deaths and serious injuries among the 0-14 age group fell faster than for other age groups: Children killed and seriously injured have decreased by 86% and 67%, respectively, while the corresponding reduction in other age groups was 53% and 50%, respectively.

These substantial reductions resulted from a set of measures, including:

- implementation of traffic calming measures in urban areas, particularly near schools
- increased enforcement of child restraints use
- promotion of reflective materials and clothing for children
- promotion of bicycle helmets for children (it is not mandatory)
- better training to raise driver awareness about vulnerable road users
- road safety education programmes for children and their parents
- distribution of educational materials.

Table 32.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	47	38	6	2	5	Figures too small for meaningful comparisons		-86.8	-89.4
6-9	52	20	7	4	3			-85.0	-94.2
10-14	81	25	5	7	3			-88.0	-96.3
15-17	152	60	8	10	8			-86.7	-94.7
18-20	282	171	31	18	24	33.3	-22.6	-86.0	-91.5
21-24	333	221	60	47	41	-12.8	-31.7	-81.4	-87.7
25-64	1 411	1 120	549	429	357	-16.8	-35.0	-68.1	-74.7
≥ 65	509	377	270	195	193	-1.0	-28.5	-48.8	-62.1
Total	***2 924***	***2 053***	***937***	***718***	***637***	***-11.3***	***-32.0***	***-69.0***	***-78.2***

Figure 32.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

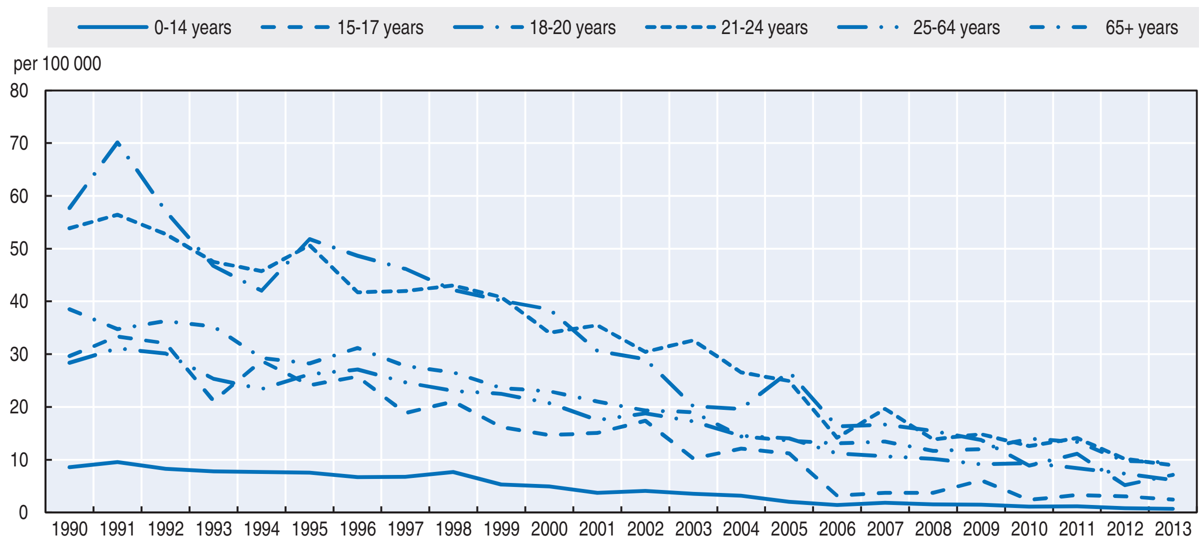
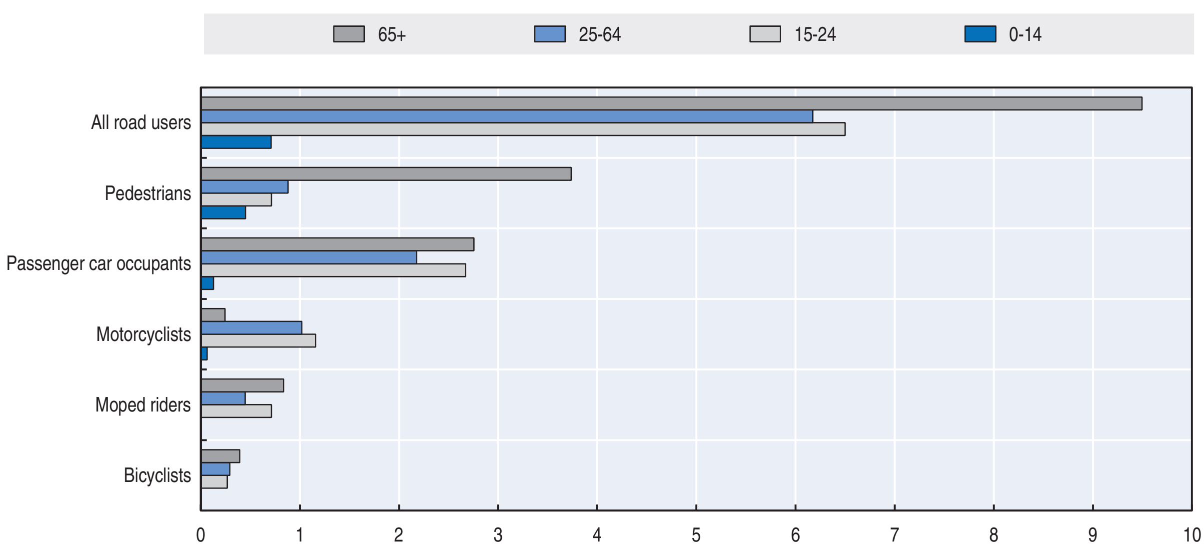


Figure 32.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants in 2013



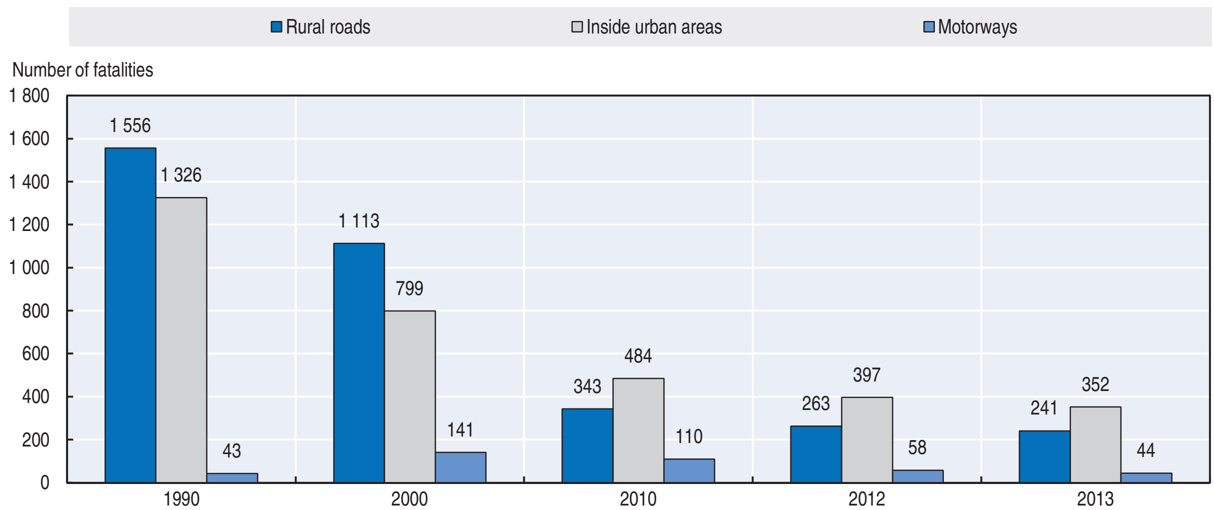
Road safety by road type

In 2013, there were more fatalities in urban areas (55%) than on country roads (38%). This represents a significant change from 1990 and 2000, thanks to faster improvement in the reduction of road deaths on rural roads. The positive results are closely related to the significant increase in the length of the motorway network and black spot treatment.

Urban area fatalities and serious injuries are a major concern and urban road safety remains a priority target of the National Road Safety Strategy.

Compared to 2010, the number of road fatalities on motorways was more than halved. The economic crisis in Portugal led to an important reduction in motorway traffic along with an overall speed reduction. On the other hand, the introduction of tolling on some

Figure 32.4. **Road fatalities by road type**



motorways that before were free caused an increase of traffic on alternative roads and therefore raised the number of crashes and victims on those roads. The increase of speed enforcement also contributed to the decrease of road fatalities on motorways.

Economic costs of traffic crashes

ANSR and the University of Lisbon (*Universidade Autónoma de Lisboa*) conducted a study in 2010-11 to estimate the national costs of traffic crashes.

This study used the methodology of human capital, based on data from several public institutions for a period of 15 years (1996-2010). This method relies mainly on historical data and tends to estimate a value lower than the willingness-to-pay approach. Therefore, the costs presented in this study should be viewed as minimum estimates.

Table 32.4. **Costs of road crashes, 2010**

Costs	Unit cost	Total
Fatalities	EUR 625 000	EUR 0.46 billion
Injured	Seriously injured: EUR 102 000 Slightly injured: EUR 26 000	EUR 1.43 billion
Property/damage costs		
Total		EUR 1.89 billion
Total as % of GDP		1.2%

Source: ANSR, University of Lisbon.

Recent trends in road user behaviour

Impaired driving

Drink driving

Until 2013, the maximum authorised blood alcohol content (BAC) in Portugal was 0.5 g/l for all drivers. Following the revision of the Road Code that entered into force on the 1 January 2014, a limit of 0.2 g/l applies for novice drivers (licence for up to three years) and professional drivers of emergency/medical service vehicles, taxis, school buses, heavy vehicles and dangerous goods transport vehicles.

A drink driving crash is defined as a crash where at least one of the drivers involved is over the legal BAC limit. However, data are incomplete because some drivers involved in road crashes have not been tested, some because they were too seriously injured.

According to the Toxicological Department of the National Institute for Legal Medicine and Forensic Sciences, 33% of drivers killed in road crashes in 2013 were found to be over the legal blood alcohol limit.

Drugs and driving

It is forbidden to drive under the influence of psychotropic substances. Every driver involved in a fatal or serious injury crash is tested for drugs consumption, and the application of roadside drug tests is allowed when there is a suspicion of drugs abuse.

According to the Toxicological Department of the National Institute for Legal Medicine and Forensic Sciences, 12% of killed drivers in 2013 tested positive for drugs.

Distraction and fatigue

Portuguese law allows the use of hands-free mobile phones while driving.

A 2013 study conducted by the PRP found that 2.5% of Portuguese drivers used a mobile phone while driving.

The use of mobile phones and fatigue are part of a new operational objective defined in the review of the National Road Safety Strategy, which aims to better understand the influence of these issues on road crashes.

Speed

The table below summarises the main speed limits in Portugal. The revised Road Code introduced the concept of "Coexistence zones" where vulnerable users and others have to respect different rules from other roads. In coexistence zones the speed limit is 20 km/h.

National data on speed distributions are not available. According to police records of speeding traffic offences from 2010 to 2013, the number of controls increased by 10% while the number of offenders increased by 28%. The percentage of drivers exceeding the speed limit in 2013 is determined to be 7%, up from 6% in 2010.

Table 32.5. **Passenger car speed limits by road type, 2015**

Urban roads	50 km/h
Rural roads	90 km/h
Motorways	120 km/h

Seat belts and helmets

Seat belt use has been compulsory in front seats since 1978 and in rear seats since 1994. According to the 2013 PRP study, the seat belt wearing rate in cars is 96% for drivers and front seat passengers and 77% for rear seat passengers. The front seat rate is relatively higher on motorways than on other roads.

Child restraint systems

In Portugal, the use of child restraint systems is compulsory until the age of 12 or for children less than 135 cm. In 2013, 98% of children traveling in car front seats and 94% in car back seats were using a child restraint system. However, child restraint usage varies significantly with age: among children up to five years old, child restraint use is 96% or more, but it decreases for children aged 6 to 9 and from 9 to 12 years old, some children use the adult seat belt.

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

National road safety strategies and targets

Organisation of road safety

ANSR is a government agency within the Ministry of Internal Affairs which has the mission of planning and co-ordinating road safety policies in Portugal through the development of national road safety strategies and targets.

Directly dependent on the ANSR, A Road Safety Council – dependent on ANSR – is an advisory body chaired by the ANSR president. The council ensures the strategic management and co-ordination of organisations involved in road safety. Members are representatives of PSP and GNR, the Mobility and Transport Institute and the Directorate of Health. The Road Safety Council can also invite other public or private institutions to take part in its meetings.

Although ANSR defines the medium and long-term road safety targets with the support of external expertise, local authorities are invited to collaborate during the process of elaboration of programmes.

The main stakeholders within the road safety sector are:

- other ministries, such as the Ministry of Education, the Ministry of Economy and the Ministry of Justice
- universities, insurance companies, road concessionaires
- non-governmental organisations and associations, such as automobile associations, the Portuguese Road Accident Prevention, Auto-mobilized Citizens Association, the Children Safety Promotion, etc.

Road safety strategy for 2008-15

The revision of the National Road Safety Strategy for its second period (2013-15) has been approved by the Council of Ministers. This led to the redefinition of the initial strategic goals and the definition of new ones.

Based on the identification of the main risk groups and risk factors, seven strategic targets were defined:

- improvement of driver behaviour
- protection of vulnerable road users
- increased road safety in urban areas
- reduction of the main risk behaviours
- safer infrastructures and better mobility

- promotion of vehicle safety
- improvement in the assistance, treatment and follow-up of injured road users.

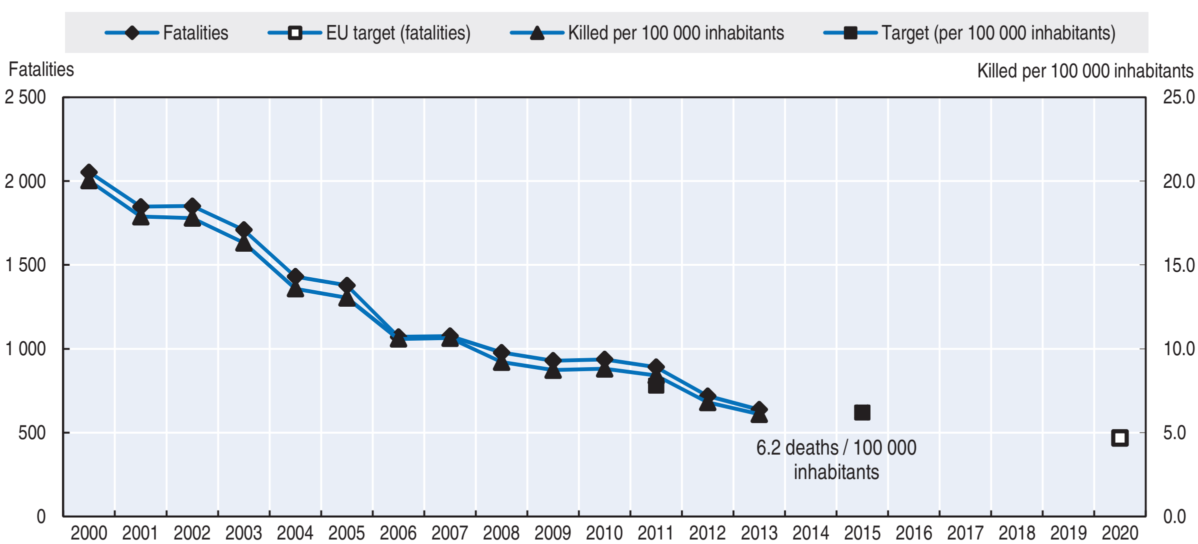
Thirteen operational objectives have been established, with each one assigned to a work group involving different public and private entities. The work groups have defined 131 actions that will be subject to regular monitoring and evaluation.

Road safety targets

ANSR has maintained the previous objective of achieving a death rate of 6.2 fatalities per 100 000 inhabitants, even though the change in 2010 to extend the definition of a road death to deaths within 30 days of the crash, represents a bigger challenge. However, with the significant decrease achieved since 2011, Portugal is on track to reach its target.

In the framework of the National Road Safety Strategy, all the strategic and operational targets and respective actions established should be evaluated annually and possibly reformulated.

Figure 32.5. **Trends in road fatalities towards national target**



Evaluation of past road safety strategy

In 2009, the Portuguese Plan for the Prevention of Road Accidents, launched in 2003, was terminated. Regarding the targets that Portugal adopted for the year 2009, the most important ones were achieved or surpassed.

In terms of the evolution of people killed or seriously injured in road crashes in relation to the baseline period (1998-2000) the main improvements were:

- Fatalities and serious injuries declined 58% and 65% respectively, which was superior to the target of 50% improvement.
- Pedestrian fatalities and serious injuries fell 62% and 67% respectively.
- Fatalities and serious injuries for two-wheeled vehicle users declined 65% and 72% respectively.
- Urban areas decreased fatalities and serious injuries by 53% and 68% respectively.

Recent safety measures (2012-14)

Speed management

ANSR has hired a company to start implementation of automatic speed cameras in 2015.

Website

- Autoridade Nacional de Segurança Rodoviária – ANSR (National Authority for Road Safety): *www.ansr.pt*.
- Instituto Mobilidade e Transportes – IMT (Mobility and Transport Institute): *www.imtt.pt*.
- Polícia Segurança Pública – PSP (Public Security Police): *www.psp.pt*.
- Estradas de Portugal – EP (Portuguese Roads Institute): *www.estradasdeportugal.pt*.

Chapter 33

Serbia

*This chapter presents the most recent crash data for Serbia, as well as an update on the country's road safety strategy and the recently implemented safety measures.**

* The Republic of Serbia joined the International Road Traffic and Accident Database (IRTAD) group in 2013 as an observer country. Data and information provided in this report stem from the Road Traffic Safety Agency (RTSA) unless otherwise noted and have not been validated by IRTAD. For more information contact dragoslav.kukic@abs.gov.rs or jovica.vasiljevic@abs.gov.rs.

In 2014 Serbia started to implement a number of EU directives, rules and recommendations and started to upgrade the road traffic safety law for adoption in 2015. A Road Traffic Safety Strategy expected to be adopted in 2015 will have the quantitative target of no child killed in traffic by 2020. Unlike many other countries, the great majority of fatalities (62%) occurred in urban areas.

Road safety data collection

Definitions applied in Serbia

- Road fatality: Person killed immediately or dying within 30 days as a result of a road crash.
- Serious injury: Serbia has not yet adopted a definition for serious injury in police records.

Data collection

Data on road deaths are available since 1981. More detailed information on road crashes is available for the years 1996 onward and is included in the police crash database established in 1996. A project, funded by the World Bank, is underway to develop a new, unique database, compatible with the Common Accident Data Set (CADAS) structure of the European Commission's Community database on Accidents on the Road in Europe (CARE). This new database should be finalised in 2015 and begin collecting data according to CADAS structure in January 2016.

When a crash occurs, traffic police go to the scene to secure the site, organise relief and collect data for the road crash database, using a dedicated form.

Data on levels of injury are collected by the traffic police based on information from hospitals. Hospitals are obliged to call the police for every person admitted to hospital, claiming to have been involved in a road crash.

There is no information on the level of underreporting.

Most recent safety data

Road crashes in 2014 – provisional data

Based on provisional data, there were 536 reported road deaths in 2014, i.e. a 17.5% decrease compared to 2013. This is the lowest figures since 1981 (Road Traffic Safety Agency, 2013).

These relatively good results are the fruit of the Law on Road Traffic Safety enacted in 2009, which was accompanied by a series of education, prevention and other measures. In 2014, institutional organisation and co-ordination of road safety activities were improved. Serbia also started to implement a number of European Union directives, rules and recommendations, and started to upgrade the road traffic safety law for adoption in 2015.

Road crashes in 2013

In 2013, there were 650 reported road deaths in Serbia, a 6% decrease from 2012.

Trends in traffic and road safety (1990-2014)

Traffic

Between 2001 and 2013, the number of motorised vehicles increased by 23%.

Road safety

Crashes and casualties

Between 2010 and 2014, the number of fatalities decreased by 19%. Most of the reduction was achieved during 2014 (Road Traffic Safety Agency, 2014).

A number of important measures have been implemented since the adoption of the New Road Traffic Safety Law in 2009:

- establishment of institutions like the national Road Traffic Safety Co-ordination Body, Road Traffic Safety Agency, etc.
- introduction of a penalty point system
- reduction of the maximum legal blood alcohol content to 0.3 g/l
- introduction of a 50 km/h speed limit in urban areas
- compulsory seat belt wearing for rear seats.

Rates

In 2014, the reported death rate per 100 000 inhabitants was 7.5.

Table 33.1. **Road safety and traffic data**

	2010	2012	2013	2014	2014 % change over	
					2013	2010
Reported safety data						
Fatalities	660	688	650	536	-17.5	-18.8
Injury crashes	14 197	13 361	13 523	13 044	-3.5	-8.1
Deaths per 100 000 inhabitants	9.0	9.5	9.1	7.5	-17.1	-17.0
Deaths per 10 000 registered vehicles[1]	3.7	3.5	3.0			
Traffic data						
Registered vehicles[1] (thousands)	1 801	1 977	2 154			
Registered vehicles per 1,000 inhabitants	246	274	299			

1. Registered vehicles excluding mopeds.

Road safety by user group

In 2013, passenger car occupants represented 46% of traffic fatalities, pedestrians 24% and motorised two-wheelers 9%.

Since 2010, road safety improvements have not benefitted car occupants. The lack of improvement can be explained by a low set belt wearing rate, in particular on rear seats, and an increase in the car fleet.

Figure 33.1. **Road safety and traffic data index 2001 = 100**

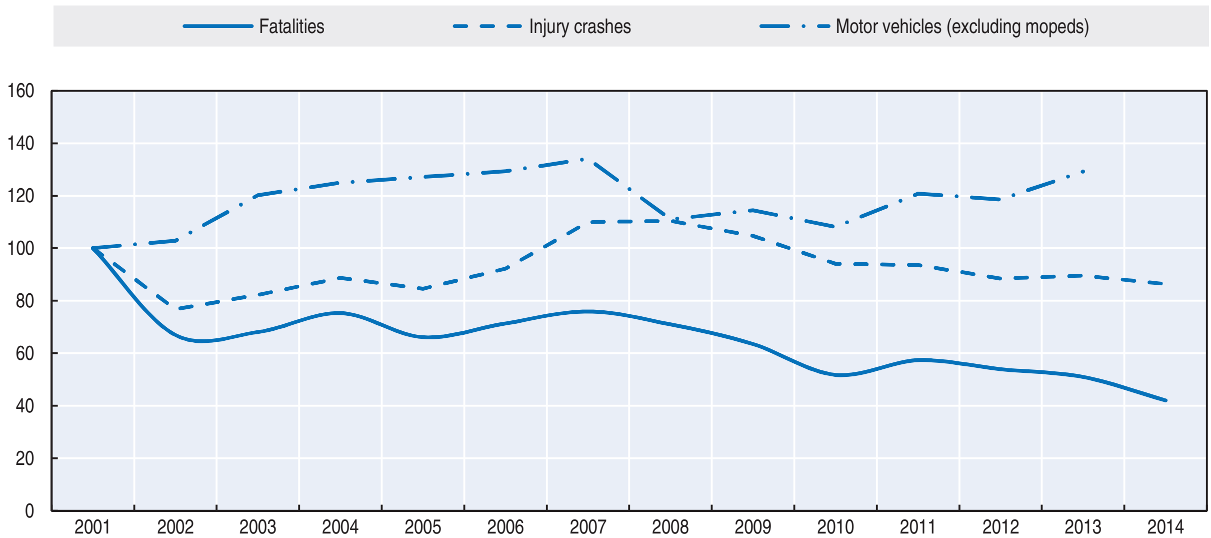


Table 33.2. **Road fatalities by road user group**

	2010	2012	2013	2013 % change from	
				2012	2010
Bicyclists	65	69	59	-14.5	-9.2
Moped users	22	29	19	-34.5	-13.6
Motorcyclists	48	62	37	-40.3	-22.9
Passenger car occupants	278	299	297	-0.7	6.8
Pedestrians	169	157	157	0.0	-7.1
Others	78	72	81		
Total	***660***	***688***	***650***	***-5.5***	***-1.5***

Road safety by age group

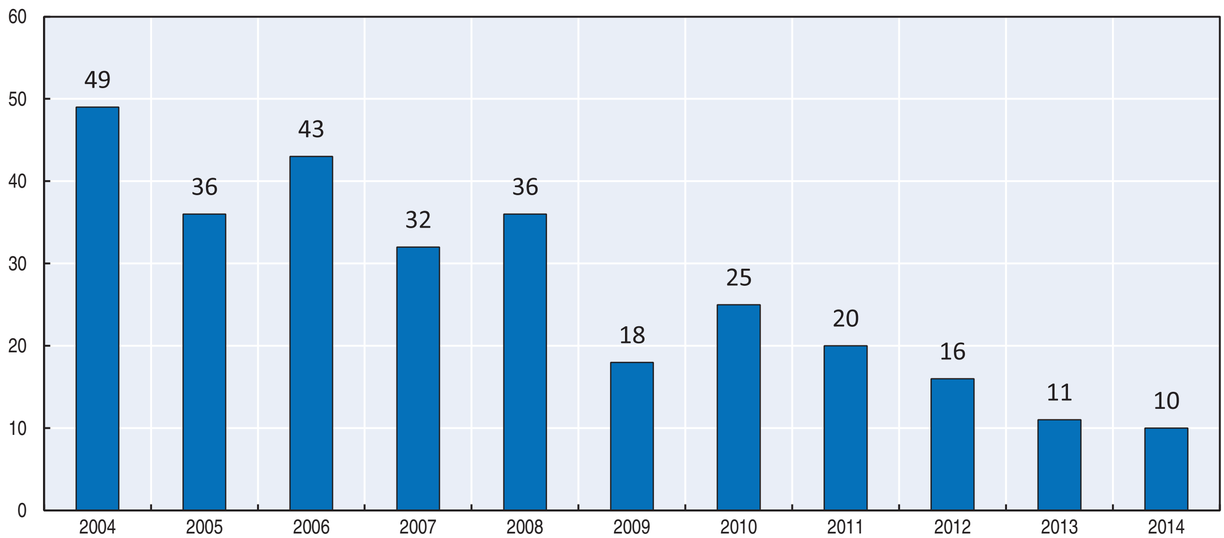
Table 33.3. **Road fatalities by age group**

Age	2010	2012	2013	2013 % change over	
				2012	*2010*
0-5	9	3	1	Figures too low for meaningful comparisons	
6-9	7	4	5		
10-14	9	9	5		
15-17	8	21	11	-47,6	37,5
18-20	31	28	34	21,4	9,7
21-24	50	48	45	-6,3	-10,0
25-64	389	387	377	-2,6	-3,1
≥ 65	157	188	172	-8,5	9,6
Total incl. Unknown	***660***	***688***	***650***	***-5,5***	***-1,5***

Children safety

In 2011, Serbia started a series of measures targeting child safety, including the campaign "Attention Now" to raise awareness of children and their parents. The campaign is supported by dedicated cartoons, books and brochures for parents and teachers. There are education campaigns in primary schools and around high risk locations.

