



Serious Injuries Summary

2018



What is the problem?

While road deaths are typically used as the benchmark for defining and comparing road safety performance internationally, it is estimated that for every death there are four permanently disabling injuries, ten serious injuries and forty minor injuries. While progress has been made towards fatal accidents' reduction – an average 44% decrease in serious injuries has been achieved since 2001 across Member States – serious but non-fatal road traffic injuries continue to present a major EU health problem with substantial humanitarian impacts and economic costs to society.

How big is the problem?

- The European Commission has, for the first time, published an estimate of the number of people seriously injured on Europe's roads – 135.000 in 2015.
- Since 2010 the number of people seriously injured on roads in 23 EU countries has been reduced by just 1,6%, compared to an 18% decrease in the number of road deaths.
- The number of serious injuries in 2014 increased by more than 3% compared to the 2013 results.
- Research indicates that 50% of the total social costs of road accidents in high, middle and low-income countries relate to injuries. Two thirds of these are serious injuries.

What does science say?

Definition of serious injuries.

A range of definitions of injury severity are used throughout the EU. Relevant criteria used in police records and official statistics vary from country to country. These criteria may include: length of hospitalisation (used in many countries), type and level of injury (e.g. using MAIS injury scale), inability to work, length of recovery, long-term disability etc. A new common definition of serious injuries agreed in the EU is an injury level of three or higher on the Maximum Abbreviated Injury Scale (MAIS3+).

What forces can be tolerated in the human body?

The tolerance of the human body to kinetic forces released in road accidents is limited. Human tolerance to serious and fatal injury of a pedestrian hit by well-designed cars may be exceeded if the vehicle is travelling at over 30 km/h. While younger drivers are more likely to be involved in accidents due to riskier behaviours, the elderly body is fragile and more likely to sustain serious or fatal injuries in the event of an accident.

Speed is a primary factor determining the severity of an injury.

The energy released during an accident is proportional to the square of the velocity, so small increases in speed produce major increases in the risk of injury. Research indicates that a 1% decrease in average speed corresponds with a 2% decrease in injury accidents, a 3% decrease in serious injury accidents and a 4% decrease in fatal accidents.

The cost of serious road traffic injuries.

The methodologies for assessing the cost of serious injuries, as well as the estimated social costs of traffic injuries, vary greatly amongst EU Member States. Although the long-term impacts of road traffic injuries within the EU are to a large extent unknown and many national estimates do not take account of the cost of long-term disability, it is clear that reported serious injuries in road accidents amount to substantial socio-economic costs. One study found that around 50% of the total social cost of road accidents in high-income countries is related to injuries, of which

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about two thirds are serious injuries. Motorcycle leg and head injuries and injuries to vulnerable road users are particularly costly. Furthermore, the loss of the major family wage earner in road traffic accidents can push people into poverty as well as limit the ability of victims to cope with the accident consequences (because of the lack of funds possibly required for medical recovery).

What are the solutions?

The World Health Organisation states that serious and fatal injuries are predictable and preventable. Accordingly, road safety focus is turning away from the need to try and prevent all accidents (which is seen as unrealistic and of insufficient priority) to the prevention of death and serious injury. At the same time the acknowledged need is to define better, understand the scale and cost of, target the prevention of and monitor both fatal and serious injury in road accidents.

In the Safe System Approach, the amount of biomechanical energy to which people can be exposed without sustaining serious injury is now promoted as a basic road and vehicle design parameter. The intervention strategies proposed by the Safe System Approach include:

- Safety conscious planning and proactive safety engineering design.
- Encouraging use of safer modes and safer routes.
- Safe separation/ safe integration of mixed road use.
- Managing speeds to accident protection levels.
- Providing accident protective roadsides and vehicles.
- Deterring dangerous behaviour and ensuring compliance with key safety rules by social marketing and increased highly visible police enforcement, using camera technologies and other means, by providing proven driver assistance safety technologies in cars to help drivers keep to speed limits, wear seat belts, or avoid excess alcohol.
- Managing risk via vehicle standards/designs and driver standards e.g. graduated driver licensing.
- Fast and efficient emergency medical help, diagnosis and care.

Notes

1. Country abbreviations

	Belgium	BE		Italy	IT		Romania	RO
	Bulgaria	BG		Cyprus	CY		Slovenia	SI
	Czech Republic	CZ		Latvia	LV		Slovakia	SK
	Denmark	DK		Lithuania	LT		Finland	FI
	Germany	DE		Luxembourg	LU		Sweden	SE
	Estonia	EE		Hungary	HU		United Kingdom	UK
	Ireland	IE		Malta	MT			
	Greece	EL		Netherlands	NL		Iceland	IS
	Spain	ES		Austria	AT		Liechtenstein	LI
	France	FR		Poland	PL		Norway	NO
	Croatia	HR		Portugal	PT		Switzerland	CH

2. This 2018 Traffic Safety Synthesis on Serious Injuries was written by Jeanne Breen, [Jeanne Breen Consulting](#).

3. All Traffic Safety Syntheses of the European Road Safety Observatory have been peer reviewed by the Scientific Editorial Board composed by: George Yannis, NTUA (chair), Robert Bauer, KFV, Christophe Nicodème, ERF, Klaus Machata, KFV, Eleonora Papadimitriou, NTUA, Pete Thomas, Un.Loughborough.

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5. Please refer to this Report as follows:

European Commission, Serious Injuries, European Commission, Directorate General for Transport, February 2018.

