

Childhood Road Safety

FACTS

- Road traffic injuries (RTIs) are a major but neglected public health problem requiring concerted multi-sectoral efforts for effective and sustainable prevention. Every year in Europe around 127,000 people are killed and at least 2.4 million people are injured in road traffic accidents^{1,2}. Road traffic injuries are the leading cause of death and severe injuries³ among children aged 0–14 years⁴ and are the cause for 34% of child injury deaths annually.
- This includes pedestrians, cyclists and motor vehicle passengers. An estimated 200,000 families per year suffer from the death or lifelong disability of at least one family member due to a road traffic injury⁵ in the European Union (EU).
- EU Member States are performing very differently in regards children's road safety. This explains why there is a 3 times greater risk of a child dying due to a road traffic injury in Lithuania, Estonia and Latvia than the best performing countries in Europe, such as Sweden, the Netherlands and the UK⁴. (Fig.1)
- Youth 15 to 19 years is composed of young drivers and co-drivers being the group at most risk. The risk increases steadily with the age as the active participation of children and youth in traffic increases. In the age group of 15 to 19 years, 75% of the fatalities due to road traffic injuries are male. The proportion of boys killed increases steadily with the age. (Fig. 2)
- The proportion of fatal road accidents on all causes mortality tends to be higher in high-income countries because in low income-countries injury mortality due to other causes (like drowning) is more prevalent. Approximately 45% of all fatalities caused by injuries are road traffic injuries in the age group 0-19 years. They represent nearly 13% of all fatalities in this age group in the EU27. (Fig. 3)
- Children are particularly vulnerable until the age of 9–10 years, owing to their weak capacity to concentrate attention on traffic. They are considered to be especially vulnerable when motorised traffic is heavy or fast, visibility is limited or drivers' attention is diverted⁶.
- Child pedestrians and cyclists usually suffer the most severe injuries as a result of road traffic collisions and report more continuing health problems that require more assistance⁷.
- Fatalities and injuries to children under 10 years of age remain high and these casualties occur because nearly half of the children in this age group generally travel in automobiles unrestrained. Although current data are limited, it is estimated that approximately 150 lives could be saved, annually, if those children who are not using child restraints are restrained with lap/shoulder belts. Furthermore, if all those children who are ready for booster seats used them and lap/shoulder belts, an additional 19 lives could be saved every year⁸.
- For children 0 to 14 years pedestrian and bicycling deaths and injuries contribute as a major factor risk factor, whereas youth 15 to 19 years have greater use of motorised vehicles and therefore greater risks to deaths and injuries from these causes. (Fig. 4-7)
- Child safety seats and safety belts, when installed and used correctly, can prevent injuries and save lives. Rear-facing car seats reduce injuries up to 90-95% and forward facing car seats up to 60%⁶. Unrestrained children are more likely to be injured, suffer severe injuries and die in motor vehicle crashes than children who are restrained.
- The need of the parents to know the most suitable restraint system, how to fit the system correctly to the car and the willingness or financial possibility to spend money to buy/renew the child restraint in time should be perceived as standard behaviour⁹.
- Incorrect use of child safety seats is widespread. Although 96 percent of parents believe they install and use their child safety seats correctly, it is estimated that 80 percent of child safety seats are not installed and used correctly¹⁰.
- Driver safety belt use is positively associated with child restraint use. In a recent study nearly 40 percent of children riding with unbelted drivers were completely unrestrained, compared with only 5 percent of children riding with belted drivers¹¹.