Figure 33.2. **Number of children killed in road traffic**

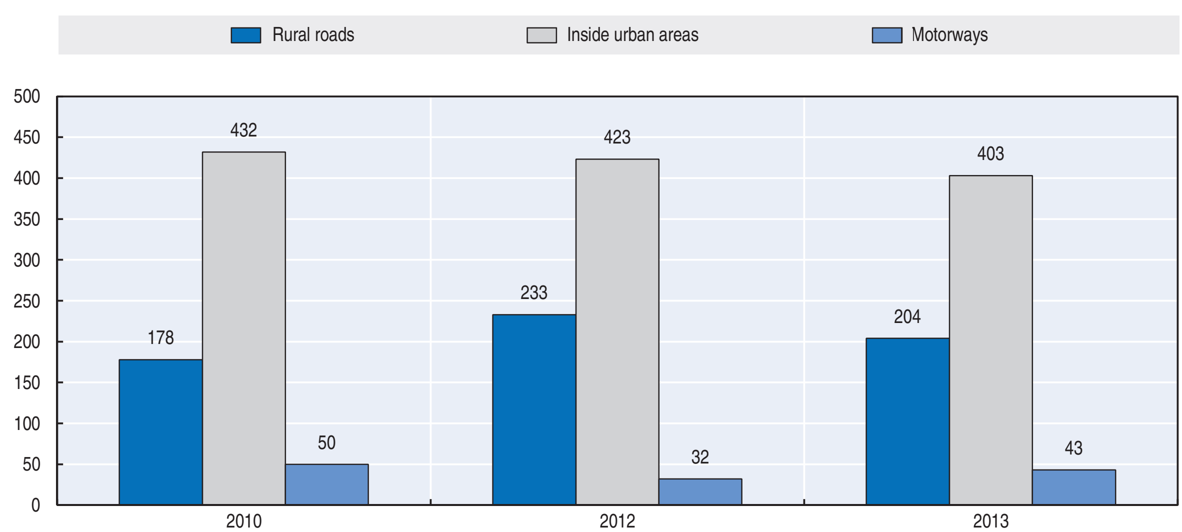


Road safety by road type

Unlike many other countries, the great majority of fatalities occurred in urban areas. In 2013, 62% of fatalities occurred on urban roads, 31% on roads outside built-up areas and 7% on motorways. This is explained by the following factors:

- Main state roads pass through built-up areas.
- Local roads and street networks lack adequate features to protect vulnerable road users, especially pedestrians and cyclists.

Figure 33.3. **Road fatalities by road type**



Economic costs of traffic crashes

Based on a recent study (Ross et al., 2012), road crashes represented in 2013 a total cost of about EUR 303.5 million. This estimate was used to guide development of the proposed road safety strategy for the period 2015-20.

Recent trends in road user behaviour

Impaired driving

Drink driving

In Serbia, the maximum authorised blood alcohol content (BAC) is 0.3 g/l. It is 0.0 g/l for novice and professional drivers and for moped and motorcycle operators. Over the past 10 years, about 5-7% of fatal crashes were attributed to drink driving.

Drugs and driving

The Road Traffic Safety law forbids driving under the influence of illicit drugs.

Distraction

Distracted driving is recognised as a growing problem in Serbia; however there are no adequate surveys to assess the extent of the phenomenon.

Since 2009, it is illegal to use a hand-held mobile phone or similar device while driving. The penalty for this is about EUR 50.

Fatigue

In 2013, fatigue was reported as the main contributing factor in 38 road crashes, causing the deaths of three people.

Speed

The table below summarises the main speed limits in Serbia. The speed limit in urban areas has been reduced from 60 km/h to 50 km/h.

Table 33.4. **Passenger car speed limits by road type, 2015**

Urban roads	50 km/h	
Rural roads	80 km/h	Lower speed limits for young drivers
Motorways	120 km/h	

Speeding is the most common cause of road crashes in Serbia. In 2013, excessive or inappropriate speed was responsible for 51% of road deaths. The implementation of the CADAS data structure will permit more in-depth analysis of crash factors, including the contribution of excessive speed for various crash types.

Seat belts and helmets

Seat belt use has been compulsory for front seats since 1982 and for rear seats since 2009. Child restraints have been compulsory since 2009 for children up to three years old. The traffic law under preparation will include new requirements, in particular dedicated child seats for all children between infancy and 12 years below 135 cm in height.

A roadside survey undertaken in 2014 indicated a 70% seat belt wearing rate by front-seat occupants and a 4% wearing rate by rear-seat occupants. For children three years old and younger, 36% were using an appropriate child seat, while 9.2% of children above three were in a child seat.

Table 33.5. **Seat belt wearing rate by car occupancy and road type**

	2014
Front seat	
General	70.3%
Rear seats	
General (adults and children)	4%
Child restraints use	35.9% children below 3 9.2% children above 3

All riders of motorised two-wheelers are required to wear helmets. In 2014, the helmet-wearing rate was 72% for moped riders and 92% for motorcyclists.

There is no mandatory law for helmet use by cyclists.

National road safety strategies and targets

Organisation of road safety

In Serbia, the leading agency for road safety is the Ministry of Transport with the support of the Road Traffic Safety Agency. The national Road Traffic Safety Co-ordination Body is composed of ministers in charge of traffic issues, interior affairs, health, labour, justice, education, and trade and services, with the main aim being to establish co-operation and harmonise efforts to improve road safety.

The government established the Road Traffic Safety Agency to manage legal and technical issues in the field of road traffic safety. The agency also co-operates with regional and local bodies for road traffic safety.

Road safety strategy for 2015-20

Adoption of the first national road traffic safety strategy and a national road safety programme is expected in 2015. It will cover the period 2015-20 and include quantitative targets.

Road safety targets

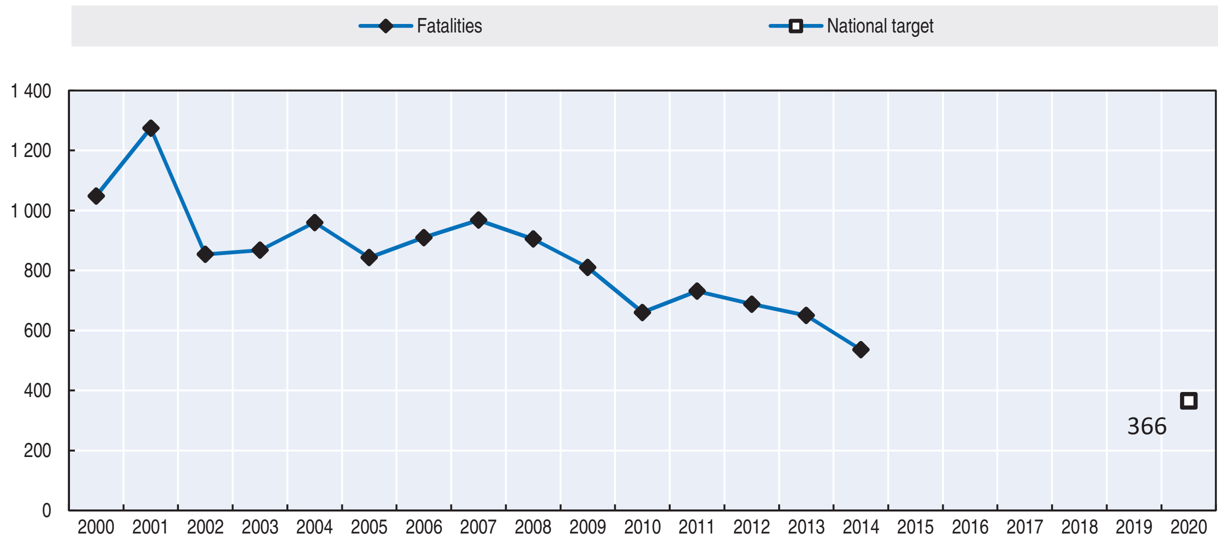
The forthcoming strategy will include the following quantitative targets:

- to have no child killed in traffic by 2020
- to reduce by 50% the number of people killed, the number of people seriously injured and the number of children seriously injured by 2020 compared to 2011
- to halve by 2020 the total annual social-economic costs of traffic crashes compared to 2011 level.

Monitoring

RTSA regularly monitors safety indicators such as speeding, use of protective equipment like child seats, seat belts and helmets, driving under the influence of alcohol, use of mobile phones and use of daylight running lights.

Figure 33.4. **Trends in road fatalities towards national target**



Recent safety measures (2012-14)

Road safety management

Graduated licensing

In 2012, Serbia introduced a graduated licensing system: Young people who obtain their driving licence at 17 have a one-year probationary period.

Safety data management

- In 2015, Serbia began training traffic police to collect road crash data according to the CADAS structure as recommended by the European Commission.
- In 2013, Serbia started monitoring road safety performance and road user's behaviour through a set of Safety Performance Indicators.

Road users

Media campaigns

- Several safety campaigns were launched or pursued in 2014 and 2015;

Education, training and enforcement

- In June 2012, Serbia began rehabilitation courses for drivers whose licence had been revoked.
- In 2013, Serbia began a licensing programme for driving instructors.

Infrastructure

- In 2015, Serbia will start implementing EU directives and recommendations on Road Infrastructure Safety Management. This includes establishing and implementing procedures of road safety impact assessments, road safety audits, the management of road network safety and safety inspections.

Vehicles

- Since January 2012, the Road Traffic Safety Agency has introduced digital tachographs for monitoring heavy trucks and professional drivers.

Recent and ongoing research

Three important research projects were completed in 2014:

- Handbook for monitoring the road accident data according to CADaS protocol. An overview of the project is available on the RTSA website *www.abs.gov.rs*.
- Social Attitudes to Road Traffic Risks in the Republic of Serbia.
- Methodology for benchmarking in road safety with basic research for Serbia.

References

Road Traffic Safety Agency (2013), *Statistical report on road safety in Serbia in 2012*, RTSA, Belgrade.

Road Traffic Safety Agency (2014), *Statistical report on road safety in Serbia in 2013*, RTSA, Belgrade.

Ross et al. (2012), *Costs of road accidents*, The Republika Srpska, Banja Luka.

Websites

- Road Traffic Safety Agency of Serbia: *www.abs.gov.rs*.

Chapter 34

Slovenia

*This chapter presents the most recent crash data for Slovenia, as well as an update on the country road safety strategy and recently implemented safety measures.**

* All data stem from the Slovenian Traffic Safety Agency and IRTAD unless otherwise noted. For more information please contact: andraz.murkovic@avp-rs.si.

In 2014, there were 108 fatalities on Slovenian roads, a 14% decrease from 2013. The rate of road fatalities amounted to 6.1 deaths per 100 000 inhabitants. Since 2000, all user groups have benefited from improved safety, although the improvement has been modest for motorcyclists. The Slovenian Traffic Safety Agency has launched a pilot project focusing on the promotion of safe cycling in the wider context of mobility, sustainable transport, health and congestion policy.

Road safety data collection

Definitions applied in Slovenia

- Road fatality: Any person killed immediately or dying within 30 days as a result of a road crash.
- Seriously injured person: Any person who sustains injuries from a road traffic crash entailing temporary or permanent health damage or temporary or permanent reduced ability to work.
- Slightly injured person: Any person injured excluding persons seriously injured.

Data collection

In Slovenia, crash data are collected by the police, which is the main source of information for road fatalities and injuries.

Slovenia uses its own classification of injuries, which is similar to that used by Germany and Austria. Slovenia does not use the Abbreviated Injury Scale (AIS) classification and, in the short-term, does not plan to collect data for MAIS3+ (Maximum Abbreviated Injury Scale of 3 or more).

Most recent safety data

Road crashes in 2014 – provisional data

In 2014, there were 108 fatalities on Slovenian roads, a 14% decrease from 2013. However, the number of persons severely injured increased by 17%. The reduction in fatalities mainly benefited motorcyclist riders and cyclists (19% fewer compared with 2013). The number of vulnerable road users killed decreased by 23%. Fatalities among car occupants increased by 5%.

Road crashes in 2013

In 2013, there were 125 road fatalities, a 3.8% decrease when compared to 2012. The number of injury crashes decreased by 4.7%. The reduction in fatalities mainly benefited car drivers (52 fatalities in 2012 and 41 fatalities in 2013). The number of vulnerable road users killed increased by 8% (53 fatalities in 2012, and 57 fatalities in 2013).

Trends in traffic and road safety (1990-2014)

Traffic

Since 1990, traffic (in vehicle-kilometres) has more than doubled and the vehicle fleet has increased by 75%.

Road safety

Crashes and casualties

Fatalities peaked in 1979, when 735 people died on the roads. Since then the number of road deaths has steadily decreased, with a period of relative stagnation between 2002 and 2007.

Fatalities declined noticeably from 2007 to 2010, probably due to the new motorway toll system, regular media campaigns promoting road safety and the Road Safety Act that came into force in 2008.

From 2010 to 2014, the number of road fatalities decreased by 22%, from 138 to 108. The number of injury crashes decreased by 17% and the number of severely injured persons decreased by 5%.

In 2013, Slovenia launched a new National Road Safety Programme 2013-22 with a goal to reduce the number of fatalities and severely injured by 50%. (See section below on road safety strategy).

Rates

Between 1990 and 2013, the mortality rate, expressed in terms of deaths per 100 000 inhabitants, was reduced by 77%. The fatality risk expressed in terms of deaths per billion vehicle-kilometres was reduced by 89%. In 2013, Slovenia had a mortality rate of 6.1 deaths per 100 000 inhabitants and a fatality risk of 7.2 deaths per billion vehicle-kilometres.

Table 34.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	517	314	138	130	125	-3.8	-9.4	-60.2	-75.8
Injury crashes		8 951	7 596	6 742	6 426	-4.7	-15.4	-28.2	
Deaths per 100 000 inhabitants	25.9	15.8	6.7	6.3	6.1	-4.0	-9.9	-61.6	-76.6
Deaths per 10 000 registered vehicles	6.9	3.2	1.1	1.0	1.0	-4.1	-11.0	-70.3	-86.2
Deaths per billion vehicle kilometres	65.1	26.7	7.7		7.2		-7.0	-73.0	-88.9
Traffic data									
Registered vehicles[1] (thousands)	749	979	1 290	1 310	1 314	0.3	1.8	34.2	75.4
Vehicle kilometres (millions)	7 945	11 759	17 826	-	17 295	-	-3.0	47.1	117.7
Registered vehicles per 1 000 inhabitants	375	493	630	637	638	0.1	1.2	29.6	70.1

1. Registered vehicles excluding mopeds.

Road safety by user group

Since 2000, all user groups have benefited from improved safety, although the improvement has been modest for motorcyclists.

Figure 34.1. **Road safety and traffic data index 1990 = 100**

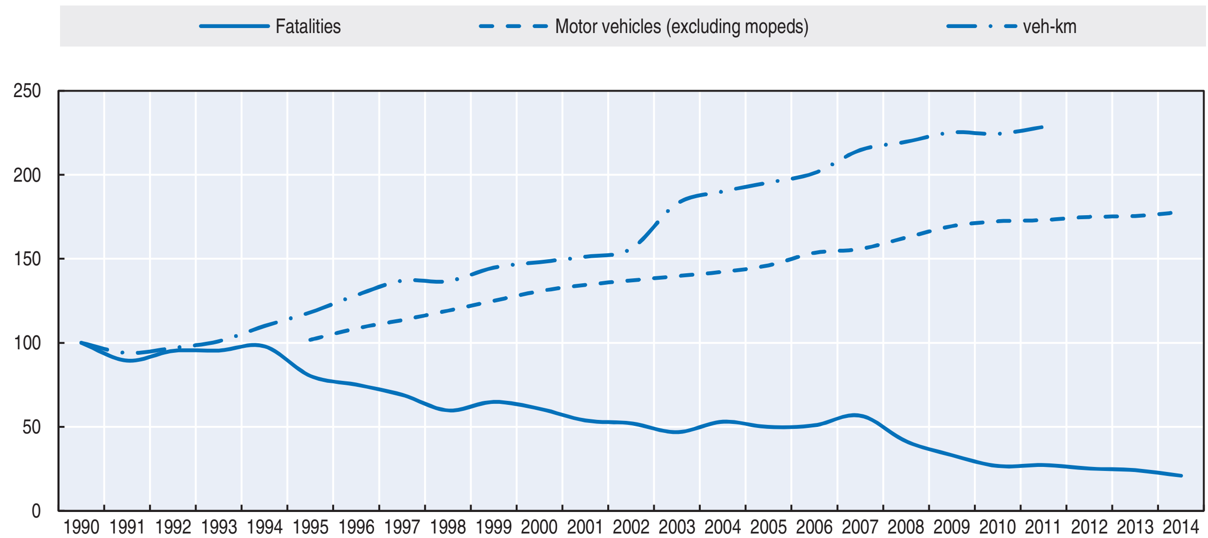


Table 34.2. **Road fatalities by road user group**

	2000	2010	2012	2013	2013 % change from		
					2012	2010	2000
Cyclists	26	16	12	16	33.3	0.0	-38.5
Moped users	21	6	4	3	-25.0	-50.0	-85.7
Motorcyclists	19	17	18	18	0.0	5.9	-5.3
Passenger car occupants	179	68	71	57	-19.7	-16.2	-68.2
Pedestrians	60	26	19	20	5.3	-23.1	-66.7
Others	9	5	6	11	83.3	120.0	22.2
Total	***314***	***138***	***130***	***125***	***-3.8***	***-9.4***	***-60.2***

Road safety by age group

Since 2000, all age groups have benefited from the improvements in road safety, with the best results for young people (0-17).

In 2013, there was no road fatality among children aged five and under. Those aged 18-20 had a fatality rate of 15 road deaths per 100 000 inhabitants, or more than twice the rate for the entire population.

Table 34.3. **Road fatalities by age group**

Age	2000	2010	2012	2013	2013 % change from		
					2012	2010	2000
0-5	2	2	2	0	Figures too small for meaningful comparisons		
6-9	2	0	1	2			
10-14	4	0	0	1			
15-17	18	4	1	2			
18-20	23	3	8	9	12.5	200.0	-60.9
21-24	28	16	11	12	9.1	-25.0	-57.1
25-64	181	82	81	71	-12.3	-13.4	-60.8
> 65	56	31	26	28	7.7	-9.7	-50.0
Total	***314***	***138***	***130***	***125***	***-3.8***	***-9.4***	***-60.2***

Figure 34.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

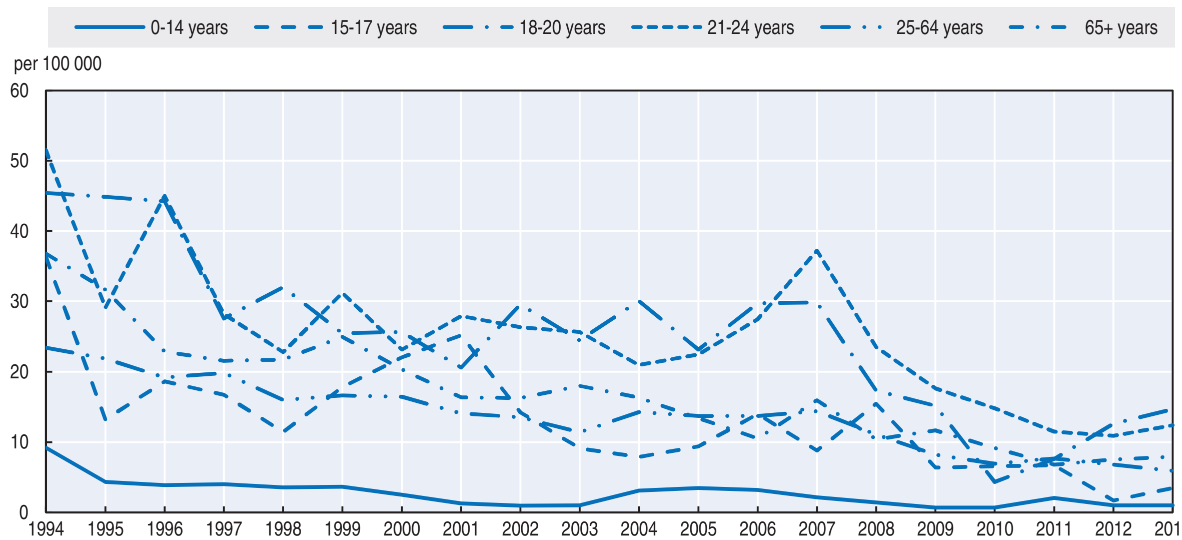
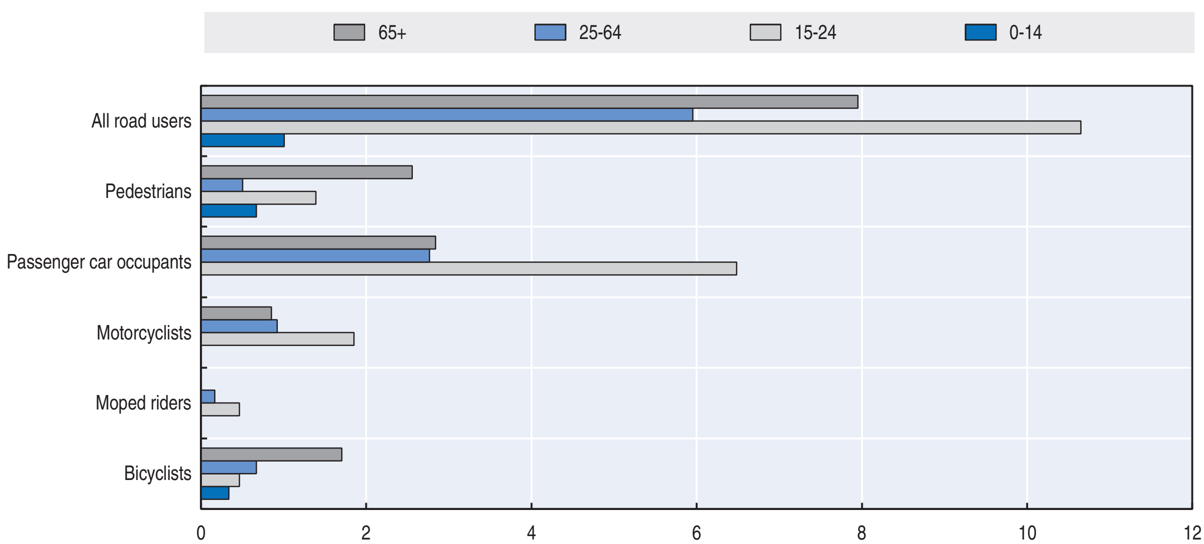


Figure 34.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants in 2013



Road safety by road type

In 2013, there was a similar share of road deaths in urban and non-urban roads.

Economic costs of traffic crashes

Traffic crashes represent a significant cost for society, estimated in 2013 at around EUR 1 billion, or 2.8% of the Gross Domestic Product. The figure is based on the number of reported crashes and an estimate of non-reported crashes, using the methodology Harmonised European Approaches for Transport Costing and Project Assessment (HEATCO), adapted to the specific conditions of Slovenia.

Figure 34.4. **Road fatalities by road type**

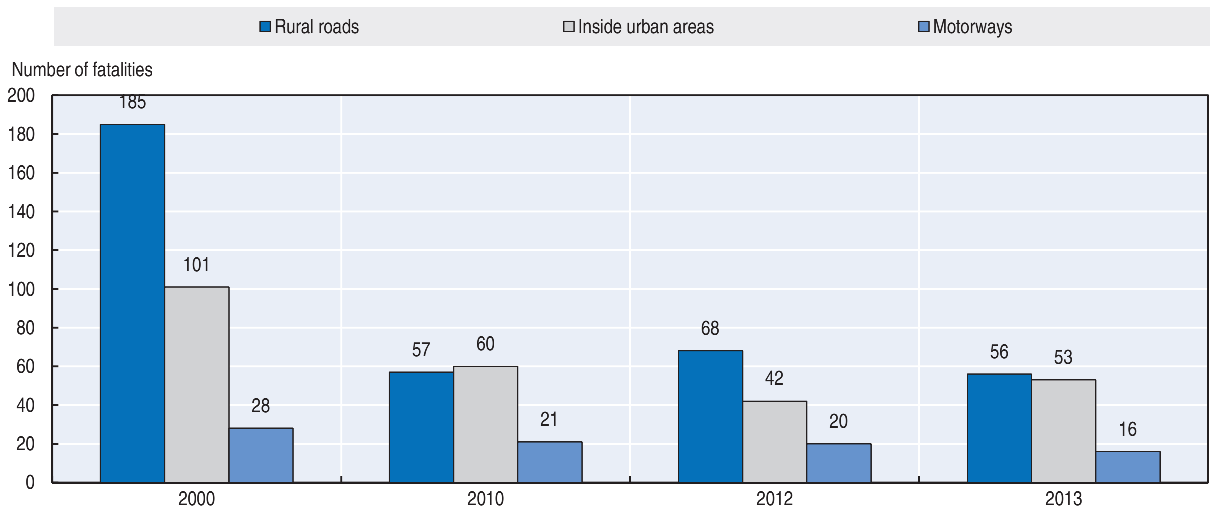


Table 34.4. **Costs of road crashes, 2013**

	Unit cost	Total
Fatalities	EUR 1 574 937	EUR 205.18 million
Hospitalised people (severely injured)	EUR 182 942	EUR 170.89 million
Slight injuries	EUR 18 041	EUR 404.77 million
Property/damage costs		EUR 228.38 million
Total		EUR 1 008.51 million *Includes estimates for non-reported crashes*
Total as % of GDP		**2.8%**

Recent trends in road user behaviour

Impaired driving

Drink driving

The maximum permissible blood alcohol content is 0.5 g/l for most drivers and 0.0 g/l for professional drivers and drivers who have had their licence for fewer than three years. Driving under the influence of alcohol is a major safety issue in Slovenia and is responsible for about one third of serious injury crashes.

In 2013, 30% of road fatalities were caused by drunk drivers. The number of drink driving crashes was reduced by 10% in 2013 compared to 2012 and the number of road users killed due to drink driving was reduced by 12%. The average blood alcohol content of drivers involved in a fatal crash was 1.49 g/l.

Drugs and driving

In 2013, the official statistics attribute 0.4% of traffic crashes to drivers under the influence of drugs. However it should be noted that police officers very rarely check if the driver is under influence of drugs.

Distraction

The use of hand-held mobile phones while driving is not allowed in Slovenia. The use of hands- free devices is tolerated. There is no statistical data available on the effect of mobile phone use on Slovenian traffic crashes.

Fatigue

There is no data available on the influence of fatigue on crashes.

Speed

Speeding is a major cause of traffic crashes in Slovenia. In 2013, 39% of road fatalities involved speeding.

The table below summarises the main speed limits in Slovenia. In 2013 the average speed during daytime was 122 km/h on motorways, 79 km/h on rural roads and 55 km/h on urban roads.

Table 34.5. **Passenger car speed limits by road type, 2015**

Urban roads	50 km/h
Rural roads	90 km/h
Expressways	110 km/h (it was 100 km/h until 2011)
Motorways	130 km/h

Seat belts and helmets

Seat belt use has been compulsory in front seats since 1977 and in rear seats since 1998. The rate of seat belt use is 94% in front seats and 66% in rear seats for adults.

Child restraint is compulsory for children under 150 cm. Child restraint use on rear seats is 94% for children under 8 years old and seat belt use is 87% for children 8-14 (2011 data).

In 2013, of the 41 car drivers killed in traffic accidents, 18 were not wearing a seat belt. In 2014, 9 of the 41 drivers killed in traffic accidents were not wearing a seat belt.

Table 34.6. **Seat belt wearing rate by car occupancy**

%

	2011
Front seat	
General	94
Rear seats	
Adults	66
Children 0-7 (child restraint)	94
Children 8-14	87

National road safety strategies and targets

Organisation of road safety

The Slovenian Traffic Safety Agency was created in 2010, in accordance with the Road Traffic Safety Act of 1 September 2010. It is an independent agency financially linked to the Ministry of Infrastructure.

The agency is the main national traffic safety organisation, combining all expertise from the road safety field. The agency's mission covers research and analysis, preventive and educational programmes, support for development of programmes for national road safety, drivers, vehicles and driver rehabilitation. The agency will also take over independent investigation of fatal crashes.

Road safety strategy for 2013-22

The Slovenian National Road Safety Programme 2013-22 was adopted by the government in March 2013. The programme is based on Vision Zero: no fatalities and no seriously injured on Slovenian roads. Priorities addressed in the national road safety programme are:

- Driver education and training.
- Preventive action and media campaigns for vulnerable road users such as pedestrians, children, the elderly and cyclists.
- Measures against the main killers on roads: speed and alcohol.

Implementation of the National Road Safety Programme has been established at three levels:

- Political level: the Parliament reviews the programme annually.
- Strategic level: A board of directors, nominated by the government, prepares the strategy, defines the main measures and assigns responsibilities for them. It also provides financial and other resources and monitors the programme.
- Professional level: an inter-ministerial working group was established to monitor and implement the programme, bringing together individual experts, organisations and non-governmental organisations in the field of road safety. Local councils, civil society and some companies are also involved.

Target

The main target is to halve the number of fatalities and seriously injured, and to reach by 2022 a fatality rate below 3.5 fatalities per 100 000 inhabitants and fewer than 230 seriously injured per million inhabitants.

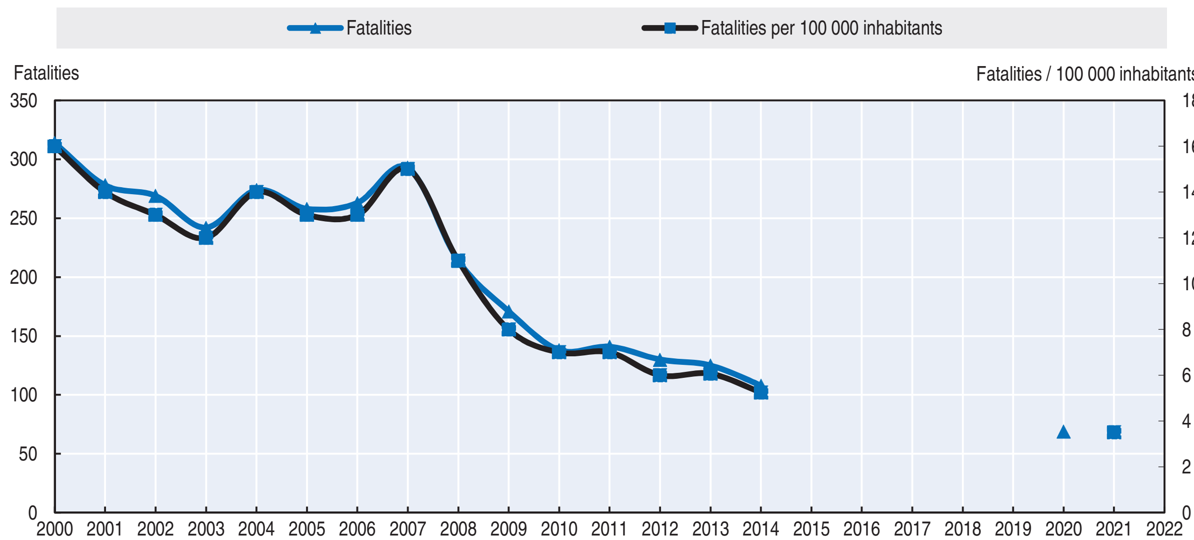
Monitoring

In 2014, there were 108 road deaths. An average annual reduction of 4-5% should be maintained to reach the target. There is a formal reporting process to the government every year.

Evaluation of past road safety strategy

The target of the past National Road Safety Programme 2007-11 was to achieve no more than 124 deaths in road traffic crashes in 2011. This goal was set in accordance with the EU goal of halving the number of deaths in road traffic accidents by 2010. The target was not reached, as there were 141 fatalities in 2011; nevertheless important achievements were made in the decade.

Figure 34.5. **Trends in Slovenian road fatalities toward national and EU targets**



Note: In 2010, the European Commission adopted the target of halving road deaths by 2020, compared to 2010 levels.

Recent safety measures (2012-14)

Road users

Enforcement

- In 2012 and 2013, laws regulating road transport were modified to include more severe sanctions for minor offenses.

Impaired driving

- Rehabilitation programmes for impaired drivers were introduced in 2012. Every year about 6 500 people participate.

Education and awareness

- Road safety campaigns are regularly conducted throughout the year. They focus on main risk factors (e.g. drink driving, use of mobile phone, speed, powered two wheeler safety).

Infrastructure reports

- November 2012: "Dangerous road sections 2011" – Annual analysis and identification of dangerous state road sections.
- May 2013: "Dangerous spots 2010-2012" – Analysis and identification of dangerous spots on the Slovenian road network.

Recent and ongoing research

- October 2012-December 2014: European project "ROSEE – Road safety in South East European regions". The main objective of ROSEE is improving co-ordination in promoting, planning and operating national and regional road networks, with a major focus on cycling safety.
- Safe cycling: The Slovenian Traffic Safety Agency has launched a pilot project focusing on the promotion of safe cycling in the wider context of mobility, sustainable transport,

health and congestion policy. Within this project, a new measure, “sharrow”, has been implemented in Maribor, Slovenia’s second largest city. Sharrow is shared-lane marking to indicate a shared space for cyclists and drivers. A symbol placed in the centre of a lane indicates that a bicyclist may use the full lane. Cyclist counters are being introduced in the capital Ljubljana to record cyclist activity. The cyclist counter is devoted to promoting cycling and increasing bicycle use. The Slovenian Traffic Safety Agency is conducting before/after analysis on the two implemented measures and is organising other activities to promote safe cycling.

Websites

- Slovenia Traffic Safety Agency: *www.avp-rs.si*.
- Slovenian Infrastructure Agency : *www.di.gov.si/en*.
- Slovenian Traffic Statistics: *www.policija.si/eng/index.php/statistics*.
- Project ROSEE – Road Safety in South East European Regions: *www.rosee-project.eu*.

Chapter 35

Spain

*This chapter presents the most recent crash data in Spain, as well as an update on the Spanish road safety strategy and recently implemented safety measures.**

* All data stem from the Directorate-General for Traffic (DGT) and IRTAD unless otherwise noted. For more information please contact: analisis.estadistica@dgt.es.

There were 1 680 road deaths in 2013, a 32% reduction from 2010. The main objective of the Spanish Road Safety Plan is to reduce by 2020 the rate of road fatalities to below 37 per million of the inhabitants. The goal will be revised in 2015, as Spain had already reached its target with a 2013 fatality rate of 36 deaths per million inhabitants.

Road safety data collection

Definitions applied in Spain

- Road fatality: Person killed immediately or dying within 30 days as a result of a road crash.
- Seriously injured person: Any injured person hospitalised longer than 24 hours as a result of a road crash.
- A MAIS 3+ injured person: Any person with a road crash injury for which the score on the Maximum Abbreviated Injury Scale is 3 or more.

Data collection

In Spain, there are several sources of information for traffic injury data. Police responsible for traffic surveillance collect detailed information and data on the circumstances of the crashes with a dedicated form. Traffic police officers monitor the condition of those injured for 24 hours after the crash to be able to classify the person as dead, seriously injured or slightly injured.

From 1993 to 2010, the procedure to estimate the number of people killed within 30 days who had been recorded as seriously injured after 24 hours was based on adjusting the number statistically, after monitoring a representative sample of the seriously injured for 30 days. From 2011, the number of fatalities is determined by combining the register of crashes reported by the police and the national deaths register, which includes the total number of deaths registered throughout the national territory.

Information on road crashes from hospital discharges and health sources, and information reported by the police, revealed important differences in 2012:

- Figures from police records show that for each person killed there are 6 seriously injured and 68 slightly injured.
- Figures from health sources show that for each fatality there are 12 people hospitalised and 313 slightly injured.

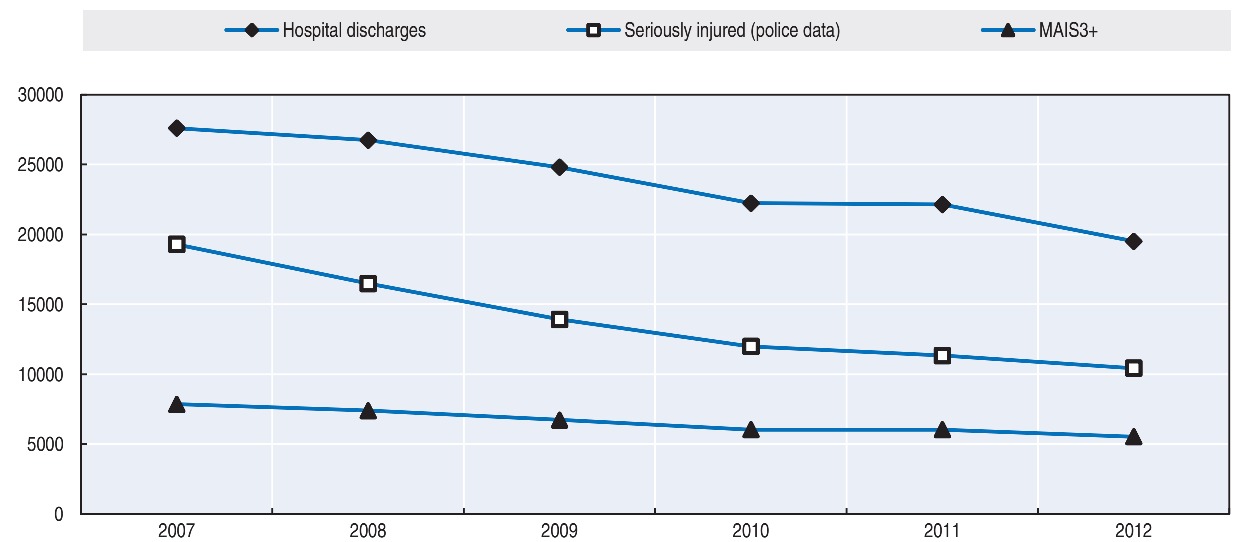
Since 2011 Spain reports the number of MAIS injured based on hospital data, but the methodology is now being reviewed by the Directorate-General for Traffic (DGT), following the recommendation by the High Level Group on Road Safety representing all EU member states, in order to harmonise data across all European countries.

The procedure to obtain MAIS3+ consists of several steps:

- Different selection criteria are applied to hospital discharge data to obtain the records of those injured due to road traffic crashes.

- International Classification of Diseases (ICD) codes 9th revision are converted into AIS codes with an algorithm.
- Finally, MAIS is calculated.

Figure 35.1. **Number of hospital discharges, seriously injured and MAIS3+**



Most recent safety data

Road crashes in 2014 – provisional data

Based on provisional data for 2014, the number of road fatalities within 24 hours outside urban areas slightly decreased by 0.4%. Provisional figures from local police in urban areas were not yet available. Pedestrian and motorcyclists fatalities had the highest reductions compared to 2013, while more cyclists were killed.

Road crashes in 2013

Based on police reports, the number of road fatalities decreased by 11.7% when compared to 2012. The year 2013 is the 11th consecutive year with a decrease in the number of road fatalities, which reached its lowest level since crash data have been reported. The reduction has been particularly relevant outside urban areas, and specifically on rural two-way two-lane roads, where the number of fatalities decreased by 18%. Important reductions were also observed during weekends (decrease of 20% in fatalities) and for people between 15 and 44 years old (decrease of 19-21%) (DGT, 2014).

The number of injury crashes increased by 7.7%; this increase could in part be explained by better crash reporting, particularly in urban areas.

Trends in traffic and road safety (1990-2014)

Traffic

Between 1990 and 2013, vehicle-kilometres increased by more than 78% on the Spanish State Road Network, which carries 50% of the national traffic volume. Overall, between 2000 and 2013, traffic volume outside urban areas increased by 6%. However, while the traffic volume effectively increased (by 23%) between 2000 and 2007, it decreased by 14% between 2007 and 2013 due to the economic downturn.

The vehicle fleet nearly doubled between 1990 and 2011; however in 2012 and 2013 the number of registered vehicles slightly decreased.

Road safety

Crashes and casualties

Since 1990, the number of road fatalities decreased by more than 80%. Road fatalities peaked in 1989 with 9 344 deaths; since then it has decreased steadily and in 2013 reached its lowest level. Between 2000 and 2013, the number of fatalities decreased by more than 70%, this is the highest reduction among IRTAD countries.

In the past 15 years, improvements have been introduced in all elements of the road traffic system. Safety performance indicators related to drivers' behaviour show that the incidence of speeding, drink driving and not wearing seat belts has been significantly reduced. This is probably related to improvements in education and training, increased enforcement, the penalty point system and the reform of the Crime Code.

The length of motorways and dual carriageways has increased from 4 693 kilometres in 1990 to 14 981 kilometres in 2013. It is estimated that the fatality risk per unit exposure in these types of roads is about 25% of the corresponding value for rural roads. There have also been improvements in the system of traffic management, with the generalisation of traffic cameras, vehicle detectors and variable message signs. This has contributed not only to improvements in safety but also to reductions in congestion and travel times.

As for the vehicle fleet, important actions on the field of roadworthiness inspections and renewal schemes have been implemented.

Rates

In 2013, both the fatality rate for 100 000 inhabitants and the fatality rate per 10 000 registered vehicles reached their lowest levels, respectively at 3.6 and 0.5. Since 1990, the risk of being killed on a Spanish road has been reduced by a factor of 7 to 11, depending on the indicator chosen.

Table 35.1. **Road safety and traffic data**

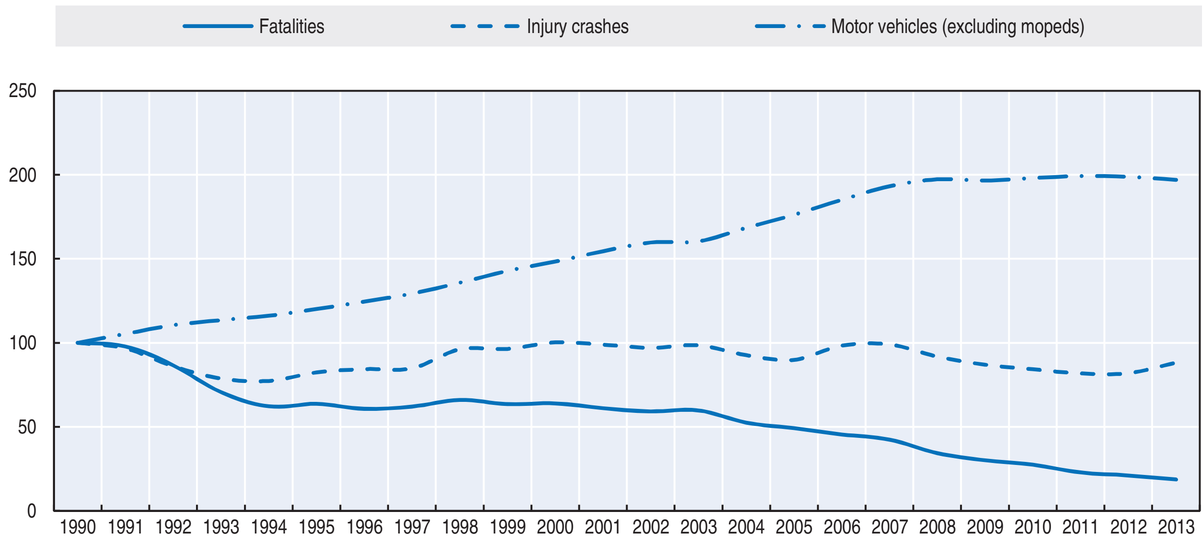
	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	9 032	5 776	2 478	1 903	1 680	-11.7	-32.2	-70.9	-81.4
Injury crashes	101 507	101 729	85 503	83 115	89 519	7.7	4.7	-12.0	-11.8
Injured persons hospitalised		27 764	11 995	10 444	10 086	-3.4	-15.9	-63.7	
Deaths per 100 000 inhabitants	23.3	14.4	5.3	4.1	3.6	-11.5	-32.6	-75.1	-84.5
Deaths per 10 000 registered vehicles	5.8	2.5	0.8	0.6	0.5	-10.9	-31.8	-78.1	-90.6
Traffic data									
Registered vehicles[1] (thousands)	15 697	23 284	31 087	31 203	30 917	-0.9	-0.5	32.8	97.0
Vehicle kilometres (millions) outside urban areas		208 508	241 131	224 285	221 610	-1.2	-8.1	6.3	
Registered vehicles per 1 000 inhabitants	404	581	669	666	662	-0.7	-1.1	13.8	63.7

1. Registered vehicles excluding mopeds.

Road safety by user group

Since 1990, all user groups, but especially car occupants and moped riders, have benefited from improvements in road safety.

Figure 35.2. **Road safety and traffic data index 1990 = 100**



Between 2003 and 2007, there was a very sharp increase (+72%) in the number of motorcyclists killed; this trend was broken in the following years with reduction every year since. Between 2007 and 2013, the number of motorcyclists killed was reduced by more than 50%. This very encouraging result is probably the fruit of the specific Strategic Plan for the Road Safety of Motorcycles.

In 2013 the decrease in fatalities benefited all road users, except pedestrians for whom stagnation was observed. The largest reductions concerned moped riders and car occupants (-18%).

Table 35.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	160	84	67	72	69	-4.2	3.0	-17.9	-56.9
Moped users	683	474	100	66	54	-18.2	-46.0	-88.6	-92.1
Motorcyclists	792	392	386	302	301	-0.3	-22.0	-23.2	-62.0
Passenger car occupants	5 034	3 289	1 197	872	715	-18.0	-40.3	-78.3	-85.8
Pedestrians	1 542	898	471	376	378	0.5	-19.7	-57.9	-75.5
Others	823	639	257	215	163	-24.2	-36.6	-74.5	-80.2
Total	***9 032***	***5 776***	***2 478***	***1 903***	***1 680***	***-11.7***	***-32.2***	***-70.9***	***-81.4***

Road safety by age group

Since 1990, the reduction in fatalities has benefited all age groups, with the highest reduction for children and young people. Since 2000, there have been reductions in all age groups. In particular, the mortality rate among those aged 15-24 decreased by more than 80%. The reduction was the lowest for the elderly.

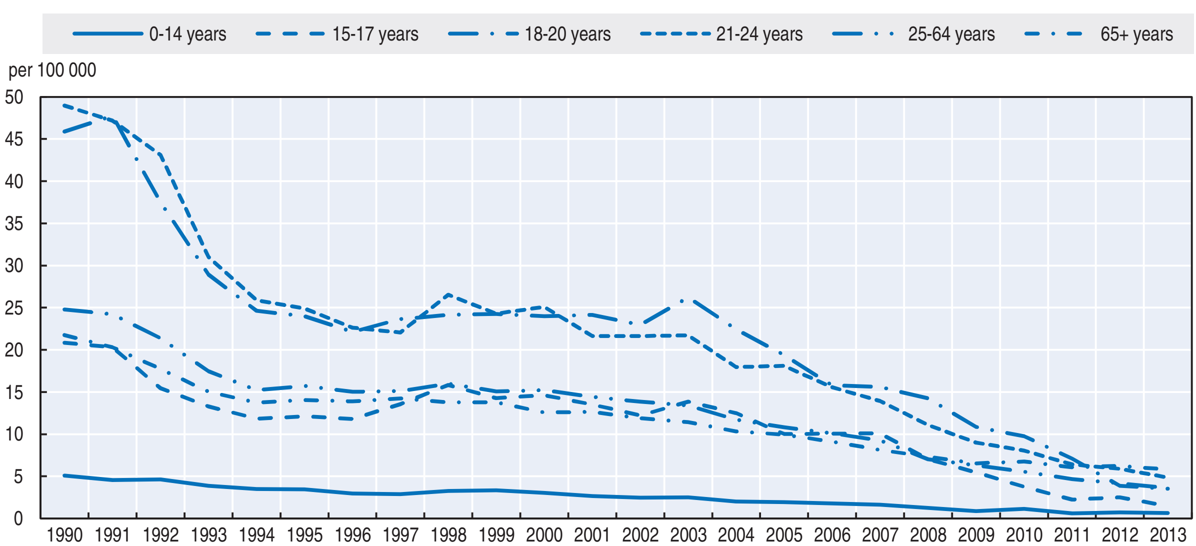
In 2013, elderly people accounted for 29% of fatalities. They are the age group the most at risk in traffic with a fatality rate above the average. Older people are particularly vulnerable as pedestrians.

In terms of mortality rate per 100 000 inhabitants, progress has been most remarkable for the young people aged 18-20, for which the rate was divided by four since 2007. They now have a fatality rate similar to that of the general population.

Table 35.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	129	46	32	15	16	6.7	-50.0	-65.2	-87.6
6-9	111	40	17	14	14	0.0	-17.6	-65.0	-87.4
10-14	160	95	30	23	16	-30.4	-46.7	-83.2	-90.0
15-17	417	223	50	32	19	-40.6	-62.0	-91.5	-95.4
18-20	902	422	139	54	48	-11.1	-65.5	-88.6	-94.7
21-24	1 266	661	174	120	96	-20.0	-44.8	-85.5	-92.4
25-64	4 759	3 267	1 489	1 122	972	-13.4	-34.7	-70.2	-79.6
≥ 65	1 134	843	529	507	482	-4.9	-8.9	-42.8	-57.5
Total	***9 032***	***5 776***	***2 478***	***1 903***	***1 680***	***-11.7***	***-32.2***	***-70.9***	***-81.4***

Figure 35.3. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013



Road safety by road type

In 2013, 73% of fatalities occurred on roads and motorways outside urban areas. Some 30% of fatal crashes are run off road crashes, typically on rural roads. Since 2000, while the whole road network benefited from significant improvements, the smallest progress was achieved on urban roads.

Economic costs of traffic crashes

Traffic crashes represent a significant cost for society, estimated at around EUR 5.2 billion (i.e. 0.5% of Gross Domestic Product [GDP]) according to police-reported data. However, when the health system data is included, economic costs rise to EUR 9.6 billion (i.e. 1% of GPD). Estimates do not include property damage.

Figure 35.4. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants in 2013

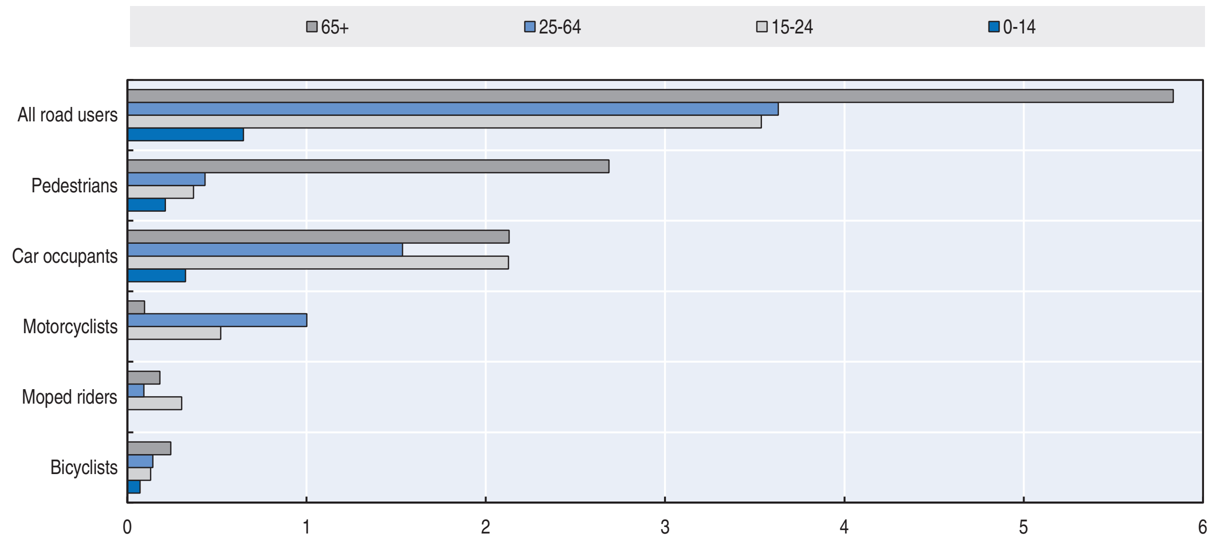
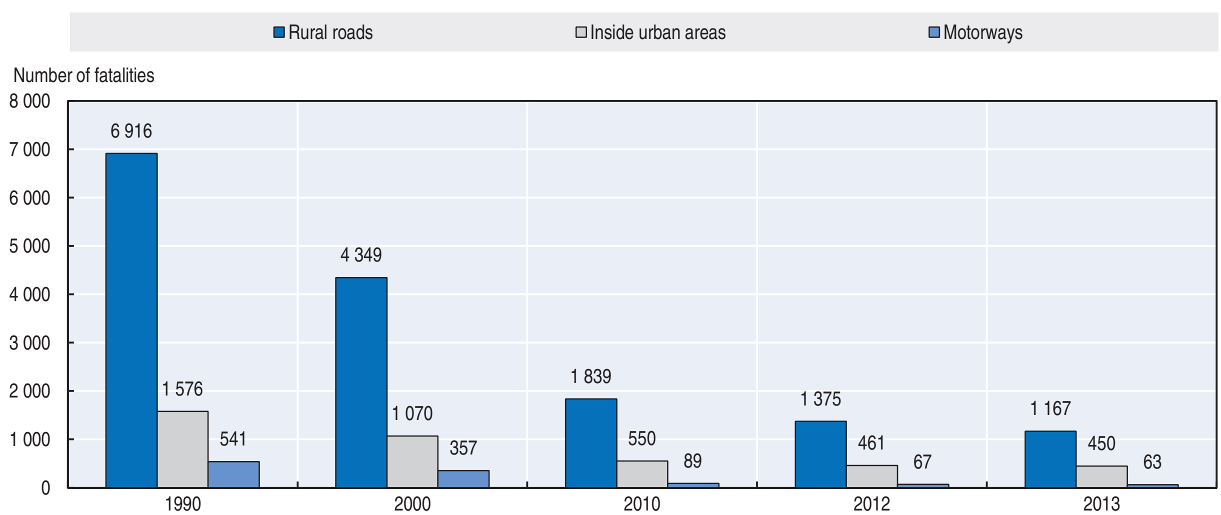


Figure 35.5. **Road fatalities by road type**



Costs are based on the calculation of a monetary value of statistical life, based on a willingness-to-pay approach (DGT; 2011). A Value of Preventing Life of EUR 1.4 million is used to compute the social costs of fatal road crashes in Spain (Abellan et al., 2011). Likewise, it is used to assess the benefits of road safety measures in terms of saved lives, making possible the economic evaluation of Spanish transport policies.

Recent trends in road user behaviour

Impaired driving

Driving after having consumed psychoactive substances is a frequent behaviour in Spain; 12% of Spanish car drivers admit having taken an illegal drug and/or alcohol before driving. According to a report by the Spanish National Toxicology and Forensic Sciences

Table 35.4. **Costs of road crashes, 2013**

Costs (EUR)	Unit cost	Total based on police reported data	Total when health data are included
Fatalities	1.37 million	2.31 billion	2.31 billion
Hospitalised people	214 737	2.17 billion	4.19 billion
Slight injuries	5 981	0.69 billion	3.14 billion
Property and damage costs		Not included	Not included
Total (EUR)		5.18 billion	9.64 billion
Total as % of GDP		0.50%	0.94%

Institute, psychoactive substances were found in 43% of the killed drivers who were tested. Of those, alcohol was in 67%, illegal drugs in 35% and psychotropic drugs in 33%. For pedestrians killed and tested, 44% tested positive for illegal drugs, psychotropic drugs and/or alcohol.

Drink driving

In Spain, the blood alcohol content (BAC) limit is 0.5 g/l for general drivers and 0.3 g/l for novice and professional drivers.

Between 2001 and 2013 random preventive alcohol tests were tripled and the positive tests have been reduced by almost a third. In 2001, the Traffic Division of the Civil Guard carried out 1.6 million preventive tests, and 5% tested positive. In 2013, 5.7 million preventive tests were carried out and 1.7% tested positive. For alcohol tests at the scene of a 2013 road crash, 5.1% tested positive.

Drugs and driving

According to the National Institute of Toxicology, in 2013 the percentage of drivers and pedestrians killed analysed with the presence of drugs other than alcohol is about 15%.

In 2010, a legislative measure was introduced to validate a saliva screening test, and to make further analysis mandatory when the screening test is positive. In 2014, a new zero tolerance regulation was introduced that increased the fine to EUR 1 000 and a loss of 6 penalty points for driving under the influence of drugs.

Every two years since 2008 Spain carries out a national cross-sectional road-side survey to assess the prevalence of drug- and drink-driving. From 2008 a decrease in the prevalence of alcohol (from 4.9% to 3.4%) and drug positive cases (from 6.9% to 4.9%) was observed, with the decline in drugs due to a marked drop in Tetrahydrocannabinol (THC).

Distraction

Distraction is a concurrent factor in 38% of injury crashes. One of the reasons for distraction is the use of the mobile phone while driving. In 2013, the Traffic Division of the Guardia Civil made 126 345 complaints for the use of the mobile telephone while driving, which represented a diminution by 4% compared to 2012.

Since 2002, the use of hand-held mobile phones while driving is forbidden. Only hands-free phones are permitted. As of 1 July 2006, driving while using hand-held mobile phones, GPS or other communication devices entails the loss of three points from the driving licence.

According to the data collected through observational studies conducted by the DGT, around 3% of drivers use their mobile phone while driving.

Fatigue

There is no estimate of crashes due to fatigue.

Speed

In 2013, inappropriate speed was reported as a contributing factor in 10% of injury crashes and 22% of fatal crashes.

In 2013, 34 million vehicles were controlled for speed, and 6.5% were driving above the limits. This is an increase in comparison to 2012 (3.5% of controlled vehicles above the limits). Since 2003, the number of controlled vehicles has doubled while the percentage of vehicles sanctioned has hardly increased.

The table below summarises the main speed limits in Spain.

Table 35.5. **Passenger car speed limits by road type, 2015**

	General speed limit	Comments
Urban roads	50 km/h	
Rural roads	90/100 km/h	90 km/h (roads with no hard shoulder or with one of less than 1.5 m. width) 100 km/h (roads with hard shoulder, at least 1.5 m. wide or with two lanes or more in each direction
Motorways	120 km/h	

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.

Children under 12 are not allowed to be seated on a front seat unless they are on a dedicated child restraint system. On rear seats, children under 12 must be seated in a dedicated child restraint system (CRS) adapted to their height and weight. Children between 135 and 150 cm are allowed to wear either a dedicated CRS or a seat belt. In 2013, four of the 20 children killed in road traffic were not using a CRS or seat belt.

In 2013, 22% of car occupants killed outside urban areas did not wear a seat belt.

Table 35.6. **Seat belt wearing rate by car occupancy and road type**

%

	2005	2010	2012
Front seats			
General seat belt wearing rate on front seats	74	88	90
Seat belt wearing rate: car driver inside urban areas	69	83	86
Seat belt wearing rate: car driver outside urban areas	81	94	95
Rear seats			
General seat belt wearing on rear seats	51	76	81

Helmet use is compulsory for riders of all motorised two-wheelers. The helmet wearing rate by riders of motorised two-wheelers is nearly 100%. Nevertheless, in 2013, 9% of motorcycle users killed outside urban areas did not wear a helmet, and in urban areas 4% did not use a helmet. As for moped riders, among 34 fatalities outside urban areas, eight did not wear a helmet. All moped riders killed on urban roads were wearing a helmet.

Helmet use is compulsory for cyclists below age 16 on all roads and for older cyclists outside built-up areas.

Table 35.7. **Helmet wearing rate by motorcyclists**

%

	2005	2010	2012
Helmet wearing rate: moped inside urban areas	93	95	97
Helmet wearing rate: moped outside urban areas	88	96	96
Helmet wearing rate: motorcycle inside urban areas	98	97	98
Helmet wearing rate: motorcycle outside urban areas	99	99	98

National road safety strategies and targets

Organisation of road safety

The agency that centralises most aspects of road safety is the Directorate-General for Traffic, which belongs to the Ministry of the Interior. The core responsibilities of the DGT are at national level on all interurban roads, except for the Basque Country, Catalonia and Navarre. Key missions of DGT include:

- Issuing and renewing driving licences and vehicle authorisations, regulating and licensing private driving training institutes, and supervision of the Roadworthiness Inspection System.
- Registering vehicles, drivers and traffic offences.
- Controlling traffic and enforcing traffic law on all interurban roads.
- Managing the Traffic Division of the Civil Guard (the police body in charge of traffic control and traffic law enforcement), with around 10 000 officers.
- Centralising road traffic statistics and co-ordinating crash investigations.
- Developing road safety plans and policies, in co-ordination with other relevant ministries or public bodies.
- Supervising driving information and road safety education campaigns.

Road safety strategy for 2011-20

The Spanish Road Safety Plan 2011-20 was adopted by the Council of Ministers on 25 February 2011.

Road safety targets

The main objective of the Spanish Road Safety Plan is to reduce by 2020 the rate of road fatalities to below 37 per million inhabitants. This target is aligned with the European objective of halving the number of people killed by 2020. The goal will be revised in 2015, as Spain had already reached its target with a 2013 fatality rate of 36 deaths per million inhabitants.

The process of drawing up the strategy was based on the analysis of data and information contained in official, valid and sustainable sources of information and the participation of the various public and private agents through working groups and international comparison. Other strategies have been analysed to assess their contributions, including the Infrastructures and Transport Strategic Plan (2005-20), the Strategic Action Plan for the Transport of Goods and Passengers, the 2008-2012 Action Plan for Spain's Energy Saving and Efficiency Strategy, Spain's Sustainable Mobility Strategy, and Spain's Health and Safety at Work Strategy (2007-12).

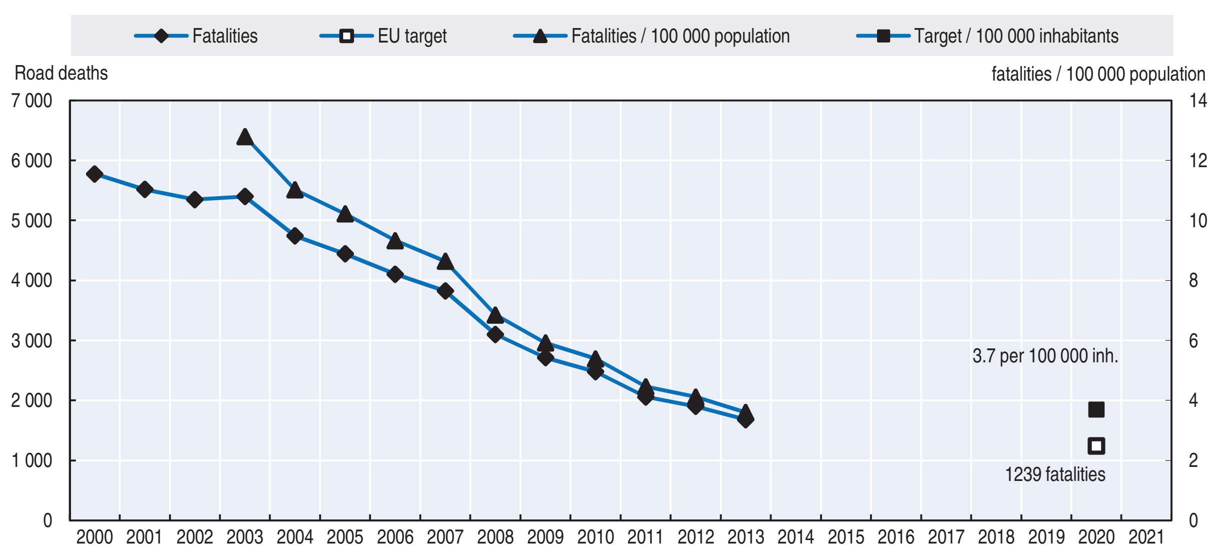
Monitoring

Spain has adopted a number of safety performance indicators, which are closely monitored.

Table 35.8. **Targets and performance indicators of the 2011-2020 road safety plan**

Indicators	Reference figures in 2009	Figures in 2012	Figures in 2013	Target figures 2020
Reach a fatality rate of 37 deaths per million inhabitants	59	41	36	< 37
Reduce by 35% the number of serious injuries	13 923	10 444	10 086	9 050
No child (< 12) killed without a child restraint system	12	9	4	0
25% fewer drivers between the ages of 18 and 24 killed or seriously injured at the weekend	730	406	345	548
10% fewer drivers killed above the age of 64	203	202	182	183
30% fewer deaths due to being run over	459	355	349	321
1 million more cyclists without their death rate going up	1.2	1.6	1.5	1.2
Zero deaths in cars in urban areas	101	71	72	0
20% fewer deaths and serious injuries amongst motorcyclists	3 473	2 760	2 811	2 778
30% fewer deaths due to having come off a single carriageway	520	369	285	364
Less than 1% positive tests for alcohol in the blood in random preventive tests	6.7%	n.a.	4.1%	< 1%
50% reduction in the percentage of light vehicles which exceed the speed limit by more than 20 km/h	12.3% (motorways) 6.9% (dual carriageways) 15.8% (single carriageway limit 90 km/h) 16.4% (single carriageway limit 100 km/h)	8.0% (motorways) 4.3% (dual carriageways) 14.0% (single carriageway limit 90 km/h) 10.8% (single carriageway limit 100 km/h)	n.a.	6.2% (motorways) 3.5% (dual carriageways) 7.9% (single carriageway limit 90 km/h) 8.2% (single carriageway limit 100 km/h)

Figure 35.6. **Trends in road fatalities towards national and EU targets**



Evaluation of past road safety strategy

Spain's objective for 2008 was to reduce by 40% the number of road crash fatalities compared to 2003. This target was reached, with a 43% reduction. The Road Safety Strategic Plan 2005-08, the Urban Road Safety model plan and the Motorcycles Plan were the major planning tools for improving road safety.

Recent safety measures (2012-14)

Road safety management

- The licensing system is being reviewed regarding both theoretical and practical tests with more focus on safe and responsible driving.
- Safety data management: DGT is improving its crash data information systems with the progressive inclusion of new parameters, such as risk exposure, descriptive analysis and time trends. In addition, Spain is one of the pioneer countries in the collection and analysis of MAIS3+ data as recommended by the IRTAD Group and the European Commission.
- In 2014, the following changes to the Law on Road Safety were approved:
  - Zero tolerance for alcohol, drugs and medicines at non-therapeutic doses.
  - Immobilisation of bicycles if a child restraint system appropriate for the minor passenger is not used.
  - Prohibition of the use of radar detectors.
  - Implementation of the State Traffic Fatalities Register to expedite accident rate reports.
  - Introduction of procedures to facilitate cross-border exchange of information on road safety related traffic offences, following EU Directive 2011/82.

Road users

Education and training

- Over 20 000 information letters were sent to school headmasters with details on road safety actions; a guide listing the location of school transport stops and safe school routes was developed (2013).
- Channels of communication with citizens were expanded using social networks, a mobile application and the renewal of the DGT web page (2013).
- Applicants for a driving licence were better trained through new theoretical and practical driving tests (2013).
- Week-long campaigns conducted in 2013 with the Traffic Division of the Civil Guard on interurban roads and local police forces in built-up areas included truck and vans, school transport, speed control, motorcycles, mobile use while driving, drink driving, the use of seat belts and child restraint systems and the use of seat belt in school buses.
- Letters sent to traffic offenders to inform them about their penalties are accompanied by information about the risks associated with the traffic violations they committed.
- DGT emphasised education for children, driving licence applicants and traffic offenders and is investigating campaigns for groups such as business professionals, healthcare personnel, and those who work with minors at risk (2014).

Monitoring and mobility

- Strengthened control for drink driving on secondary roads.
- Diverted Heavy Goods Vehicle traffic from conventional roads to high capacity roads.
- Installed the Pegasus radar system in a helicopter owned by DGT in 2013 to monitor traffic on secondary roads, and in 2014 equipped four additional helicopters with Pegasus.

Infrastructure

- DGT will implement measures to improve safety and accessibility for persons with disabilities.

Vehicles

- Programmes to renew the vehicle fleet included, among other measures, sending information letters to owners of vehicles of more than seven years old (2013-14).
- The content in the vehicle registry was expanded in 2014 to include more technical data and information relating to technological safety elements, interventions carried out at garages; changes to the vehicle and kilometres driven, the rescue sheet, active safety elements and the rating stars awarded at the European New Car Assessment Programme (EuroNCAP).

Post-crash measures

- Implementation of the Road Traffic Accident Victims Unit in 2013 to support traffic casualties and their relatives and inform them about available private and public services.

Research

- In 2014 the first call for proposals within the Road Safety Research Plan was launched, using the competitive tendering system under the framework of the National Research, Development Innovation Plan.

Recent and ongoing research

Important research conducted in 2013-14 included the following:

Alvarez, F.J., J.C. Gonzalez-Luque and M. Seguí (in press), *Drugs Substance Use Disorder and Driving: Intervention of Health Professionals in Treatment of addictions.*

Castillo-Manzano, J.I., M. Castro-Nuño and X. Fageda (2015), *Can cars and trucks coexist peacefully on highways? Analyzing the effectiveness of road safety policies in Europe*, Accident Analysis and Prevention 77 (2015) 120-126: *http://dx.doi.org/10.1016/j.aap.2015.01.010.*

De Miguel Miranda, J.L. and A. Olona Solano (2012), *Actions to improve the use of Child Restraint Systems to prevent displacement "out of position" during the sleep phase*, *www.dgt.es/es/seguridad-vial/investigacion/estudios-informes/2012/mejora-sistemas-retencion-infantil.shtml.*

Paez Ayuso, F.J. and A. Furones Crespo (2013), *Estudio piloto de análisis de causalidad de los accidentes de tráfico aplicando metodologías desarrolladas en proyectos europeos de reconstrucción de accidentes,* Informe Técnico, Dirección General de Tráfico.

Pérez González, C. et al. (2013), *Semi-separación de calzadas en carretera convencional: Análisis de diferentes sistemas y evaluación de intervenciones ya realizadas*, Informe Técnico, Dirección General de Tráfico.

Pérez González, C. et al. (2013), *Análisis de predicción de riesgo en el marco del proyecto europeo DACOTA*, Informe Técnico, Dirección General de Tráfico.

Quota Research (2013), *Encuesta no participativa sobre el uso del cinturón y SRI en turismos y vehículos de menos de 3.500 kg y de caso en motocicletas y ciclomotores*, Informe Técnico, Dirección General de Tráfico.

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Abellan et al. (2011), *El valor monetario de una vida estadística en España Estimación en el contexto de los accidentes de tráfico*, Dirección General de Tráfico, Madrid, Spain.

DGT (2014), *Main figures in road safety data, Spain 2013,* Dirección General de Tráfico, Madrid, Spain *www.dgt.es/Galerias/seguridad-vial/estadisticas-e-indicadores/publicaciones/principales-cifras-siniestralidad/Siniestralidad_Vial_2013.pdf* (accessed 23 June 2015).

Website

- General Traffic Directorate: *www.dgt.es*.

Chapter 36

Sweden

*This chapter presents the most recent crash data for Sweden, as well as an update on the Swedish road safety strategy and recently implemented safety measures.**

* All data stem from the Swedish Transport Administration, Swedish Transport Agency and IRTAD unless otherwise noted. For more information please contact: hans-yngve.berg@transportstyrelsen.se; anna.vadeby@vti.se.

Sweden is adjusting its road safety strategy to give more attention to safety for pedestrians, cyclists and motorcyclists in urban areas who have not had the same level of positive safety improvement as people in cars, buses and trucks. Sweden's road network is among the safest in the world, with 2.7 road fatalities per 100 000 inhabitants in 2013. Passenger car occupants have seen their serious injuries decline so much that since 2011 more cyclists than car occupants have been seriously injured. This is mainly due to safer cars, lower speeds and the introduction of median barriers.

Road safety data collection

Definitions applied in Sweden

- Road fatality: Person killed in a traffic crash or within 30 days after the crash. Suicides are excluded from official statistics since 2010.
- Serious injury: Two definitions are used. Road traffic accidents with fatal and severe personal injury reported by the police are still used as official statistics. Another definition is used in the preventive road safety work. This definition is based on health loss following a traffic injury in which the previous health condition is not recovered within a reasonable amount of time. A person with any percentage of medical impairment, who has not recovered their previous physical health condition, is defined as seriously injured.
- Slightly injured person: Persons slightly injured in road traffic crashes reported by the police.

Medical impairment is a concept for evaluating various functional impairments, regardless of the reason. The disability scale is built up from functional impairment: For example, total paralysis is regarded as 100% impairment, the loss of one hand as 50-65%, and the loss of the outer joint of the ring finger as 2%. A person with any percentage of medical disability has not recovered their previous physical health condition and is therefore defined as seriously injured. Today, the medical impairment cut-off is 1% but discussions are ongoing on adding a complementary category of 10% or higher.

Sweden is therefore not using the score of three or more on the Maximum Abbreviated Injury Scale (MAIS3+) as a formal measure of a seriously injured person. MAIS3+ is, however, used to calculate the number of persons seriously injured and is therefore an important part of the Swedish efforts to increase the level of road safety.

Data collection

Sweden's safety data system integrates police and health data. This system, called STRADA, is composed of two parts:

- STRADA police: Based on crash reports by the police, which include detailed information on crashes.
- STRADA hospital: Based on medical information.

The system is based on a systematic link between police and health data and allows accurate information on the severity and consequences of crashes to be obtained.

STRADA, however, only provides information on seriously injured people and acquires medical information about injured persons visiting an emergency hospital following the crash. The number of people less seriously injured is likely to be underreported. As an example, people suffering from a minor injury requiring only primary care, without being further directed to an emergency hospital, are not recorded in STRADA. But of course slightly injured persons known by the police are reported into STRADA.

Most recent safety data

Road crashes in 2014 – final data

In 2014, 270 persons were killed in road crashes, 10 more than in 2013 representing a 4% increase. The number of persons seriously injured defined as “medical impairment” increased by 2%, from 4 800 to 4 900.

The number of fatalities among “protected” road users – drivers and passengers of cars, buses and trucks – continues to decline. However, “unprotected” road users such as pedestrians, bicyclists and motorcyclists do not have the same positive development, and especially the number of bicyclists killed has increased. This development is also seen among injured road users. The safety problem in Sweden is therefore changing from protected road users outside cities to unprotected road users in cities.

Road crashes in 2013

In 2013, the number of road fatalities decreased by 9% from 285 to 260, thus reaching its lowest level since crash data has been recorded. The number of persons seriously injured defined as “medical impairment” increased by 9%, from 4 400 to 4 800.

The positive trend can partly be explained by gradual improvements in infrastructure, vehicle population and lowered speed limits. Indicators for safe national roads and safe vehicles are both improving at a sufficient rate, and road design in the municipal road network has long been incorporating greater safety.

Trends in traffic and road safety (1990-2014)

Traffic

Between 1990 and 2014, the number of motorised vehicles increased by 32% and the overall vehicle kilometres driven by 23%. Passenger cars account for about 81% of traffic volumes (vehicle kilometres) on Swedish roads. Buses and motorcycles account for just over 1% each, light trucks for 11% and heavy trucks for 6%. Light trucks are the type of vehicle showing the most rapid increase, both in terms of numbers of vehicles and traffic volume.

In 2014, provisional figures indicate that the total traffic volume increased by 2.3% compared to 2013. For passenger cars and light trucks, the change was +2.3%, and for heavy trucks +2.1%. After some years with decreasing number of vehicle kilometres for motorcycles there was an increase of 2.3% compared to 2013. The number of motorcycles increased by 2 000 vehicles during this period, from 310 000 to 312 000.

Road safety

Crashes and casualties

The number of road fatalities reached a peak in 1965 and 1966 with 1 313 road deaths, and since then road deaths have decreased by almost 80%.

Between 1990 and 2014, the number of road fatalities decreased by more than 65%, while the number of injury crashes was reduced by only 22%. This variation is explained by a much better reporting of injury crashes in recent years and by a strong focus on reducing the most severe crashes.

The overall positive trend can partly be explained by gradual improvements in infrastructure, vehicle fleet and an increased focus on injury prevention. Both the safe national roads and safe vehicles indicators are improving, and road design has long embraced greater safety.

Sweden has experienced a substantial drop in injured occupants of passenger cars since 2003. For seriously injured the drop is so radical that since 2011 more cyclists than car occupants have been seriously injured. This is mainly due to safer cars, lower speeds and the introduction of median barriers.

In 2014, approximately 1 200 persons suffered MAIS 3+ injuries in Sweden: 37% were bicyclists and 27% were in passenger cars. Since 2007 the number of persons suffering MAIS 3+ injuries has decreased by 17%, but it differs for different road users. While the number of injured persons in passenger cars has decreased with 37% the number of injured bicyclists is slightly higher than in 2007.

Rates

Since 1990, the death rate per 100 000 inhabitants has decreased by 70%, while the number of vehicles per 1 000 inhabitants has increased by 18%. In 2013, the rate reached a record low of 2.7.

Table 36.1. **Road safety and traffic data**

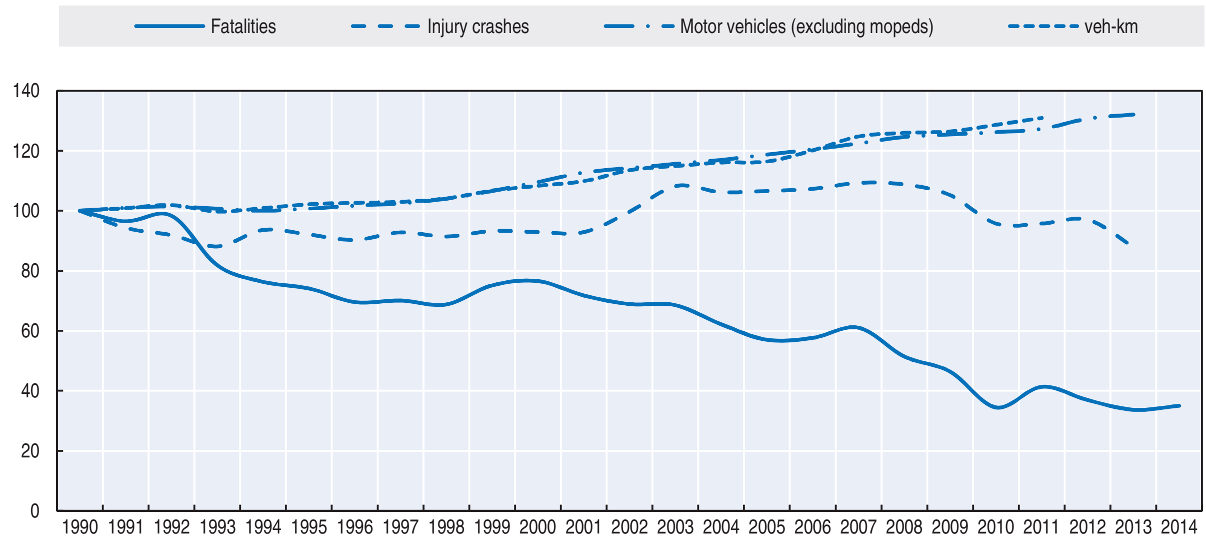
	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	772	591	266	285	260	-8.8	-2.3	-56.0	-66.3
Injury crashes	16 975	15 770	16 255	16 466	14 940	-9.3	-8.1	-5.3	-12.0
Injured persons hospitalised	17 180	10 897	7 701	-	-				
Injured persons with MAIS 3+			1 217	1 032	1 091	5.7	-10.4		
Deaths per 100 000 inhabitants	9.1	6.7	2.8	3.0	2.7	-9.5	-4.5	-59.2	-69.9
Deaths per 10 000 registered vehicles	1.8	1.2	0.5	0.5	0.5	-9.7	-6.6	-63.5	-74.5
Deaths per billion vehicle kilometres	12.0	8.6	3.5	3.7	3.4	-5.4	9.0	-58.7	-70.8
Traffic data									
Registered vehicles[1] (thousands)	4 322	4 735	5 453	5 648	5 708	1.1	4.7	20.5	32.1
Vehicle kilometres (millions)	64 430	69 021	76 851	77 276	77 189	-0.1	0.4	11.8	19.8
Registered vehicles per 1 000 inhabitants	507	534	584	596	597	0.3	2.3	11.8	17.8

1. Registered vehicles excluding mopeds.

Road safety by user group

Since 1990, all user groups have benefited from the improvements in safety. However, the reduction in fatalities was much smaller for motorcyclists than for other road users.

Figure 36.1. **Road safety and traffic data index 1990 = 100**



This relative lack of progress is partly explained by the doubling of the motorcycle fleet between 1996 and 2013. To respond to this trend, in April 2010 the Swedish Transport Administration presented a new national strategy on motorcycle and moped safety. The main result is to focus on Anti-lock Braking Systems (ABS), increased speed compliance by motorcyclists and proper helmet use for moped riders.

In 2013 40 motorcyclists died in road traffic crashes, a 29% increase compared to 2012. However, for 2014 the number of killed motorcyclists decreased again to 31, which together with 2012 is the lowest number of killed motorcyclists since the 1970s.

Table 36.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	68	47	21	28	14	-50.0	-33.3	-70.2	-79.4
Moped users	22	10	8	8	3	-62.5	-62.5	-70.0	-86.4
Motorcyclists	46	39	37	31	40	29.0	8.1	2.6	-13.0
Passenger car occupants	468	393	151	142	144	1.4	-4.6	-63.4	-69.2
Pedestrians	134	73	31	50	42	-16.0	35.5	-42.5	-68.7
Others	34	29	18	26	17	-34.6	-5.6	-41.4	-50.0
Total	***772***	***591***	***266***	***285***	***260***	***-8.8***	***-2.3***	***-56.0***	***-66.3***

Road safety by age group

Since 1990, the reduction in fatalities has benefited all age groups, but the highest reduction concerns the younger groups. Child (0-14) fatalities have been halved since 2000, partly due to the legislation on child-restraint systems, but also to efforts to separate traffic modes in urban areas.

Young people (18-20) constitute a high-risk group, with a mortality rate twice as high as the older age groups. On the other hand, the mortality rate for the 21-24 age group declined considerably in 2008-09, perhaps due to the economic downturn and its impact on the mobility patterns of this age group.

In the past three years, there has been an increase in the number of older people (65+) killed in traffic. They are particularly vulnerable as pedestrians.

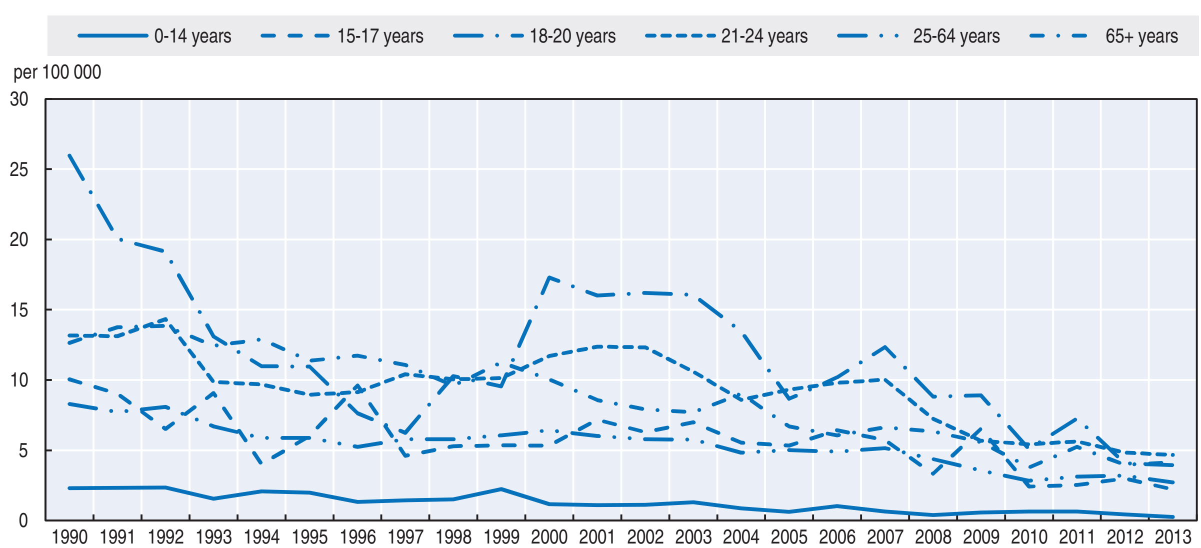
Child safety

Some 14 children aged between 0 and 17 were killed in 2014, a reduction of 80% compared with 1996. Several measures contributed to this positive development. The gradual improvements in infrastructure, safer vehicle fleet and lower speed limits benefited all users including children. Child restraint system in cars are widely used in Sweden and as many as 65-80% of children use a bicycle helmet when cycling.

Table 36.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	12	2	3	1	1	Figures too small for meaningful comparisons			-91.7
6-9	10	3	3	0	2				-80.0
10-14	13	14	4	6	1				-92.3
15-17	34	16	9	10	7	-30.0	-22.2	-56.3	-79.4
18-20	88	53	20	16	15	-6.3	-25.0	-71.7	-83.0
21-24	66	49	26	25	25	0.0	-3.8	-49.0	-62.1
25-64	357	300	137	156	133	-14.7	-2.9	-55.7	-62.7
≥ 65	192	154	64	71	76	7.0	18.8	-50.6	-60.4
Total	***772***	***591***	***266***	***285***	***260***	***-8.8***	***-2.3***	***-56.0***	***-66.3***

Figure 36.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

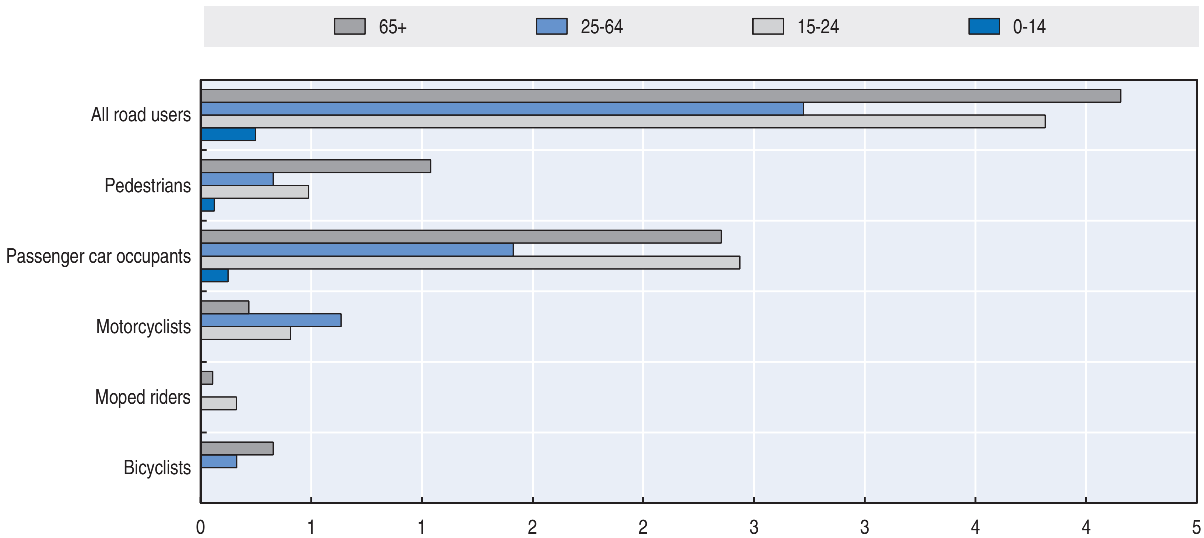


Road safety by road type

In 2013, 63% of fatalities occurred on rural roads, 21% on urban roads and 12% on motorways.

Over the past 20 years, there has been a major improvement over the whole network. The urban road environment was improved through the construction of mini-roundabouts, cycle lanes and other infrastructure measures. As there has been less

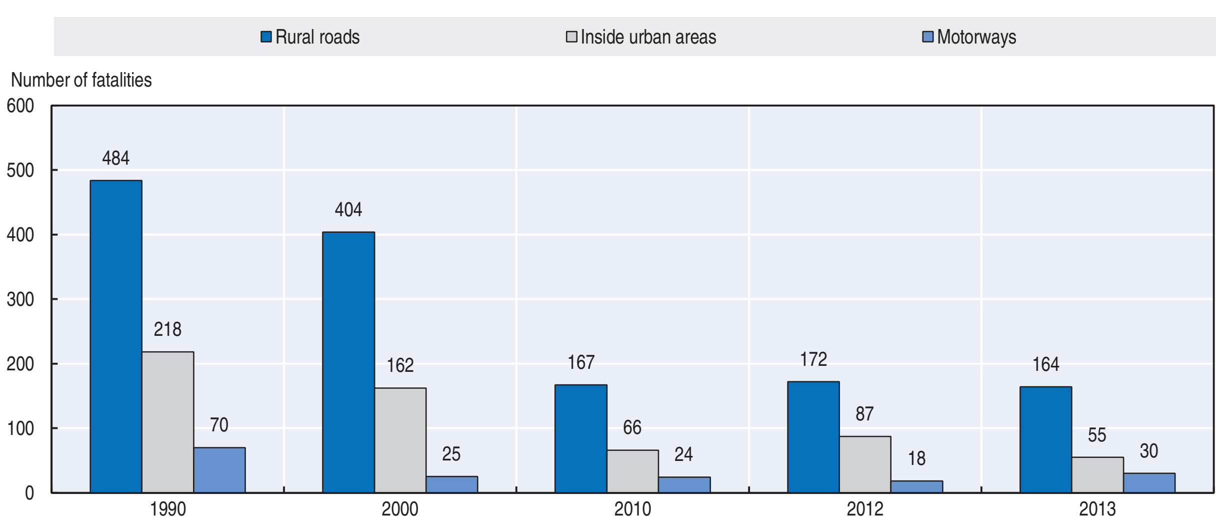
Figure 36.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants in 2013



positive development recently in the safety of vulnerable roads users, future efforts will focus on safer municipal passages for pedestrians, cyclists and moped riders.

On rural roads, improvements in road safety since 2000 are in part due to the implementation of speed cameras and the generalisation of the "2+1" roads (i.e. the transformation of traditional two wide lane roads into three narrow lane roads with a median barrier). The central lane alternates between traffic directions at regular intervals to provide ample passing opportunities. After years of discussion and debate, the first 2+1 road was built, and it has been very cost effective by reducing head-on collisions on rural roads. In 2013, 130 kilometres of roads with median barriers were added, for a total of 2 720 km of 2+1 roads. The consistent trend towards safer vehicles and an increased focus on injury prevention has also supported road safety.

Figure 36.4. **Road fatalities by road type**



Economic costs of traffic crashes

Traffic crashes represent a significant cost for society, estimated in 2011 at around EUR 5.2 billion, or 1.3% of gross domestic product (GDP).

The cost of road crashes was first evaluated in 1990 by the ASEK Group, on the basis of a willingness to-pay approach to assess the unit cost of a fatality, a hospitalised person, a slightly injured person and a property-damage-only crash. Since then, these unit costs are regularly re-evaluated taking into account the evolution of GDP and of the Consumer Price Index.

Table 36.4. **Costs of road crashes, 2011**

	Unit cost	Total
Fatalities		EUR 900 million
Hospitalised people		EUR 2 700 million
Slight injuries		EUR 800 million
Property/damage costs		EUR 800 million
Total		EUR 5.2 billion
Total as % of GDP		1.3%

Recent trends in road user behaviour

Impaired driving

Drink driving

In Sweden, the legal blood alcohol content (BAC) limit is 0.2 g/l. A crash is defined as alcohol-related if a (BAC) level of above 0.2 g/l can be proven in the driver, rider, pedestrian or cyclist involved. In 2012, 24% of car drivers killed in crashes were under the influence of alcohol and 19% of road fatalities were due to an intoxicated driver, rider, pedestrian or cyclist.

The goal for Sweden is that, by 2020, 99.9% of traffic should consist of drivers under the legal BAC limit of 0.2 g/l. In 2013, it is estimated, from random breath testing by the police, that 99.77% of the traffic volume involved drivers under the BAC limit. Even if only 0.23% of all drivers in random tests are above the legal limit, 49 out of the 260 fatalities (or 19%) in 2013 involved a driver, rider, pedestrian or cyclists under the influence of alcohol.

Drugs and driving

It is not allowed to drive a motor vehicle under the influence of illegal drugs. A driver who is under suspicion of driving after taking illegal drugs must leave a sample of blood or saliva to be analysed. It is up to the driver to decide whether to drive when using medication. If the medication has a negative effect on driving, the person is not allowed to drive. In 2014, 21 fatalities involved a driver under the influence of illegal drugs; amphetamine being the substance most commonly found.

Distraction

The Swedish Road Traffic Ordinance requires drivers to pay sufficient attention to driving. To avoid crashes, road users shall "observe the care and attention that the circumstances demand". However, from 2013, the government has strengthened this by-law, forbidding the use of communications devices when driving if "the use influences the driving in an unfavourable way". Sweden has not evaluated the problem but using a device like a smartphone is estimated to cause about 1% of all fatal crashes.

Fatigue

Fatigue may be a stronger cause of road crashes than alcohol, it interacts with alcohol and drugs in a dramatic way. Sweden has no clear facts on the magnitude of the problem, but it is estimated that 10-20% of all crashes are caused by fatigue. Fatigue mostly concerns single-car crashes.

Speed

Speeding is a major problem in Sweden and the percentage of drivers exceeding speed limits was increasing at the beginning of the century. However, there are now indications that compliance with speed limits is somewhat better, primarily due to road safety cameras.

In 2012, the Swedish Transport Administration measured the average speed and compared the results with the average speed in 2004 and found that speeds had decreased by 3.4 km/h. The trend is therefore positive from a road safety perspective. In 2014, there was a tendency of increasing average speeds, but the differences compared to 2013 are small.

Sweden has adopted tighter speed limits and introduced new limits in 10 km/h steps, ranging from 30 km/h to 120 km/h. In some specific areas, speed limits of 5, 10 and 20 km/h are also used.

The table below summarises the main speed limits in Sweden.

Table 36.5. **Passenger car speed limits by road type, 2015**

Urban roads	30-50 km/h
Rural roads	60-100 km/h
Motorways	110 km/h or 120 km/h

Seat belts and helmets

Seat belt use has been compulsory for front seats since 1975, rear seats since 1986 and it is compulsory for children smaller than 135 cm to use child restraint systems since 1988. The medical recommendation is that a booster seat or similar device is used up to the age of 12.

The use of seat belts in the front of passenger cars was 97 % during 2014, the same level as 2013. For car drivers, the wearing rate is 98%. The proportion of car drivers killed who were unrestrained has decreased since 2001 and was 34% in 2014.

An observational study from 2010 shows that the wearing rate of child restraint system was 90% among children aged 0-6.

There has been a long-term upward trend in the use of seat belts. This trend will probably continue, because the percentage cars with seat belt reminders will increase.

Table 36.6. **Seat belt wearing rate by car occupancy and road type**

%

	2000	2011	2013	2014
Front + rear seats	90	96	97	96
Front seat	90	97	97	97
Rear seats				
Adults	72	84	84	81
Children	89	96	96	95

All riders of motorised two-wheelers are required to wear a helmet. The helmet-wearing rate by riders of motorised two-wheelers is high, at 96-99%.

In Sweden, it is mandatory for children below 15 years to use a helmet when cycling, and 60-70% of children comply. About 30% of adults use helmets, but it varies much by cities.

National road safety strategies and targets

Organisation of road safety

Several agencies in Sweden support the government in the field of road safety. Authorities co-operate with each other but have specific tasks within the road transport system. The three main governmental agencies are:

- *Transportstyrelsen*, the Swedish Transport Agency, whose goal is to offer good accessibility, high-quality, secure and environmentally friendly rail, air, sea and road transport. The Agency has overall responsibility for drawing up regulations and ensuring that authorities, companies, organisations and citizens abide by them.
- *Trafikverket*, the Swedish Transport Administration, which is responsible for long-term planning of the transport system for all types of traffic, as well as for building, operating and maintaining public roads and railways. The Swedish Transport Administration is also responsible for administering the theoretical and driving tests needed for a driving licence for both professional and private drivers.
- *Trafikanalys*, Transport Analysis, which reviews the bases for decisions, assesses measures and is responsible for statistics.

Sweden is divided into 290 municipalities and 20 county councils. These municipalities and counties have responsibility for local road safety. Local government has a long tradition in Sweden. The country's municipalities, county councils and regions are responsible for providing a significant proportion of all public services, including road safety. They have a considerable degree of autonomy, as well as independent powers of taxation. Local self-government and the right to levy taxes are stipulated in the Instrument of Government, one of the four pillars of the Swedish Constitution.

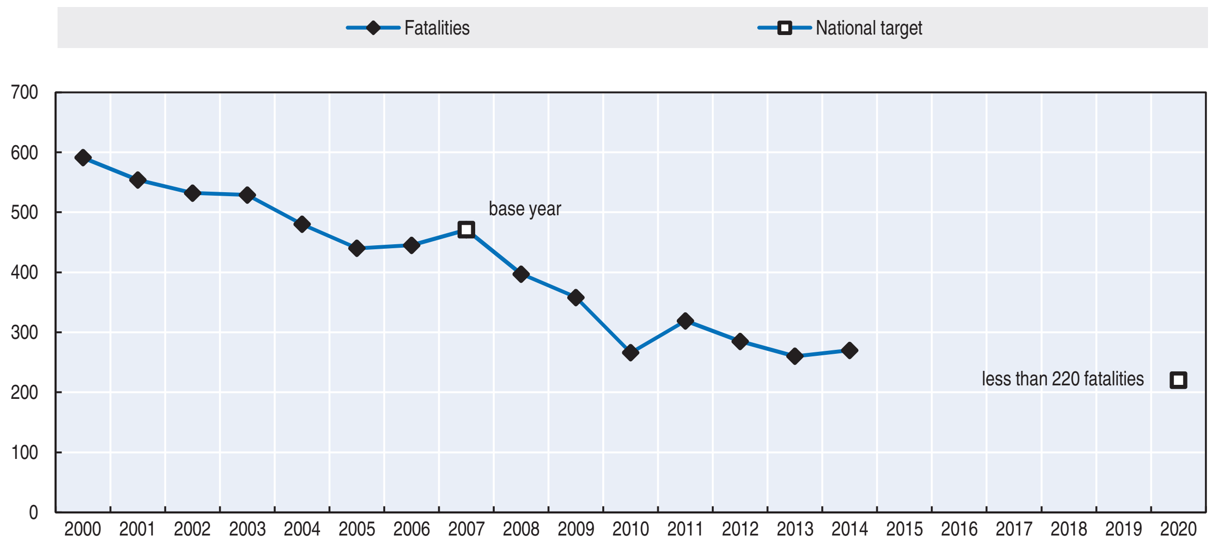
Road safety strategy for 2011-20

The basis of Swedish road safety work is Vision Zero, a strategic approach towards a safe system, whereby no-one is at risk of being fatally or severely injured while using road transport. There is no safety plan in a traditional sense.

Road safety targets

Sweden has an interim target for the year 2020, which initially stated a reduction in fatalities by 50% between 2007 and 2020. The target, and the monitoring set-up for reaching this target, was revised in 2012. The years 2012 and 2016 were fixed as moments to review and revise plans to ensure that target levels and indicators are as relevant as possible. The year 2012 revision started in autumn 2011 and took into consideration a sharpening of the interim goal, due to the new European Union targets. However, as of April 2015, there is still no decision from the government to review the current target of fewer than 220 fatalities by 2020.

Figure 36.5. **Trends in road fatalities towards national target**



Evaluation of past road safety strategy

In 2007, some of the earlier road safety programmes were evaluated (Swedish Transport Administration, 2008). The main lesson of this evaluation was that the interim target for the number of fatalities did not provide sufficient guidance to stakeholders for their activity planning. More action-related interim targets are needed. This is understood to mean indicators that help stakeholders to identify measures that can contribute toward changes in conditions on the road transport system, and that are necessary to achieve targets for the number of fatalities and seriously injured.

Recent safety measures (2012-14)

Road users

Speed cameras

- There are around 1 100 speed cameras on the rural network in Sweden. During 2014, only a few new cameras were introduced, but for the period 2015-20, yearly additions of about 200 new cameras are planned. This is expected to have a significant impact on speed compliance.

Impaired driving

- On 1 January 2012, a system was introduced to allow drivers having committed a drunk-driving offence to keep their driving licence. Instead of losing their licence, the drink driving offenders can apply for a licence with alcolock conditions for a period of one or two years. A longer term is required for those convicted of severe drunk-driving offences. The conditions include regular medical check-ups, with sampling and inspections, and servicing of the alcolock and its log.

Vehicles

Motorcycle

- The development of ABS as standard equipment on motorcycles has moved quickly over the last three years. From being standard with only one manufacturer and an expensive option with the others, ABS has become a natural piece of standard equipment on the majority of the major motorcycle models. The percentage of traffic volume of motorcycles fitted with ABS increased from 9% in 2007 to 34% in 2013. The goal for 2020 is 70%.

Recent and ongoing research

Henriksson, P. et al. (20141), *Challenging situations, self-reported driving habits and capacity among older drivers (70+) in Sweden. A questionnaire study,* VTI notat 9A-2014, VTI, Linköping (in English.)

Howard, C. and A. Linder (2014), *Review of Swedish experiences concerning analysis of people injured in traffic accidents,* VTI notat 7A-2014, VTI, Linköping (in English.)

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Websites

- Swedish Transport Administration: *www.trafikverket.se*.
- Swedish Transport Agency: *www.transportstyrelsen.se/en/*.
- Swedish National Road and Transport Research Institute VTI: *www.vti.se/en/*.
- Transport Analysis: *www.trafa.se*.
- Chalmers University: *www.chalmers.se*.

Chapter 37

Switzerland

*This chapter presents the most recent crash data for Switzerland, as well as an update on the Swiss road safety strategy and the recently implemented safety measures.**

* All data stem from Federal Roads Office (FEDRO), Swiss Council for Accident Prevention (bfu) and IRTAD unless otherwise noted. For more information please contact: philippe.bapst@astra.admin.ch or s.niemann@bfu.ch.

Switzerland's road safety improved in 2013 and 2014 for most users. The 243 fatalities were a 10% improvement from 2013, and the number is the lowest since record-keeping began. The downward trend in the number of serious injuries continued. However, 29 cyclists were killed – 12 more fatalities than in 2013, and the number of seriously injured cyclists increased by 13%. Further analysis of these crashes will be done by the Federal Roads Office. Switzerland also keeps records for electric bicycles, on which 145 people were seriously injured. Pedestrian deaths in 2014 declined by 40% to 43 persons killed.

Road safety data collection

Definitions applied in Switzerland

- Road fatality: Death which occurred within 30 days of the road crash.
- Seriously injured person: In police records, a person hospitalised for at least 24 hours or incapable of resuming his or her daily activity for 24 hours.
- Slight injury: Minor injury such as superficial skin injury. The casualty can leave the crash site unaided. An outpatient treatment in a hospital or by physicians may still be required.
- Injury crash: Crash resulting in at least one injured or killed person.

In Switzerland, injury severity is assessed by police present at the scene. There is no information on the type and long-term outcome of injuries. International comparison of non-fatal crashes is not feasible. In order to improve the assessment of injury severity, in January 2015 the definition of injury severity was further specified and the police officers were trained. Also a new category "life-threatening injury" was introduced. For a further standardisation the severity scale was linked to the codes of the National Advisory Committee for Aeronautics, used by all emergency services in Switzerland.

Data collection

Since January 2011, the Federal Roads Office is responsible for all Swiss road crash data. A new reporting form was introduced to all cantonal police forces and a new platform for data entry and data analysis (statistical and geographical) is online.

To estimate the real extent of road traffic injuries, police-reported data is compared to insurance data. Factors are then calculated to correct the number of unreported cases by road use and age group.

In order to have a better understanding of the consequences of road crashes, the Swiss Federal Roads Office started a research project to link police-reported data of a given year with other data sources, including hospital data. This will allow coding of the recommended maximum Abbreviated Injury Scale score based on the International Classification of Diseases (ISD-10). A yearly data linkage procedure is now being implemented. The availability of data for several years will allow the addressing of important research questions.

Most recent safety data

Road crashes in 2014

In 2014, a total of 17 803 injury crashes occurred on Switzerland's roads in which 243 persons were killed – a 10% decrease in comparison to 2013. In 2014, Switzerland experienced its lowest level of fatalities since record-keeping began.

The downward trend in the number of serious injuries continued. Safer vehicles are likely to have contributed to this trend as the share of seriously injured passenger car occupants has been decreasing substantially in recent years. However, 29 cyclists were killed – 12 more fatalities than in 2013. The number of seriously injured cyclists has increased by 13%. Further analysis of these accidents will be done by the Federal Roads Office. There were 145 seriously injured E-bike riders, continuing the negative trend observed in recent years. Pedestrian deaths declined by 40% to 43 persons killed.

Road crashes in 2013

In 2013, there was a 21% decrease in the number of road fatalities, with 269 persons killed. The decrease was observed mainly for motorcyclists and cyclists. Cold and rainy weather in the first half of 2013 led to a diminution in traffic volume, which might have been a contributory factor. The reduction of fatalities in 2013 is also explained by the high number of fatalities in 2012, due to a coach crash that killed 28 persons.

Trends in traffic and road safety (1990-2014)

Traffic

Since 1990, distance travelled (vehicle-kilometres) increased by 26% and the number of motorised vehicles increased by more than 50%.

Total vehicle-kilometres travelled in 2013 showed a 3.5% increase compared with the previous year. Provisional figures for 2014 indicate that the overall traffic volume rose by 0.6%.

Constant population growth and the ever-increasing trend of mobility lead to increasing traffic volume for both individual and public transport. An important characteristic of the traffic in Switzerland is the transport of freight through the Alps. In recent years there has been stagnation in transalpine freight traffic. However, the proportion of foreign vehicles is still above 70%.

Road safety

Crashes and casualties

Road fatalities peaked in 1971, when 1 720 people died on the roads. Between 1971 and 1996, the number of fatalities significantly diminished. The average annual reduction from 1971 to 1976 was 7.5%, and then 3%, until 1996. Between 1997 and 2000, the number of casualties was stable at around 600 per year. In 2004-06, the rate of decrease significantly accelerated. Recent figures show a downward trend in the numbers of those seriously injured, after years of little change.

In the last 15 years several important safety measures have been implemented in Switzerland, including:

- 2005: The legal blood alcohol content (BAC) limit was lowered to 0.5 g/l. At the same time police were allowed to control for alcohol without suspicion.

- 2005: Jurisdiction for licence withdrawal was strengthened and a new, two-stage drivers' training was introduced.
- 2014: The first measures of the road safety programme "Via Sicura" came into force, including mandatory daytime running lights and a zero blood alcohol limit for novice, bus and truck drivers.

Rates

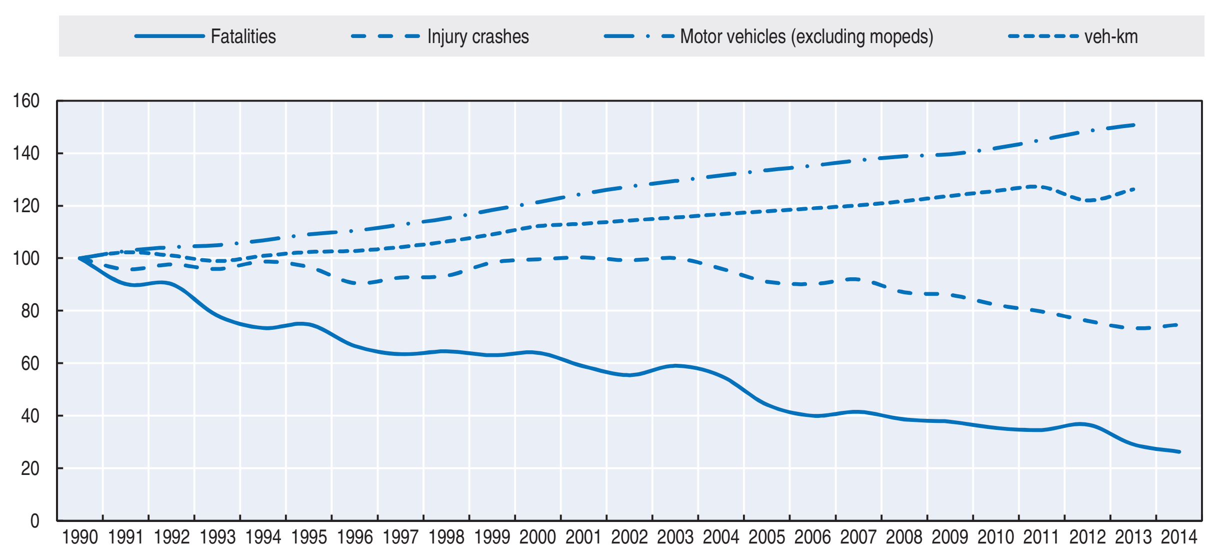
In 2013, the mortality rate expressed in terms of deaths per 100 000 inhabitants was 3.3, a 60% decrease compared to 2000. Similarly, the mortality risks, expressed in terms of deaths per distance travelled, have also been more than halved since 2000.

Table 37.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	925	592	327	339	269	-20.6	-17.7	-54.6	-70.9
Injury crashes	23 834	23 737	19 609	18 148	17 473	-3.7	-10.9	-26.4	-26.7
Deaths per 100 000 inhabitants	13.9	8.3	4.2	4.3	3.3	-21.5	-20.3	-59.5	-75.9
Deaths per 10 000 registered vehicles	2.4	1.3	0.6	0.6	0.5	-21.9	-22.6	-63.4	-80.7
Deaths per billion vehicle kilometres	18.6	10.6	5.2	5.6	4.3	-23.3	-18.1	-59.6	-77.0
Traffic data									
Registered vehicles[1] (thousands)	3 777	4 583	5 360	5 605	5 694	1.6	6.2	24.2	50.7
Vehicle kilometres (millions)	49 624	55 686	62 339	60 548	62 647	3.5	0.5	12.5	26.2
Registered vehicles per 1 000 inhabitants	566	640	688	705	708	0.5	2.9	10.7	25.1

1. Registered vehicles excluding mopeds.

Figure 37.1. **Road safety and traffic data Index 1990 = 100**



Road safety by user group

All user groups have benefited from the improvement in road safety since 1990. A sharp decrease is observed for moped riders (-84%) that is mainly due to a large reduction in moped distance travelled in recent years.

Since 2000, car occupants have the best improvement (-52%). The penetration of safer vehicles in the fleet partly explains these good results.

Since 2011, electric bikes constitute a new category of vehicles in police records. In 2012 and 2013 there was a net increase in injury crashes involving these vehicles.

Table 37.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	58	48	34	36	21	-41.7	-38.2	-56.3	-63.8
Moped users	49	19	4	3	8	na	na	-57.9	-83.7
Motorcyclists	155	92	67	74	55	-25.7	-17.9	-40.2	-64.5
Passenger car occupants	455	273	129	104	103	-1.0	-20.2	-62.3	-77.4
Pedestrians	167	130	75	75	69	-8.0	-8.0	-46.9	-58.7
Others	41	30	18	47	13	-72.3	-27.8	-56.7	-68.3
Total	***925***	***592***	***327***	***339***	***269***	***-20.6***	***-17.7***	***-54.6***	***-70.9***

Road safety by age group

Since 1990, a reduction in fatalities has been observed in all age groups, with a greater than average reduction for teenagers and young people. The trend for the elderly is less positive than for other age groups. Older people are particularly vulnerable as pedestrians. In the period 2011-14, 60% of all pedestrian fatalities were aged 65+.

The mortality rate of young people (18-20) has been divided by nearly five since 2004. This is partly explained by a reduced exposure as the mean age for obtaining a driving licence is increasing. Another explanation is the introduction in 2005 of the two-phase licensing scheme, with a three-year probationary licence.

In 2013, young people still had the highest death rate (4.7 road deaths per 100 000 inhabitants), but it is just slightly above the average.

Table 37.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	15	10	4	5	7	Comparison is not relevant due to small absolute numbers		-30.0	-53.3
6-9	12	11	0	1	3			-72.7	-75.0
10-14	20	7	4	25[1]	2			-71.4	-90.0
15-17	28	26	12	6	2			-92.3	-92.9
18-20	93	42	21	22	13	-40.9	-38.1	-69.0	-86.0
21-24	121	49	15	17	17	0.0	13.3	-65.3	-86.0
25-64	438	285	170	170	125	-26.5	-26.5	-56.1	-71.5
≥ 65	198	161	101	93	100	7.5	-1.0	-37.9	-49.5
Total	***925***	***592***	***327***	***339***	***269***	***-20.6***	***-17.7***	***-54.6***	***-70.9***

1. The very high number killed among the 10-14 age group in 2012 is related to the March 2012 coach crash, in which 22 children and 8 adults died.

Child safety

In the last 10 years the number of children killed or seriously injured in traffic crashes was halved. Nevertheless, in 2014, more than 200 children were severely injured and 10 killed. The most common cause of severely injured children as pedestrians is running on the road. In severe bicycle crashes the main cause is violation of right of way or traffic signals.

Bfu (*Beratungsstelle für Unfallverhütung,* the Swiss Council for Accident Prevention) offers support to schools and parents and developed the "Safety Tools" for teachers to promote safer behaviour and discuss with children such topics as visibility, cycling and the safe way to school.

Figure 37.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

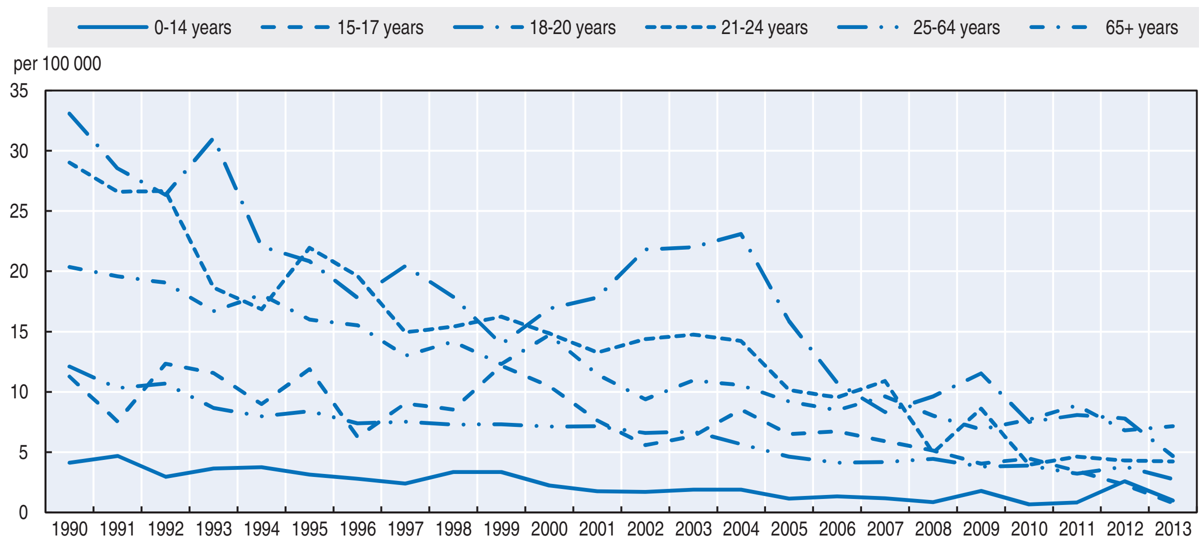
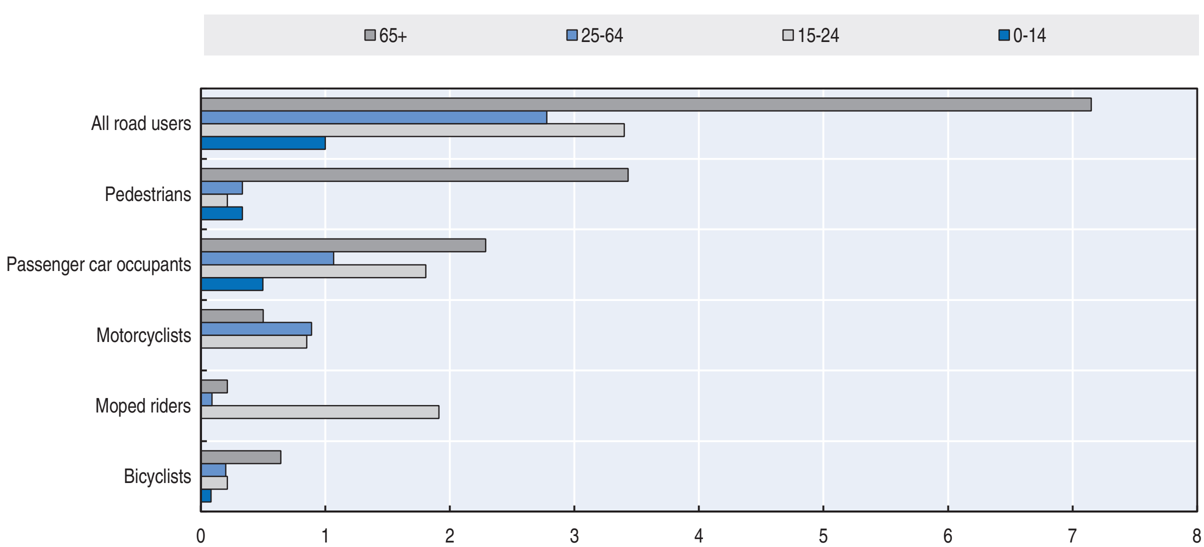


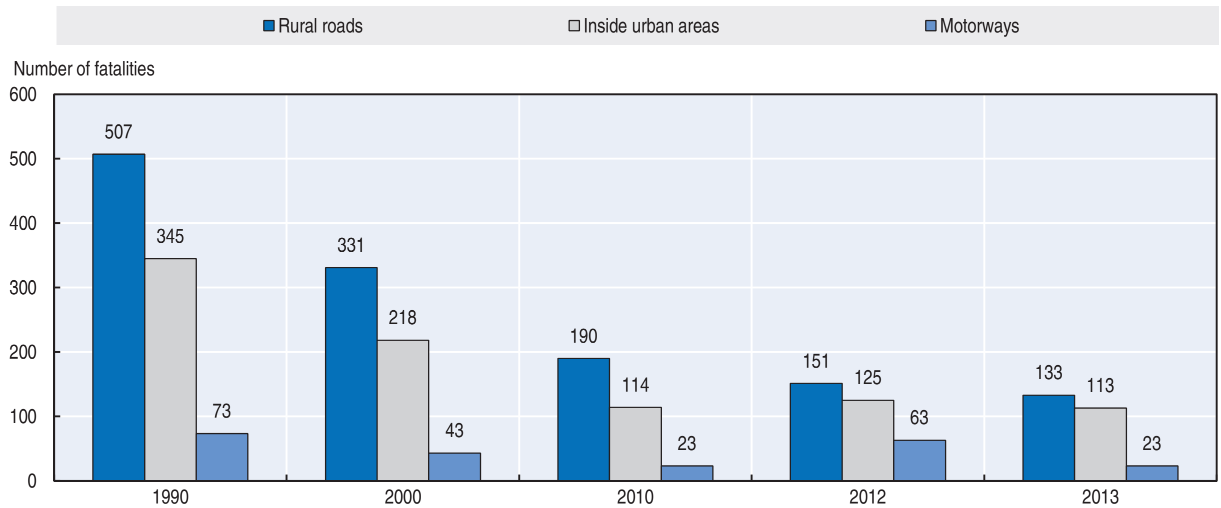
Figure 37.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants in 2013



Road safety by road type

The number of fatalities on motorways is back to the 2010 level after a significant increase in 2012, due to the aforementioned tragic coach crash.

Figure 37.4. **Road fatalities by road type**



Economic costs of traffic crashes

In 2011, the cost of road crashes was CHF 10.7 billion. This estimate of the total economic burden is based on a willingness-to-pay approach (Niemann et al., 2015).

Table 37.4. **Costs of road crashes, 2011**

	Unit cost (CHF)	Total (CHF)
Fatalities	2.86 million	0.8 billion
Serious injuries	0.36 million	6.4 billion
Slight injuries	0.02 million	1.1 billion
Property and damage costs		2.4 billion
Total		10.7 billion

Source: Niemann et al. (2015).

Recent trends in road user behaviour

Impaired driving

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. As of 1 January 2014, novice drivers are subject to a zero alcohol limit for their first three years behind the wheel. The same restriction applies to all professional drivers.

In 2014, 9% of injury crashes involved a driver with a BAC above 0.5 g/l.

Drugs and driving

In 2013, 22 road fatalities (6%) were explicitly due to a road user impaired by drugs, legal or not. However, in official statistics, the consumption of drugs is probably underreported.

In Switzerland the limit for drugs is set at zero ("zero tolerance"). The road traffic law specifies that driving ability must be ensured. The use of any drugs which reduce driving ability is prohibited. In the case of some drugs, like THC or amphetamine, a positive test is proof of reduced driving ability and considered an offence. In the case of other drugs or medical substances a "three-pillar system" is used: Driving impairment is judged by police, physicians and blood tests.

Distraction

"Distraction or lack of attention" is cited in 28% of injury crashes.

The use of mobile phones without a hands-free set or for texting is subject to a fine of CHF 100. Although using mobile phones with hands-free sets is not prohibited, in several cases the Swiss Federal Court has qualified such use as a situation that leads to impaired driving.

Fatigue

According to police reporting, 2% of all injury crashes in 2014 were due to fatigue. The real number is expected to be much higher.

Speed

In 2014, speed was a contributing factor in about 26% of fatal crashes. In most cases, inappropriate speed is to blame rather than excessive speed. In 2010, the proportion of drivers above the speed limit was 23% on urban roads, 31% on rural roads and 18% on motorways. The survey on actual speeds was stopped in 2010.

The table below summarises the main speed limits in Switzerland.

Table 37.5. **Passenger car speed limits by road type, 2015**

Urban roads	50 km/h
Rural roads	80 km/h
Motorways	120 km/h

Seat belts and helmets

Seat belt use has been compulsory in front seats since 1981 and in rear seats since 1994. Since 2002, dedicated child-restraint systems have been mandatory for all children below the age of seven. Starting from 1 April 2010, new regulations have been applied for the transport of children in cars: Children between 7 and 12 and smaller than 150 cm must be restrained with a certified child-restraint system.

In 2014, seat belt wearing rates among car drivers and front-seat passengers remained stable, with figures of 94% and 93% respectively. The rate in back seats remains low with 77%. Significant differences were again revealed by location and language region: the wearing rate was highest (97%) on motorways. On rural roads and urban roads it was lower at 93% and 92%.

In the past three years, 56% of the killed car occupants did not wear a seat belt. Considering the actual wearing rate and a 50% protective effect of the seat belt on front seats and 25% on rear seats, it is estimated a 100% wearing rate in front and rear seats would have saved eight lives in 2013.

Helmet wearing has been compulsory on motorcycles since 1981 and on mopeds (up to 50 cc, maximum speed 45 km/h) since 1990. Observation indicates a compliance rate of almost 100%.

Table 37.6. **Seat belt wearing rate by car occupancy and road type**

%

	2000	2013	2014
Front seat			
General	77 (driver)	92 (driver) 91 (passenger)	94 (driver) 93 (passenger)
Urban roads	66	88	92
Rural roads	74	93	93
Motorways	89	97	97
Rear seats			
Adults	32	72	77
Children (child restraints)	85 (2002)	93 (2012)	n.a.

A helmet is not compulsory on bicycles. In 2014, the estimated wearing rate was around 41% for adults and 60% for children for bicycles. Helmets are compulsory for electric bicycles with a pedal assistance over 25 km/h, and the wearing rate was 89%. For those electric bicycles on which a helmet is not required, the rate was 63%.

National road safety strategies and targets

Organisation of road safety

Due to Swiss federalism, many organisations are involved in and responsible for road safety, including local and cantonal authorities, special interest groups and insurance companies. The leading roles in road safety are taken mainly by the three organisations: The Fund for Road Safety, the Swiss Council for Accident Prevention (bfu) and the Federal Roads Office. The Swiss Federal Council regulates the national road safety policy and is responsible for the Via Sicura road safety programme.

Road safety strategy for 2011-20

On 15 June 2012, the Swiss Federal Council adopted the road safety programme Via Sicura, almost 10 years after the first proposal. A range of safety measures is being progressively implemented (see details in section below).

Road safety targets

No quantitative target was set under the Via Sicura programme.

Monitoring

Monitoring is planned for some measures to be implemented and bfu regularly publishes safety performance indicators, including daytime running lights, seat belt use and bicycle helmet use.

Evaluation of past road safety strategy

The prior target in Switzerland was to halve the number of fatalities and seriously injured by 2010 in comparison to 2000. Despite a substantial improvement in road safety during the last decade, the target for 2010 was not reached, although much progress has been made towards the fatality target.

Recent safety measures (2012-14)

On January 2014, a number of measures of the Swiss road safety programme Via Sicura came into force.

Road users

Impaired driving

- As of 1 January 2014, novice drivers are subject to a zero alcohol limit for their first three years behind the wheel. The same restriction applies to all professional drivers.
- Excessive drink-driving offenders must equip their car with an alcolock.
- A test on fitness to drive is mandatory for those convicted of offences such as driving under the influence of drugs.

Seat belt and helmet use

- Since 2012 bicycle helmets are required on electric bicycles above 25 km/h pedal assistance.

Speed

- A driver's licence is revoked for a minimum two years in cases of excessive speeding and for 10 years to life in case of repeated offences.

Vehicles

- As of January 2014, daytime running lights are mandatory for all motorised vehicles. The bfu-survey on daytime running lights was conducted in July 2014, six month after daytime running lights became mandatory: 94% of vehicles are in compliance with the new regulation (68 % in 2013).

Recent and ongoing research

- The SINUS-Report 2014 (SINUS: *Strassenverkehrsunfälle als soziale*) on safety and road accidents was published in October 2014.
- The second edition of the bfu report on safety of motorcycle riders was published (abstract also in French and Italian).

References

Niemann, S., C. Lieb and H. Sommer (2015), *Nichtberufsunfälle in der Schweiz: Aktualisierte Hochrechnung und Kostenberechnung,* bfu-Report 71. Bern, bfu – Beratungsstelle für Unfallverhütung.

Websites

- Federal Roads Office (FEDRO/ASTRA): *www.astra.admin.ch*.
- Swiss Council for Accident Prevention (bfu): *www.bfu.ch*.
- Road accident data: *www.astra.admin.ch/unfalldaten*.
- SINUS report 2014 on Road Safety.
- bfu report on Safety of Pedestrians.

Chapter 38

United Kingdom

*This chapter presents the most recent crash data for the United Kingdom, as well as an update on the country's road safety strategy and recently implemented safety measures.**

* Information and data presented in this report from the Department for Transport concern the United Kingdom (i.e. Great Britain + Northern Ireland). Where comparable information is not available for Northern Ireland, data are provided for Great Britain only, which accounts for 97% of UK fatalities.
All data stem from the Department for Transport and IRTAD unless otherwise noted. For more information please contact: anil.bhagat@dft.gsi.gov.uk.

The rate of road fatalities in Great Britain is among the lowest in the Organisation for Economic Co-operation and Development, at 2.8 deaths per 100 000 inhabitants. Between 2000 and 2013, the number of fatalities decreased by 51%. In addition to longer term trends in improved vehicle safety, road engineering, trauma care and education, the recession and economic downturn, which have led to falling traffic levels, and continued reduction in average speeds have played a part in the important reduction in road fatalities.

Road safety data collection

Definitions applied in the United Kingdom

- Road fatality: Human casualties whose injuries resulted in death within 30 days of a road accident. Confirmed suicides are excluded.
- Serious injury: An injury for which a person is detained in hospital as an "in-patient", or any of the following injuries whether or not they are detained in hospital: fractures, concussion, internal injuries, crushings, burns, severe cuts, severe general shock requiring medical treatment and injuries that cause death 30 or more days after the accident. Casualties are recorded as seriously or slightly injured by police on the basis of information available within a short time of the accident, and may take into account whether the casualty is hospitalised. Hospitalisation procedures vary regionally.
- Slight injury: An injury of a minor character such as a sprain (including neck whiplash), bruise or cut which are not judged to be severe, slight shock requiring roadside attention and injuries not requiring medical treatment.
- Injury accident: accident in which at least one person is injured or killed.

Data collection

There are three main sources of safety information in the United Kingdom:

- The national road accident reporting system, STATS19, which includes information from police reports.
- Information from coroners in England and Northern Ireland and procurators fiscal in Scotland on the levels of alcohol in the blood of people killed in road traffic accidents.
- Hospital episode statistics (HES).

Most of the data in this report, which is also included in the *IRTAD Database*, come from STATS19.

While all fatal crashes are reported by the police, data from hospitals, surveys and compensation claims indicate that a considerable proportion of non-fatal casualties are not known to the police.

Based on information from the National Travel Survey, the Department for Transport (DfT) estimates that the total number of casualties was within the range 630 000 to 800 000 with a central estimate of 720 000. The National Travel Survey results suggest that about

10% of accidents reported by the respondents are outside the scope of STATS19 accident data. This should be borne in mind when using and analysing the STATS19 data.

Linking HES data from hospitals and police data for England gives a better understanding of injury severity and outcomes. Around 47% of the police-reported seriously injured casualties are matched to the hospital records. As part of this linkage, the United Kingdom (UK) uses the Maximum Abbreviated Injury Scale (MAIS) to rate the severity of injury crashes:

- MAIS 1 and 2: correspond to minor or moderate injuries
- MAIS 3+: correspond to serious injuries.

Due to changed legal requirements, the DfT has not had access to HES data since 2012, but the department expects to restart this work in spring 2015 and aims to produce more robust estimates of MAIS 3+ casualties during 2015.

Most recent safety data

Road crashes in 2014 – provisional data

In the 12 months ending September 2014 there were 1 730 reported road fatalities in Great Britain, a 1% increase compared to the previous year. Part of the reason is the unusually low number of casualties in the first quarter of 2013, which resulted in a large increase in casualties in the first quarter of 2014. Although DfT cannot predict whether the final fatality figures for 2014 will be up or down in comparison with 2013, it is highly likely that the whole year will have an increased number of seriously injured casualties.

Road crashes in 2013

Road deaths in Great Britain in 2013 decreased by 2% compared to 2012 to 1 713. This is the lowest figure since national records began in 1926. The number of people seriously injured decreased by 6%.

Trends in traffic and road safety (1990-2014)

Traffic

Motor vehicle traffic in Great Britain peaked in 2007 and decreased consecutively each year to 2010. From 2010 to 2013, traffic volumes remained broadly stable and in 2013 overall motor vehicle traffic volume levels were similar to levels seen in 2003. Motor vehicle traffic increased by 0.4% between 2012 and 2013 and the provisional estimate for 2014 is a 2.1% increase over 2013.

Initial estimates suggest that Gross Domestic Product in the United Kingdom increased over 2014 and it is likely that increased economic activity contributes to the upward trend.

Heavy Goods Vehicle (HGV) traffic increased by 0.9% from 2012 to 2013. HGV traffic peaked in 2007 and subsequently declined (except for growth once, in 2010). Provisional estimates suggest that HGV traffic increased by 2.2% in 2014.

Light Goods Vehicle (LGV) traffic has grown steadily since 2009, despite a small decrease in 2012. In 2013, LGV traffic volumes increased to a new record of 42.6 billion vehicle-miles (68.2 billion vehicle-kilometres). LGV traffic increased 5.8% from 2013 to 2014, according to provisional estimates.

Bicycle traffic increased by over 13% from 2003 to 2013. It is likely, due to the way road traffic is recorded, that cycling traffic has increased more than the road traffic estimates suggest. Transport for London estimates that the number of cycling trips in London doubled between 2000 and 2012, and tripled in Central London over the same period.

Road safety

Crashes and casualties

Road fatalities reached a peak in 1941 to just over 9 000. Since then it decreased by 81% in 2013 to 1 713 in Great Britain.

Between 1990 and 2013, the number of fatalities decreased by 67% and between 2000 and 2013 the decrease was 50%. Various factors may contribute to the recent large reductions in fatalities in addition to longer term trends in improved vehicle safety, road engineering, trauma care and education. The recession and economic downturn led to falling traffic levels and continued reduction in average speeds have played a part. Similar large falls in fatalities were seen in the recession in the early 1990s.

As the number of road casualties gets smaller, understanding the reasons behind year-on-year changes becomes more important, and weather patterns provide useful context. Significant snowfall throughout Britain at the start and end of 2010 is likely to have reduced the number of road users, leading to a reduction in traffic, crashes and casualties in these periods. This is likely to have reduced the number of fatalities disproportionately in 2010, and as a result an increase in fatalities was seen in 2011. The return to the long term downward trend in fatalities in 2012 and 2013 reinforces the hypothesis that the 2010 figures were affected by the weather.

The year 2012 was the second wettest on record. The likely result of such rainfall would have been to reduce the number of vulnerable road users, particularly cyclists and motorcyclists, during the spring and summer months. This may have had the effect of reducing the number of crashes and casualties from these user groups. Both 2011 and 2013 were drier than 2012, so some caution is needed in interpreting annual changes in casualties over the period 2011-13.

Rates

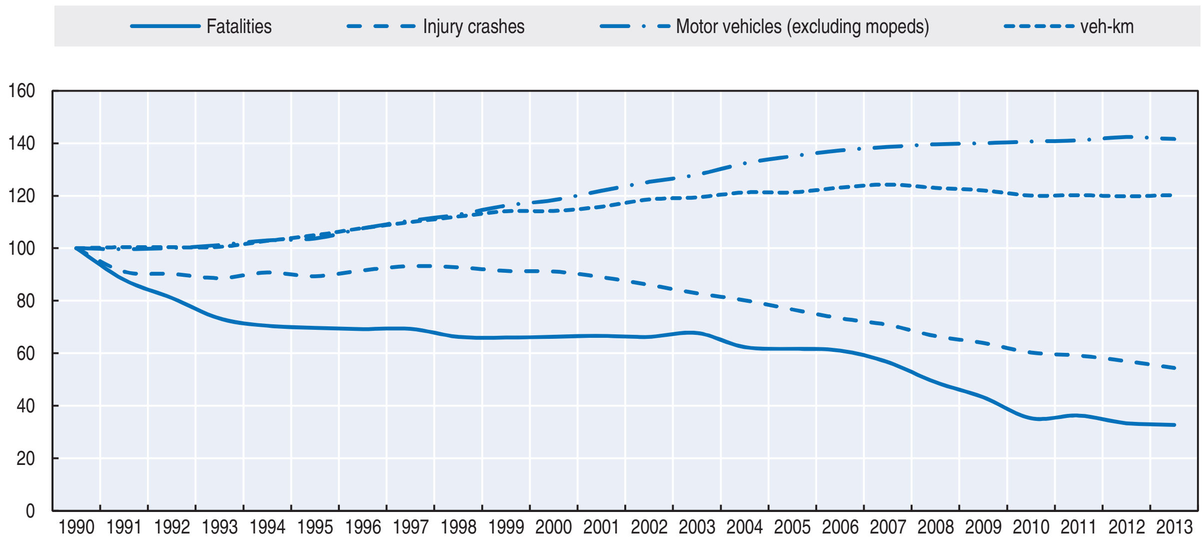
Fatality rates have generally been on a downward trend since 1973, with some intermittent periods where small increases were observed. In 2013, the UK had a fatality rate of 2.8 deaths per 100 000 inhabitants.

Table 38.1. **UK road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	5 402	3 580	1 905	1 802	1 770	-1.8	-7.1	-50.6	-67.2
Injury crashes	265 600	242 117	160 080	151 346	144 480	-4.5	-9.7	-40.3	-45.6
Deaths per 100 000 inhabitants	9.4	6.1	3.0	2.8	2.8	-2.4	-9.0	-54.6	-70.7
Deaths per 10 000 registered vehicles	2.2	1.2	0.5	0.5	0.5	-1.3	-7.7	-58.7	-76.9
Deaths per billion vehicle kilometres	12.8	7.4	3.8	3.6	3.5	-2.1	-7.2	-53.1	-72.8
Traffic data									
Registered vehicles[1] (thousands)	24 941	29 523	35 087	35 501	35 321	-0.5	0.7	19.6	41.6
Vehicle kilometres (millions)	422 840	482 951	507 700	506 500	508 600	0.4	0.2	5.3	20.3
Registered vehicles per 1 000 inhabitants	436	501	559	557	551	-1.1	-1.4	9.9	26.4

1. Registered vehicles excluding mopeds.

Figure 38.1. **Road safety and traffic data Index 1990 = 100**



Road safety by user group

Since 1990, the important reduction in mortality has benefited all road users, with the greatest reduction achieved for mopeds (but actual figures are very small) and pedestrians.

Fatalities fell for all road users in 2013 except motorcyclists (+5%).

After eight consecutive years of increase, the number of cyclists killed decreased by 6% in 2013. However, provisional results for the 12 months ending September 2014 show an increase in the number of cyclists killed or seriously injured. It is likely that the long term upward trend in cyclist casualties will continue, probably closely related to an increase in cycling throughout Britain, especially in urban areas.

Table 38.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	267	131	111	120	113	-5.8	1.8	-13.7	-57.7
Moped users	37	15	10	12	4	-66.7	-60.0	-73.3	-89.2
Motorcyclists	634	597	403	320	337	5.3	-16.4	-43.6	-46.8
Passenger car occupants	2 462	1 784	867	831	819	-1.4	-5.5	-54.1	-66.7
Pedestrians	1 754	889	415	429	405	-5.6	-2.4	-54.4	-76.9
Others	248	164	99	90	104	15.6	5.1	-36.6	-58.1
Total	***5 402***	***3 580***	***1 905***	***1 802***	***1 770***	***-1.8***	***-7.1***	***-50.6***	***-67.2***

Road safety by age group

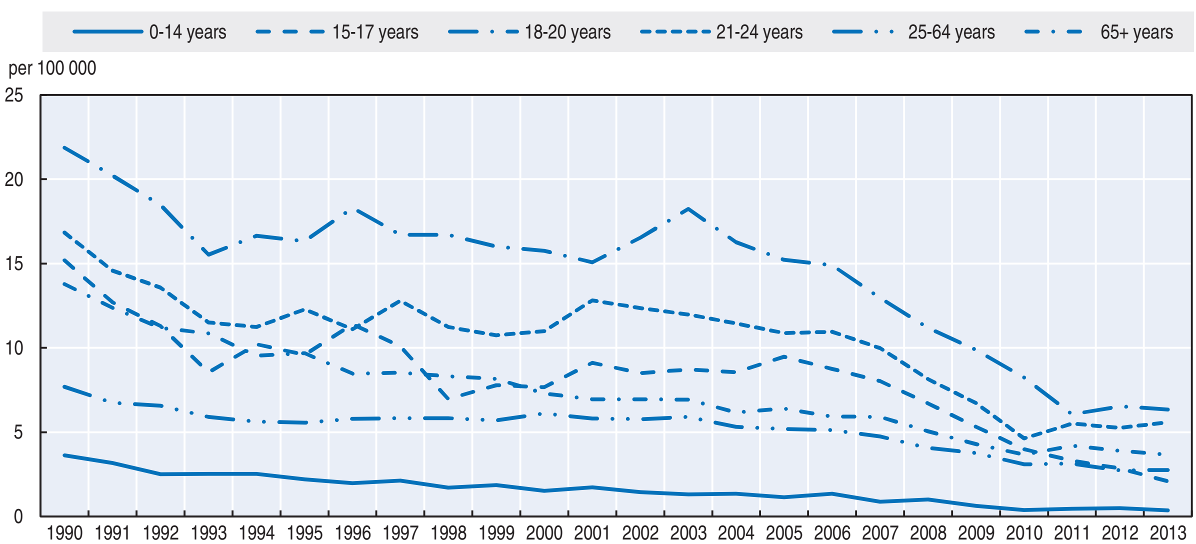
Since 1990, the reduction in fatalities has benefited all age groups, with the highest reduction for the youngest group (0-14), for which fatalities decreased from 394 in 1990, to 41 in 2013. The elderly (above 65) have not benefited at the same rate as the average population of the improvement of road safety. They are particularly vulnerable as pedestrians.

In 2013, the 18-20 group has the highest risk, with a fatality rate per 100 000 inhabitants twice those of the general population.

Table 38.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	123	41	16	21	13	-38.1	-18.8	-68.3	-89.4
6-9	108	41	14	10	7	-30.0	-50.0	-82.9	-93.5
10-14	163	89	12	25	21	-16.0	75.0	-76.4	-87.1
15-17	335	169	93	66	48	-27.3	-48.4	-71.6	-85.7
18-20	558	342	206	161	153	-5.0	-25.7	-55.3	-72.6
21-24	616	304	156	183	195	6.6	25.0	-35.9	-68.3
25-64	2 223	1 908	1 031	914	924	1.1	-10.4	-51.6	-58.4
≥ 65	1 241	679	377	422	409	-3.1	8.5	-39.8	-67.0
Total	***5 402***	***3 580***	***1 905***	***1 802***	***1 770***	***-1.8***	***-7.1***	***-50.6***	***-67.2***

Figure 38.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013



Road safety by road type

In 2013, most fatalities (62%) occurred on rural roads. This is considerably higher than the 42% of traffic on these roads. Traffic on urban roads usually travels at lower speeds, so that injuries from collisions involving just cars, buses and goods vehicles tend to be less serious. The higher average speeds on rural roads more frequently results in more serious injuries and deaths. Since 1990, the largest improvement was made on urban roads, possibly as a result of improved secondary safety and highway engineering.

Economic costs of traffic crashes

The total value of reported road crashes in 2013 for Great Britain was estimated to be GBP 14.7 billion – this includes an estimate of the cost of damage-only crashes but does not allow for unreported injury crashes. This represents a decrease of GBP 0.4 billion compared with the same estimate made in 2012.

Allowing for crashes not reported to the police could increase the total to about GBP 34.3 billion.

Figure 38.3. **Road death rate by age and road user group**
Fatalities per 100 000 inhabitants in 2013

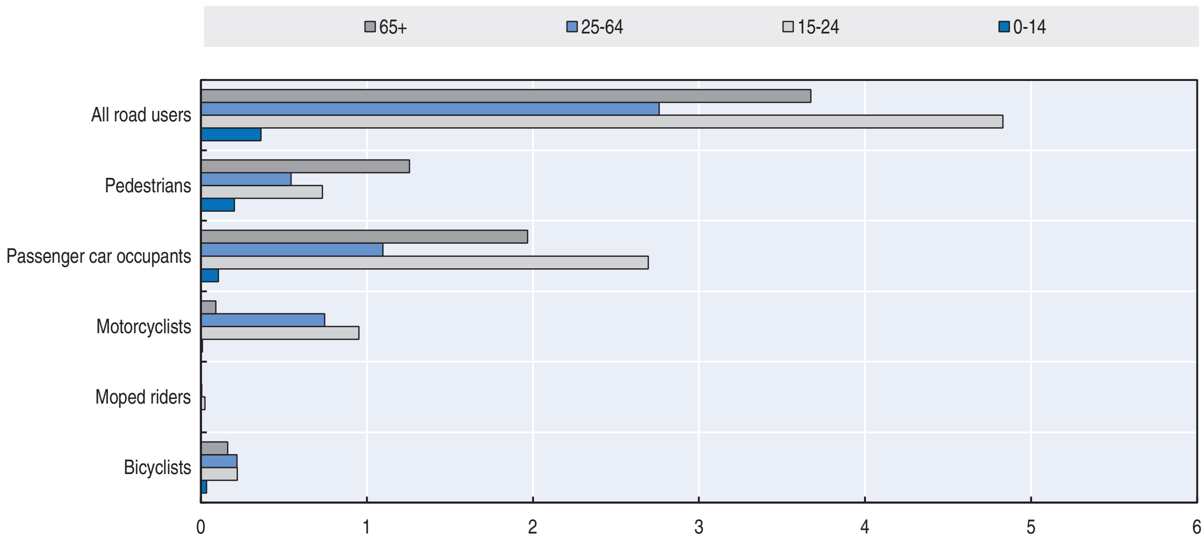


Figure 38.4. **Road fatalities by road type**

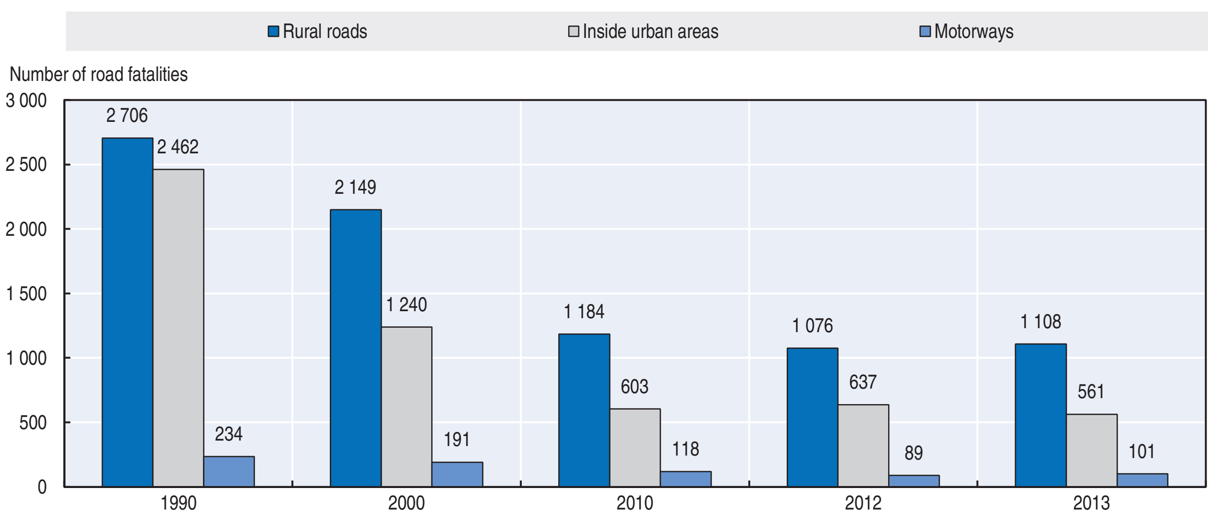


Table 38.4. **Costs of road crashes, 2013**

	Unit cost GBP	Total in GBP
Fatalities	1 953 783	3 142 billion
Serious injury crashes	223 870	4 393 billion
Slight injury crashes	23 544	2 765 billion
Property/damage only costs	2 096	4 414 billion
Total (all crashes)	6 556	14 713 billion
Total as % of GDP		0.9%

Source: Department for Transport (2013 and 2014).

Recent trends in road user behaviour

Impaired driving

Drink driving

In England, Wales and Northern Ireland the maximum authorised blood alcohol content (BAC) is 0.8 g/l. In Scotland the maximum limit was reduced to 0.5 g/l in December 2014.

For statistical purposes, a drink drive crash is defined as an incident on a public road in which someone is killed or injured and where at least one of the motor vehicle drivers or riders involved either refused to give a breath test specimen or one of the following:

- failed a roadside breath test by registering over 35 micrograms of alcohol per 100 millilitres of breath
- died and was subsequently found to have more than the authorised BAC.

Drink drive casualties are defined as all road users killed or injured in a drink drive crash.

In 2012, about 13% of fatal crashes involved at least one driver with a BAC above 0.8 g/l, killing 230 people.

In a survey on drink driving in England and Wales undertaken in 2013-14, 6% of adult drivers said that they had driven at least once or twice within the previous 12 months when they thought they were over the legal alcohol limit (DfT, 2014).

Drugs and driving

In 2013-14 in England and Wales, 0.7% of drivers said they had driven under the influence of illegal drugs at least once in the previous year. This is not significantly different from earlier years. The survey found that drivers in their 20s had the highest rates of both drink driving (9%) and drug driving (1.5%). Among older drivers, the prevalence was around half those figures.

More detailed results on self-reported drink and drug drinking are published at:

www.gov.uk/government/statistics/reported-road-casualties-in-great-britain-provisional-estimates-involving-illegal-alcohol-levels-2013.

The UK introduced new legislation on 2 March 2015 on driving with a specified controlled drug in the body above a specified limit. The previous legislation required the police to demonstrate that driving was impaired by drugs in order to prosecute. See link for more details:

www.gov.uk/government/news/drug-drive-legislation-am-i-fit-to-drive.

Distraction

Research demonstrates that reaction times for drivers using a hand-held phone are 30% worse than driving under the influence of alcohol at the legal limit.

It is illegal to use a hand-held mobile phone or similar device while driving. There is an automatic fixed penalty if caught using a hand-held phone while driving or riding. Three penalty points on the licence and a fine of GBP 100 can be imposed. If the case goes to court, the maximum fine can be GBP 1 000 in a car and GBP 2 500 for a bus, coach or heavy goods vehicle.

A driver can also be prosecuted for using a hands-free phone or similar device if distracted and not in proper control of the vehicle. The same penalties apply. Employers can be prosecuted if employees are distracted because they are required to use mobile phones while driving.

An observational 2014 survey in England and Scotland showed the proportion of drivers using hand-held mobile phones while driving was 1.6% overall: 1.4% for car drivers, 2.7% for van drivers, and 1.2% for truck drivers. Results are available at: *www.gov.uk/government/statistics/seat belt-and-mobile-phone-use-surveys-2014*.

Fatigue

Research suggests that almost 20% of crashes on major roads are sleep-related. Sleep-related crashes are more likely than others to result in a fatality or serious injury. Peak times for crashes are in the early hours and after lunch. About 40% of sleep-related crashes involve commercial vehicles. Men under 30 have the highest risk of falling asleep at the wheel.

In Great Britain "fatigue" was assigned as a contributory factor in 5% of fatal injury crashes in 2013.

Speed

Exceeding the speed limit was reported as a factor in 5% of all crashes in 2013. These crashes accounted for 15% of fatalities.

The table below summarises the main speed limits in the United Kingdom.

Table 38.5. **Passenger car speed limits by road type, 2015**

Urban roads	30 mph
Rural roads	Single carriageway: 60 mph Dual carriageway : 70 mph
Motorways	70 mph

Seat belts and helmets

Seat belt use is compulsory on all seats:

- 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.

The most recent survey of seat belt use, carried out in 2014, provided estimates that 95% of car drivers and front-seat passengers and 89% of rear-seat occupants wore seat belts. These rates are slightly higher than earlier in the decade. Seat belt wearing for front seat passengers has never been below 93% since 1999.

Children are required to be restrained by a suitable combination of car seats and belts, depending on age. Although the level of children in restraints fell from 96% in 2009 to 91% in 2014, this decrease is not statistically significant.

Table 38.6. **Seat belt wearing rate by car occupancy**

%

	2009	2014
Front seats		
Drivers and passengers	95	96
Rear seats		
Adults	89	92
Children (child restraint)	96	91

Helmet wearing has been compulsory on motorcycles since 1973 and on mopeds (up to 50 cc, maximum speed 45 km/h) since 1977. A helmet is not compulsory on bicycles.

National road safety strategies and targets

Organisation of road safety

The Department for Transport sets overall road safety strategy in Great Britain. This includes decisions about road safety targets and legislating on key safety issues. Transport Scotland has certain powers in respect of road safety in Scotland, for example it can vary the drink driving limit; and the Welsh Assembly Government has set a Welsh road safety target. Local highway authorities are responsible for safety on their roads and can use engineering measures as well as local education campaigns to improve safety. Road safety in Northern Ireland is the responsibility of the Department of the Environment in Northern Ireland.

Road safety strategy for 2011-20

A Strategic Framework for Road Safety for Great Britain was launched on 11 May 2011, when the UN launched its Decade of Action. This set out a framework on which to monitor progress of road safety, including six key indicators for which initial figures were published in the 2010 Annual Report, and a range of other indicators.

The six key indicators are:

- number of road deaths (and rate per billion vehicle miles)
- rate of motorcyclist deaths per billion vehicle miles
- rate of car occupant deaths per billion vehicle miles
- rate of cyclist deaths per billion vehicle miles
- rate of pedestrian deaths per billion miles walked
- number of deaths resulting from collisions involving drivers under 25.

The government's approach translates into a number of key themes for road safety:

- making it easier for road users to do the right thing and going with the grain of human behaviour
- better education and training for children and for learner and inexperienced drivers
- remedial education for those who make mistakes and for low-level offences, where this is more effective than financial penalties and penalty points
- tougher enforcement for the small minority of motorists who deliberately choose to drive dangerously
- extending this approach to cover all dangerous and careless offences, not just speeding

- taking action based upon cost-benefit analysis, including assessing the impact on business
- decentralising decision making and providing local information to citizens to enable them to challenge priorities
- working with the road safety community on better tools to support road safety professionals.
- Full details for the Strategy can be found at: *www.gov.uk/government/publications/strategic-framework-for-road-safety*.

Road safety targets

The action plan has not set quantitative targets as such, but a modelling exercise has been conducted to assess the expected casualty reduction.

The table below shows projected reductions based on assumptions about the effectiveness of measures contained in the new strategic framework, both in terms of casualty numbers and percentage reduction compared with the 2005-09 average.

Table 38.7. **Projected casualty reduction up to 2030**

	2005-09 average	2020	2025	2030
Killed				
Central projection	2 816	1 770	1 720	1 670
Change on 05-09 average		-37%	-39%	-41%
Low projection		1 530	1 370	1 220
Change on 05-09 average		-46%	-51%	-57%
Killed or seriously injured				
Central projection	30 040	18 070	15 820	13 570
Change on 05-09 average		-40%	-47%	-55%
Low projection		15 110	12 130	9 150
Change on 05-09 average		-50%	-60%	-70%

Monitoring

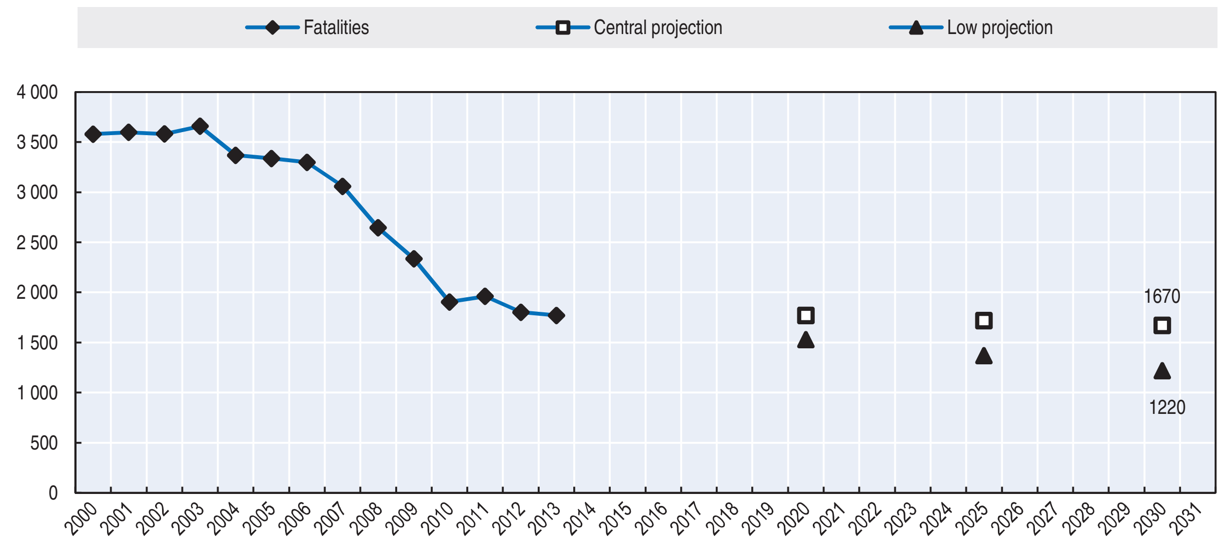
The average over the five-year period from 2005 to 2009 is used as a basis for comparison when considering road safety trends over a longer period.

- The total number of fatalities in 2013 was 39% lower than the 2005-09 average, thus achieving the model's central projection for 2025. The number of people killed or seriously injured was down by 22%, where the 2020 goal is 40%, and the total number of casualties across all severities was down by 25%.
- A total of 48 children (aged under 15 years old) were killed in reported road traffic crashes in 2013, down 21% from 61 in 2012 and down 62% from the 2005-09 average.

Evaluation of past road safety strategy

No evaluation of the Strategic Framework for Road Safety has yet been carried out.

Figure 38.5. **Trends in road fatalities and projections for 2020, 2025 and 2030**



Recent safety measures (2012-14)

Road safety management

Speed limit

- In January 2013 the DfT published revised guidance to local authorities on setting local speed limits. This revision will help local authorities implement more consistent speed limits on local roads and incorporates recent changes that create more flexibility for authorities to implement 20 mph limits and zones.

Road users

Impaired driving

- A new section offence of driving over specified limits for specified drugs came into force on 2 March 2015. See link for more information: *www.gov.uk/government/news/drug-drive-legislation-am-i-fit-to-drive*.
- The Scottish Government reduced the drink driving blood alcohol content limit from 0.8 g/l to 0.5 g/l. The change came into force in December 2014. Northern Ireland is considering reducing drink drive limit to the same level as Scotland.

Recent and ongoing research

- "Understanding short term casualty trends, impact of weather", article published September 2014. The study analyses the relationship between casualties and weather events such as rain or sub-zero temperatures. Outputs from this work will be published once completed in Spring/Summer 2015.

References

Department for Transport (2013), *A valuation of road accidents and casualties in Great Britain*, DfT, London.

Department for Transport (2014), *Average value of prevention per reported casualty and per reported road accident: Great Britain, latest available year*, DfT, London.

Websites

- UK Department for Transport – Road Safety Unit: *www.gov.uk/government/policies/making-roads-safer*.
- Reported Road Casualties Great Britain 2013: Annual Report: *www.gov.uk/government/uploads/system/uploads/attachment_data/file/359311/rrcgb-2013.pdf*.
- UK Road safety observatory: key facts and summaries of research on road safety topics: *www.roadsafetyobservatory.com/*.

Chapter 39

United States

*This chapter presents the most recent crash data for the United States, as well as an update on the US road safety strategy and recently implemented safety measures.**

* All data stem from the National Highway Traffic Safety Administration (NHTSA) and IRTAD unless otherwise noted. For more information please contact: terry.shelton@dot.gov.

Road crash fatalities fell by 3.1% in 2013, continuing a trend that since 2006 has seen declines every year but one. The biggest declines came with a reduction of miles travelled during the economic crisis. However, road fatalities remain the biggest cause of death for Americans aged 3 through 34, and the death rate is 10.3 persons per 100 000 inhabitants. In 2010, the US Department of Transportation made reducing roadway fatalities one of its high-priority performance goals.

Road safety data collection

Definitions applied in the United States

- Road fatality: A fatality that occurs within 30 days of the crash involving a motor vehicle travelling on a traffic way customarily open to the public.
- Seriously injuries: Incapacitating injuries, defined as severe lacerations, broken or distorted extremities, crush injuries, internal skull/chest/abdominal injuries, significant burns, unconscious and paralysis.
- Slightly injured person: No definition.

For general crash-related injury figures, the National Highway Traffic Safety Administration (NHTSA) does not differentiate between seriously- and slightly-injured people. A crash is considered an injury crash if there were no fatalities, but someone involved in the crash – occupant or non-occupant – was reported as injured.

Data collection

State Police collect data on motor vehicle traffic crashes on specific roadways in each of the 50 states. Each state also has local police jurisdictions within counties, cities and towns that collect data on motor vehicle traffic crashes on the roadways not covered by the State Police.

The National Automotive Sampling System (NASS) consists of two sub-systems: the General Estimates System (GES) and the Crashworthiness Data System (CDS). Both sub-systems are probabilistic surveys designed to produce national estimates on motor vehicle traffic crashes annually.

The CDS is a nationally representative sample of police-reported motor vehicle traffic crashes in which at least one light motor vehicle (automobile, automobile derivative, minivan, van, pickup truck, or sport utility vehicle) was towed from the crash scene as a result of the crash.

The GES is a nationally representative sample of all police-reported motor vehicle traffic crashes occurring across the United States (US), designed to produce national estimates on general characteristics of motor vehicle traffic crashes.

In particular, GES data are obtained through a sample selected from all police-reported motor vehicle crashes. Although various sources suggest that about half the motor vehicle crashes in the country are not reported to police, the majority of these unreported crashes involve only minor property damage and no significant personal injury. By restricting attention to police-reported crashes, the GES concentrates on crashes of the greatest concern to the highway safety community and the general public.

Approximately 90 data elements are coded into a common format. To protect individual privacy, no personal information (name, address, specific crash location) is coded.

Strengths of the system:

- Information is available on all types of motor vehicle traffic crashes and can aid policy makers in enhancing safety standards in motor vehicles.
- It is possible to produce national estimates on crash characteristics.

Weaknesses:

- A police accident report may not be completed when it is obtained by the GES, therefore some of the information may not be available.
- Access to police accident reports is dependent on the co-operation of the police jurisdictions.

A challenge of collecting data at the federal level is obtaining and maintaining co-operation with state and local police jurisdictions.

Injuries coded in the Maximum Abbreviated Injury Scale at three or more (MAIS3+) are coded in the CDS, not the GES, and are defined as serious injuries.

Most recent safety data

Road crashes in 2014 – provisional data

A statistical projection of traffic fatalities for the first six months of 2014 shows that an estimated 14 950 people died in motor vehicle traffic crashes. This represents a decrease of about 2.2% as compared to the 15 294 fatalities that were reported to have occurred in the first half of 2013. The fatality rate for the first half of 2014 decreased to 1.02 fatalities per 100 million vehicle miles travelled, down from 1.05 fatalities per 100 million vehicle miles travelled in the first half of 2013.

Road crashes in 2013

In 2013, 32 719 people died in motor vehicle traffic crashes in the United States, a 3.1% decrease from the 33 782 fatalities in 2012. This decline continues a general trend of declining in fatalities that started in 2006, except for an increase in 2012. An estimated 2.31 million people were injured in 2013 (NHTSA, 2014a).

Fatalities and injuries declined in almost all segments of the population – passenger vehicle occupants, large-truck occupants, pedestrians, young drivers. Alcohol-impaired driving fatalities declined, and a particularly notable decrease (-6%) was seen in the number of motorcyclists killed.

Trends in traffic and road safety (1990-2014)

Since 1990, the number of registered vehicles grew steadily to over 259 million in 2008. Even though the number of registered vehicles declined for years 2009 and 2010, the number began rising again and the 269 million registered vehicles in 2013 has well surpassed the 2008 high. Vehicle ownership exceeds 850 vehicles per 1 000 inhabitants.

Between 1990 and 2007, vehicle miles travelled (VMT) had grown at an annual average compound growth rate of about 1%. VMT declined in 2008 and reached a low of 2.95 million in 2011, the lowest since 2003. The latest 2013 VMT data of 2.99 million is still below the peak of 3.03 million in 2007.

Road safety

Crashes and casualties

In the first decade of the 21st century, the United States averaged more than 40 000 deaths and more than 2 500 000 injuries on roads each year. Road crashes generally are the leading cause of death for Americans for every age, from 3 through 34. However, there has been some change with particular ages from year to year more recently.

Between 1990 and 2013, the number of fatalities decreased by 27%, and most of the progress was achieved from 2006 through 2013. During the 1990s, there was little progress. Traffic fatalities have been declining steadily since reaching a near-term peak in 2005, and the reduction accelerated in 2008 and 2009. The magnitude of decline decreased in 2010 and 2011. In 2012, the US experienced the first increase in fatalities since 2005. In 2013, the number of road deaths declined again, but was still above the low record achieved in 2011.

The reduction in fatalities in 2008-11 may be partly explained by a reduction in distance travelled as a consequence of the economic recession; but the overall decline in fatalities has been much greater than the reduction in traffic volume, indicating that recent safety measures promoted by the US Department of Transportation (DOT) have been effective.

Rates

The fatality rate per 100 million vehicle-miles travelled (VMT) fell to a historic low of 1.10 in 2011, which was achieved again in 2013. In terms of population, the death rate in 2013 was 10.3 road fatalities per 100 000 inhabitants, a 4.6% decrease from 2012. Between 1990 and 2013, the death rate expressed in terms of deaths per 100 000 inhabitants, decreased by 43%, and the risk in terms of deaths per billion vehicle-kilometres declined by 47%.

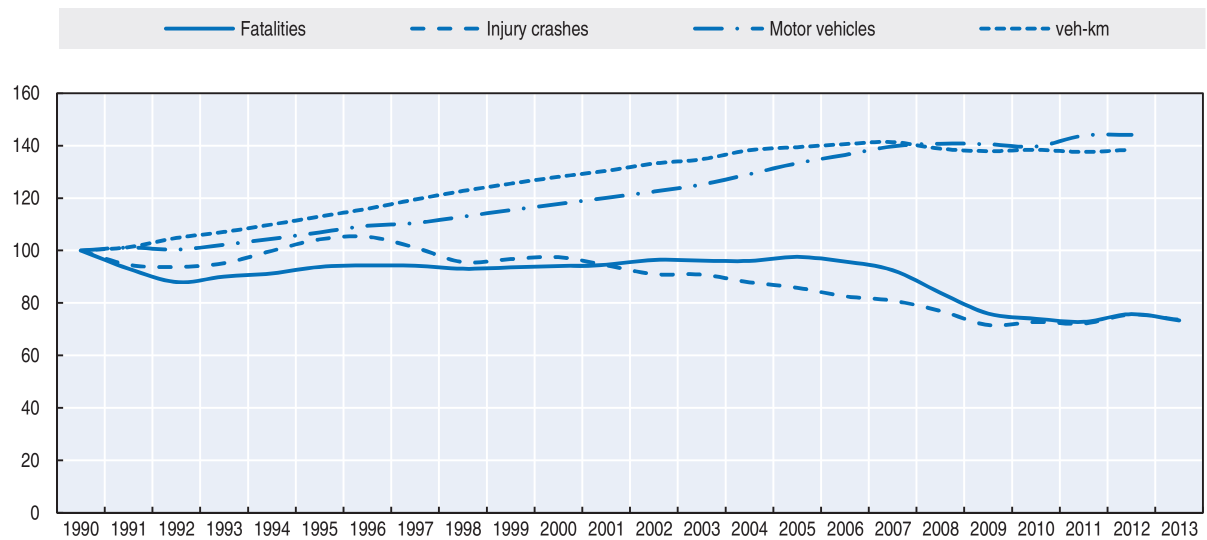
Table 39.1. **Road safety and traffic data**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Reported safety data									
Fatalities	44 599	41 945	32 999	33 782	32 719	-3.1	-0.8	-22.0	-26.6
Injury crashes	2 161 757	2 107 431	1 572 400	1 634 000	1 591 000	-2.6	1.2	-24.5	-26.4
Deaths per 100 000 inhabitants	17.9	14.9	10.7	10.8	10.3	-4.6	-3.7	-30.8	-42.5
Deaths per 10 000 registered vehicles	2.4	1.9	1.3	1.3	1.2	-7.7	-7.7	-36.8	-50.0
Deaths per billion vehicle kilometres	12.9	9.5	6.9	7.1	6.8	-4.2	-1.4	-28.4	-47.3
Traffic data									
Registered vehicles (thousands)	184 275	217 028	257 312	265 647	269 294	1.4	4.7	24.1	46.1
Vehicle kilometres (millions)	3 451 016	4 420 747	4 775 352	4 778 839	4 809 240	0.7	0.7	8.8	39.4
Registered vehicles per 1 000 inhabitants	739	769	832	846	852	0.7	2.4	10.8	15.3

Road safety by user group

Since 1990, all road users except motorcycle riders have benefited from the improvement in road safety. Motorcycle rider fatalities (including mopeds) increased by

Figure 39.1. **Road safety and traffic data Index 1990 = 100**



45% between 1990 and 2013. Although, in 2013 motorcyclist fatalities declined by 6% from 2012 – 318 fewer motorcyclist fatalities. This was the first decrease in motorcyclist fatalities since 2009, the only other decrease since 1997.

In 2013, the number of passenger vehicle occupants who died is the lowest on record. Deaths among passenger vehicle occupants had shown an increase in 2012, the first since 2002, but in 2013, the 3% decrease resumed the general downward trend in this category. Pedestrian fatalities decreased by 1.7% from 2012 to 2013. It is the first decrease since 2009 and is important at a time of growing concern over pedestrian safety.

In 2015, NHTSA released a report that estimates that vehicle safety technologies have saved over 613 000 lives from 1960 to 2012. These technologies include seat belts, air bags and electronic stability control, along with numerous other advances (NHTSA, 2015).

Table 39.2. **Road fatalities by road user group**

	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
Cyclists	859	693	623	734	743	1.2	19.3	7.2	-13.5
Moped users	76	29	113	179	174	-2.8	54.0	500.0	128.9
Motorcyclists	3 168	2 868	4 405	4 807	4 494	-6.5	2.0	56.7	41.9
Passenger car occupants	24 092	20 699	12 491	12 361	11 977	-3.1	-4.1	-42.1	-50.3
Pedestrians	6 482	4 763	4 302	4 818	4 735	-1.7	10.1	-0.6	-27.0
Others	9 922	12 893	11 065	10 883	10 056	-7.6	-9.1	-22.0	1.4
Total	**44 599**	**41 945**	**32 999**	**33 782**	**32 719**	**-3.1**	**-0.8**	**-22.0**	**-26.6**

Road safety by age group

Since 1990, safety improvements have benefited all age groups, but the improvement was more marked for people up to 20 than for older age groups.

The Department of Transportation has been working diligently to address the safety risk of young drivers. This group, lacking experience that is acquired only over time, often poses a greater safety risk on the road. However, over the years, with the attention to young drivers and the introduction of graduated driver licensing, fatalities associated with young drivers have decreased. In 2003, there were 8 514 fatalities associated with young driver (16-20 years old) crashes as compared to 4 248 fatalities in young driver crashes in 2013.

Table 39.3. **Road fatalities by age group**

Age	1990	2000	2010	2012	2013	2013 % change from			
						2012	2010	2000	1990
0-5	1 101	858	471	478	470	-1.3	-0.2	-45.2	-57.3
6-9	752	579	285	277	268	-2.2	-6.0	-53.7	-64.4
10-14	1 025	926	455	418	411	-1.7	-9.7	-55.6	-59.9
15-17	2 744	2 467	1 216	1 092	923	-15.0	-24.1	-62.6	-66.4
18-20	4 564	3 967	2 449	2 351	2 208	-5.4	-9.8	-44.3	-51.6
21-24	5 049	4 061	3 340	3 453	3 314	-3.6	-0.8	-18.4	-34.4
25-64	22 812	22 267	19 213	20 056	19 396	-2.6	1.0	-12.9	-15.0
≥ 65	6 427	6 701	5 524	5 607	5 671	2.0	2.7	-15.4	-11.8
Total	**44 599**	**41 945**	**32 999**	**33 782**	**32 719**	**-3.1**	**-0.8**	**-22.0**	**-26.6**

Child safety

NHTSA promotes proper restraint use for children based on age and weight, and children should graduate through four different types of restraint systems. In 2013, the combined efforts of vehicle safety equipment, proper restraint use, state laws, enforcement, media, education, and local community efforts contributed to the lowest number of fatalities for child occupants under four on record.

School transportation is also a focus area for NHTSA and the DOT in protecting children. Children of all ages travel to school in one of four modes of transportation: passenger vehicle, school bus, bicycle, or on foot. NHTSA in concert with other DOT agencies and safety advocates educates the public about the safest choices for school transportation as well as resources and tips to make the chosen method of transport the safest possible.

In 2014, NHTSA finalised a rule to expand the rear-view area of a vehicle from the driver's perspective. This is to avoid unintentional back over of children and other vulnerable populations. A phase-in schedule is set to provide manufacturers time to incorporate new technology and designs into their vehicles.

Road safety by road type

In 2013, slightly less than half of fatalities occurred on rural roads. There were 15 601 fatalities on rural roadways in the US in 2013. Compared to 2012, this percentage has not changed (48%). The number of fatalities on motorways increased from 3 985 in 2012 to 4 080 in 2013.

Economic costs of traffic crashes

Based on a recent study published in 2014 (NHTSA, 2014c), the economic costs of traffic crashes totalled USD 242 billion in 2010, representing 1.6% of the gross domestic product (GDP) of the United States. This represents the value of lifetime economic costs for 32 999 fatalities, 3.9 million non-fatal injuries, and 24 million damaged vehicles. This figure includes both police-reported and unreported crashes. When quality of life valuations are considered, the total value of societal harm from motor vehicle crashes in 2010 was USD 836 billion, nearly 6% of GDP.

Figure 39.2. **Road death rates by age group**
Fatalities per 100 000 inhabitants in a given age group, 1990-2013

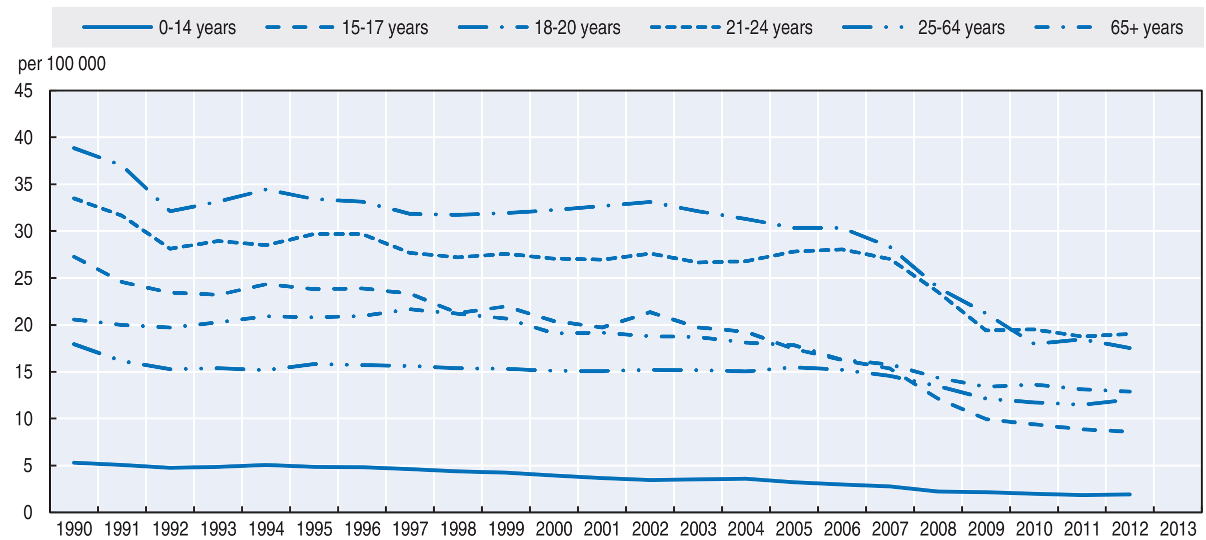
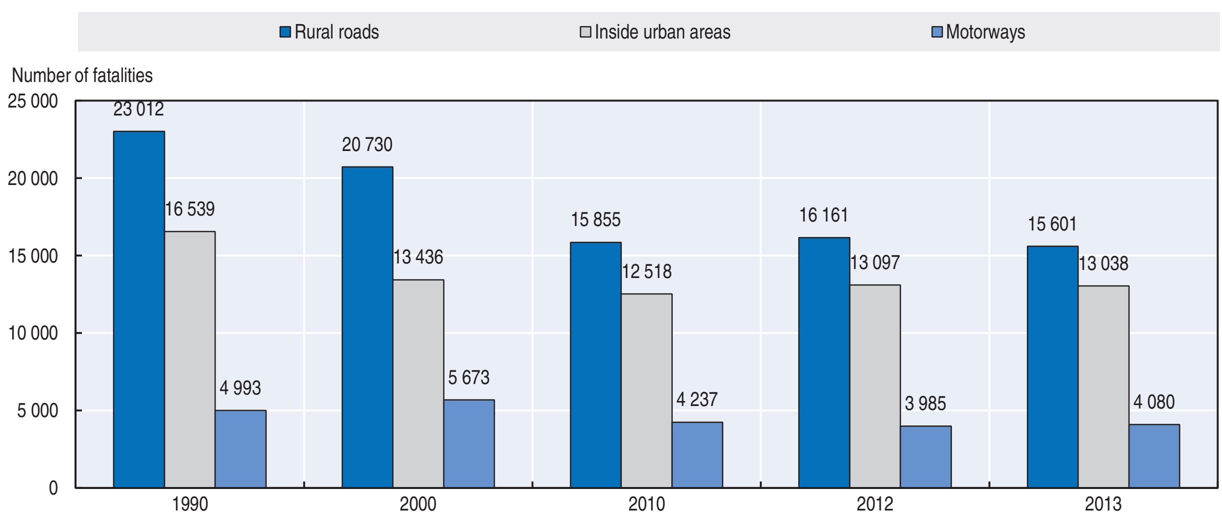


Figure 39.3. **Road fatalities by road type**



Cost components include productivity losses, property damage, medical costs, rehabilitation costs, congestion costs, legal and court costs, emergency services such as medical, police, and fire services, insurance administration costs, and costs to employers.

Recent trends in road user behaviour

Impaired driving

Drink driving

Each state makes its own laws governing legal blood alcohol content (BAC) levels for drivers. In general, state BAC laws fall into three categories: zero tolerance; 0.8 g/l; and high BAC (levels of 1 g/l or more). All 50 states have enacted zero tolerance laws (primarily, laws at 0.2 g/l or lower) that make it illegal for drivers under age 21 to have any detectable alcohol in their bodies. All 50 states, the District of Columbia and Puerto Rico have enacted 0.8 g/l BAC laws, that make it a criminal offence to drive with that level of alcohol.

About 31% of crash fatalities involve alcohol-impaired drivers. Crashes with drivers testing at BAC of 0.8 g/l or higher are considered alcohol-impaired crashes. In 2013, fatalities in alcohol-impaired crashes decreased by 2.6% over 2012.

Drugs and driving

There is no federal law regarding driving under the influence of drugs. Drug laws are generally written to forbid driving with certain drugs in the system. However, not all states drug laws.

Given the differences in state collection and reporting of drug data, and the large amounts of missing data, NHTSA's data on drugs and crashes should be considered with care. Of those drivers involved in fatal crashes in 2013 (44 574 drivers), 39% were tested for drugs and of those, 36% were reported as having drugs in their system at the time of the fatal crash.

Distraction

Distracted driving laws focus on the use of mobile electronic devices while driving. Each state sets its own laws regarding distracted driving. As of April 2015, 14 states and the District of Columbia prohibit drivers from using hand-held cell phones while driving. In 38 states and the District of Columbia, all cell phone use is banned for novice drivers, and 45 states and the District of Columbia ban text messaging for all drivers.

In 2013, 3 154 people were killed on US roadways and an estimated 424 000 were injured in motor vehicle crashes that were reported to have involved distracted driving, amounting to 10% of all crash fatalities and 18% of injury crashes. The distraction involved in fatal cases was a cell phone 14% of the time (455 deaths), and for injuries the cell phone was the distraction 8% of the time (34 000 injured).

Fatigue

For NHTSA, drowsy driving crashes are those in which the driver was reported, on official crash documents, as drowsy, sleepy, asleep or fatigued. NHTSA recognises the difficulty in collecting data regarding fatigue in crashes and offers these figures as the only known crash data regarding fatigue.

In 2013, 800 people lost their lives in crashes in which a driver was reported as drowsy at the time of the crash. This represents 2.4% of the fatalities in the year. This proportion has remained relatively consistent over time. In addition to those killed, an estimated 44 000 people were injured in crashes involving a drowsy driver in 2013. A total of 72 000 police-reported crashes throughout the year were considered drowsy driving crashes.

Speed

NHTSA considers a crash to be speeding-related if the driver was charged with a speeding-related offense, or if an officer indicated that racing, driving too fast for conditions, or exceeding the posted speed limit was a contributing factor in the crash.

Speeding is one of the most prevalent factors contributing to traffic crashes. In 2013, speed was a contributing factor in 29% of all fatal crashes, and 9 613 lives were lost in speeding-related crashes. Speeding-related fatalities decreased by 7% from 10 329 in 2012.

Speed limits in the United States are set by each state. The table below summarises, in general, speed limit ranges in the United States.

Table 39.4. **Passenger car speed limits by road type, 2015**

Urban roads[1]	25 mph
Rural roads[1]	25-55 mph
Motorways[1]	55-80 mph

1. Speed limits depend on the use of the road and the size of the road as well as state discretion.

Seat belts and helmets

Seat belts are required to be worn in all but one state, but law enforcement can differ. Primary seat belt laws allow police to stop a driver solely for not wearing a seatbelt, and as of April 2015, 34 states, the District of Columbia and Puerto Rico have such laws. In 15 states, drivers must commit another driving offence before they can be stopped, thus the seat belt law is referred to as a secondary law. One state has no belt use law for adults, but it does have a primary child passenger safety law that covers drivers and passengers under 18.

Child passenger restraint laws vary based on age, weight and height. Most laws use restrictions in stages, starting with infants in rear facing seats, moving to toddlers in forward facing child seats, and then older children using booster seats until they reach a size or age for using an adult belt.

All 50 states and the District of Columbia require child safety seats for infants and children fitting specific criteria, and all but two states require booster seats or other appropriate devices for children who have outgrown a child safety seat but are still too small to use an adult seat belt safely.

In 2014 seat belt use reached 87%. Seat belt use has been increasing since 1995, accompanied by a steady decline in the percentage of unrestrained fatalities during daytime. Seat belt use continued to be higher in the states in which vehicle occupants can be pulled over solely for not using seat belts (NHTSA, 2014b).

Table 39.5. **Seat belt wearing rate by car occupancy and road type**

%

	2000	2010	2013	2014
Front seat (all)	71	85	87	87
Rear seats – All passengers		74		

Motorcycle helmet laws are issued and enforced by individual states. As of April 2015, 19 states, the District of Columbia and Puerto Rico require helmets for all motorcycle drivers and passengers. In 28 states, only a specific population segment is required to wear helmets, and three states do not require helmets.

In 2014, the average wearing rate of a DOT-compliant motorcycle helmet meeting DOT safety standard FMVSS218 was 64%. Use of non-compliant helmets was 5% and 31% had no helmet. Among states with universal helmet laws, 89% were wearing DOT-compliant helmets with an additional 7% wearing non-DOT-compliant helmets. In states without universal helmet laws, 48% were wearing DOT-compliant helmets and an additional 3% were wearing non-compliant helmets.

National road safety strategies and targets

Organisation of road safety

The United States uses a "federalism" approach that divides the powers of government between the national (federal) government and state and local governments. Under federalism, each level of government has sovereignty in some areas and shares powers in others. At the national level, Congress passes the laws and assigns the funding that provides the overall structure for the DOT to carry out its safety mission. However, most traffic safety laws and policies are enacted and developed at the state level. For example, each of the 50 states has the authority to set its own speed limits, distracted driving rules, or seat belt use law.

Congress can influence the states by providing incentive grants if they enact certain laws that have been proven effective or penalties if they do not. It can also use performance results as eligibility criteria for grants in some cases. The DOT implements the grant programmes and provides guidance to the states on developing effective strategies that address their particular traffic safety challenges.

Within DOT, NHTSA has the lead role in reducing traffic crashes and fatalities.

In 2010, the DOT designated reducing roadway fatalities as one of its high-priority performance goals. Three agencies, NHTSA, the Federal Highway Administration (FHWA), and the Federal Motor Carrier Safety Administration (FMCSA), are working together to address multiple dimensions of roadway safety.

Road safety strategy for 2011-20

The number one priority of the DOT remains safety.

To align the programme and policy actions, the DOT has established four fatality sub measures: passenger vehicles, non-occupants, motorcycle riders, and large-truck- bus-related fatalities. The purpose of this approach is to more closely examine fatality rates of the different segments of highway users, focus the energy and resources involved and develop new strategies to reduce fatalities in each of the four areas.

Road safety targets

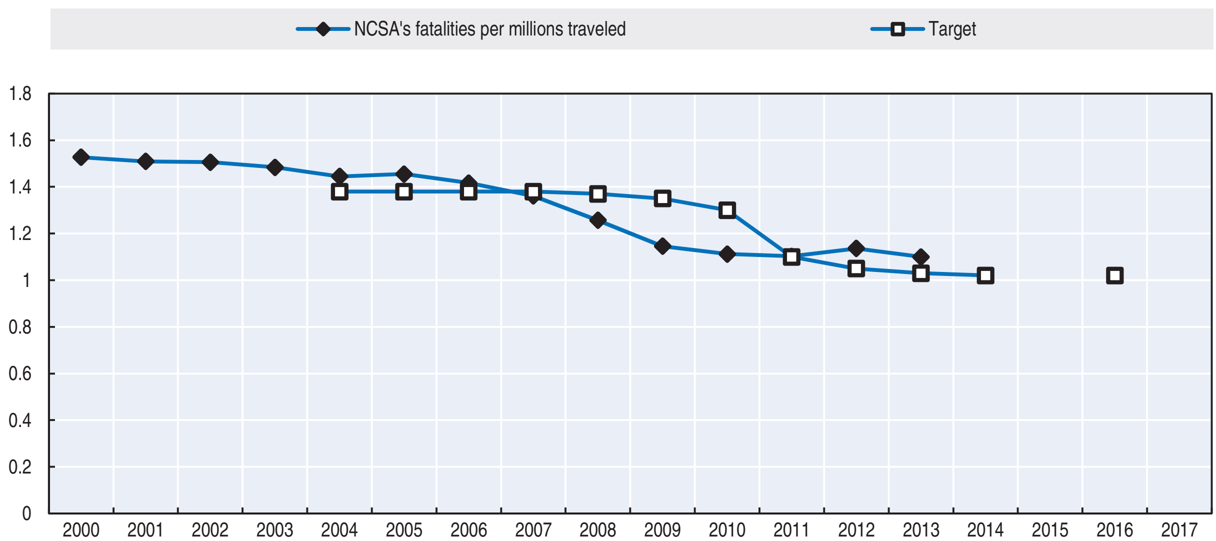
The DOT currently has performance targets through 2016 for the overall fatality rate and NHTSA and FMCSA have performance targets for each of the four sub measures. For year 2016, DOT's overall motor vehicle crash fatality rate target is 1.02 fatalities per 100 million vehicle miles travelled. The sub measure targets for 2016 are 0.15 fatalities per 100 million vehicle miles travelled for the non-occupant fatality rate, 62 fatalities per 100 000 registrations for the motorcyclist fatality rate, 0.82 fatalities per 100 million vehicle miles travelled for the passenger vehicle fatality rate, and the large truck and bus fatality rate for 2016 is 0.114 fatalities per 100 million vehicle miles travelled.

The fatality rates are forecast through statistical methods for a number of years into the future in order to guide a plan of action for safety countermeasures. These forecasts use historical data combined with an evaluation of the existing countermeasures, trend data, and other societal factors that may affect fatality rates in the future.

Monitoring

In 2013, the fatality rate was 1.1 deaths per 100 million VMT, but the performance target for the year was 1.03 and thus DOT did not meet the target. More road deaths seem

Figure 39.4. **Trends in road fatalities towards national target**



to have occurred in the second half of 2013, as early estimates for the first half of 2014 show a fatality rate of 1.02 fatalities per 100 million VMT.

Evaluation of past road safety strategy

In 2015, NHTSA released a document entitled "Lives Saved by Vehicle Safety Technologies & Associated FMVSS, 1960 to 2012 Passenger Cars and LTVs". This document estimates that vehicle safety technologies have saved more than 600 000 lives from 1960 through 2012. These figures do not take into account the number of lives saved by changes in behaviour of the driver or infrastructure changes (NHTSA, 2015).

Recent safety measures (2012-14)

Road users

Speed management

- NHTSA and FHWA recently released a Speed Management Plan to improve public health and safety by reducing speeding-related fatalities and injuries *www.nhtsa.gov/staticfiles/nti/pdf/812028-SpeedMgtProgram.pdf*.

Child safety

- In September 2014, NHTSA released its Car Seat Finder lookup tool. The site allows parents and caregivers to select their manufacturer or brand of car seat and directly links them to the manufacturer's registration page.

  www.nhtsa.gov/About+NHTSA/Press+Releases/2014/NHTSA-launches-car-seat-finder-tool.

Pedestrian safety

- NHTSA and FHWA launched a programme titled "Everyone is a Pedestrian". The programme contains guidelines for safe practices, research, education materials, and programme information. *www.nhtsa.gov/nhtsa/everyoneisapedestrian/index.html*.

Older drivers

- Older Driver Highway Safety Program Guidelines are based on best practices around the country and include countermeasures that can be implemented to ensure the safety of older drivers, including at-risk drivers. The guidelines encourage state highway safety offices to work closely with driver license officials, state departments of transportation, medical providers and aging services providers, among others.

  www.nhtsa.gov/nhtsa/whatsup/tea21/tea21programs/pages/812007D-HSPG13-OlderDriver Safety.pdf.

Motor coach safety

- The Federal Motor Carrier Safety Administration began a programme called Look Before You Book to provide safety information for travellers and trip planners who are looking to reserve and use a motor coach. The programme provides information to the public about bus safety and a checklist to verify before selecting a company to use in motor coach travel. A mobile app was developed to provide easily accessible information to help in decision making. The programme also encourages the public to report any safety issues with motor coaches that they encounter. *www.fmcsa.dot.gov/lookbeforeyoubook*.

Vehicles

- In 2014, NHTSA unveiled a new, free, online search tool for recalls using the Vehicle Identification Number or VIN. The new tool is available on www.safercar.gov/vinlookup and provides consumers with a quick and easy way to identify uncompleted recalls by entering their VIN. All major light vehicle and motorcycle brands can be searched. *www.nhtsa.gov/About+NHTSA/Press+Releases/2014/New-free-online-search-tool-for-recalls-using-VIN-released*.
- NHTSA announced a final rule requiring rear visibility technology in March 2014. This new rule enhances the safety of passenger vehicles by significantly reducing the risk of fatalities and serious injuries caused by back over accidents.

  www.nhtsa.gov/About+NHTSA/Press+Releases/2014/NHTSA+Announces+Final+Rule+Requiring+Rear+Visibility+Technology.
- NHTSA announced a final rule requiring seat belts on motor coaches in November 2013. This new rule enhances the safety of these vehicles by significantly reducing the risk of fatalities and serious injuries in frontal crashes and the risk of occupant ejection in rollovers. *www.nhtsa.gov/About+NHTSA/Press+Releases/NHTSA+Announces+Final+Rule+Requiring+Seat+Belts+on+Motorcoaches*.
- In 2015, NHTSA announced plans to add two cutting-edge automatic emergency braking systems to the recommended advanced safety features included under the New Car Assessment Program. The addition includes crash imminent braking and dynamic brake support and will encourage development and commercialisation of these promising safety-related technologies.

Recent and ongoing research

- In August 2014, NHTSA released a comprehensive research report on vehicle-to-vehicle (V2V) communications technology. The report includes analysis of the Department's research findings in several key areas including technical feasibility, privacy and security, and preliminary estimates on costs and safety benefits. The report includes preliminary estimates of safety benefits that show two safety applications – Left Turn Assist and Intersection Movement Assist – could prevent up to 592 000 crashes and save 1 083 lives per year.

www.nhtsa.gov/About+NHTSA/Press+Releases/2014/NHTSA-issues-advanced-notice-of-proposed-rulemaking-on-V2V-communications.

- The 2014 National Roadside Survey of Alcohol and Drug Use by Drivers found that the number of drivers with alcohol in their system has declined nearly one third since 2007 and by more than three quarters since the first Roadside Survey in 1973. The survey found a large increase in the number of drivers using marijuana or other illegal drugs. In the 2014 survey, nearly one in four drivers tested positive for at least one drug that could affect safety.

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NHTSA Office of Vehicle Safety Research: *www.nhtsa.gov/Research*.

NHTSA Behavioural Safety Programs: *www.nhtsa.gov/Driving+Safety*.

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The report outlines the most recent safety data in IRTAD countries, including detailed analysis by road user, age group and type of road. It describes the crash data collection process in IRTAD countries, the road safety strategies and targets in place and information on recent trends in speeding, drink-driving and other aspects of road user behaviour.

Contents

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