- Child restraint use decreases as both the age of the child and the blood alcohol level of the child's driver increase⁵.
- Children are up to 29 percent safer riding in the back seat versus the front seat¹².
- Very positive results have derived from the implementation of rental or loan programmes for infant seats allowing parents all over Sweden, Finland, Germany or the UK to save money and make changes when appropriate for a low fee (or even without any cost)⁹.
- Speed cameras have been shown to have a positive cost-benefit of around 4:1. In the United Kingdom the benefits to society from the avoided injuries due to speed cameras were in excess of £221 million compared to enforcement costs of around £54 million. Furthermore there is public support for the use of safety cameras for targeted enforcement as illustrated by the Three-year evaluation report of the national safety camera programme, published in June 2004.
- Airbags pose a risk to children. Children sat in rearward facing seats are closer to the airbag and are especially in danger of being fatally injured if the airbag goes off, and in some countries it is illegal to put a rearward facing child seat in the front where there is an active frontal passenger airbag.¹³
- In addition to physical trauma, motor vehicle injuries can have long-lasting psychological effects. One study showed that 25 percent of children who suffered from traffic injuries and 15 percent of their parents were diagnosed with post-traumatic stress disorder¹⁴.
- The use of belts in the United States saves \$50 billion each year in medical care, productivity, and other societal costs. Belt non-use costs \$26 billion annually¹⁵. The numbers are not yet known for Europe as a whole.
- Every EURO spent on a child safety seat saves 32 EUROS⁴.
- Many pedestrian-related injuries occur in driveways when backing up the vehicle, usually a sports utility vehicle. More than half of these occur when children are playing or walking behind a vehicle at the time of injury¹⁶.

- Toddlers (ages 1 to 2) sustain the highest number of pedestrian injuries, primarily due to their small size and limited traffic experience. More than half of all toddler pedestrian injuries occur when a vehicle is backing up¹⁶.
- Children living in homes with shared driveways are at significantly increased risk for driveway-related injuries. A fenced play area, physically separated from residential driveways, could reduce the risk of driveway-related incidents by 50 percent¹⁷.

Prevention Effectiveness

- There is evidence that more lives could be saved on roads throughout Europe if the following strategies were implemented, taught to the public and enforced:
- **Reduced speed limit zones** – are effective in reducing both traffic speed and accidents, a major risk factor that influences the severity of pedestrian injuries. In the UK introduction of 30 km/h speed limit zones resulted in local reductions of 48% in child road accidents involving cyclists and a reduction of 70% in fatal child road accidents involving pedestrians¹⁸.
- **Traffic calming** – comprehensive area wide traffic calming measures (constructing urban throughpasses, enlarging existing pedestrian areas, improving the network of cycling facilities, constructing roundabouts, implementing 30 km/h zones, and strictly enforcing traffic rules) have shown a 60% reduction in casualties from road accidents¹⁹. Furthermore, parents have been shown to place a high value on physical and social interventions to improve child pedestrian safety²⁰.
- **Safer car fronts for pedestrians and cyclists** – it is estimated that up to 2,100 deaths and 18,000 serious pedestrian and cyclist casualties of all ages could be prevented annually in the EU⁶.
- **Safety restraints** - include seatbelts, booster and child seats are a highly effective way of reducing serious and fatal injuries to children. The chance of being killed or severely injured is about 7 times greater for children who are not belted or restrained⁹.



- 83% of belted and restrained children remain uninjured in accidents. When properly used, they have shown to have an injury reducing factor of 90-95% for rear-facing systems and 60% with forward facing systems⁶.
- The Netherlands conducted an extremely effective campaign (www.gordeldier.nl) targeted at increased seatbelt wearing rates for 4-12 year olds, and in 2 years time the seatbelt wearing rate went up from 52% to 69%⁹.
- Stay rearward facing longer – children transported rearward in child passenger restraints up to the age of 3 have shown almost 5 times greater protection than those in forward facing restraints²¹
- **Bicycle helmets** - correctly fitted, bicycle helmets reduce the risk of head and brain injury by 63 to 88%²²
 - Discount schemes and programmes to assist with helmet purchase have shown to be an important element in encouraging helmet wearing⁷. As in the case of financial help to the acquisition of child seats, the evidence suggests that promotional campaigns may be effective in increasing the helmet use, especially among younger children.
- **Education campaigns** - a broad array of educational approaches, such as individual instruction, audiovisual materials, behaviour modification techniques, modelling, simulations, training in real street situations, and mass media campaigns can increase children's knowledge of pedestrian safety, has potential for changing unsafe behaviours; and a parent education component is needed to maximize success²³. Also, targeted communication messages for use of child passenger restraints²⁴ and bicycle helmets²⁵ have shown positive behaviour change.
- **Education and skills development**²⁶ - training programmes in pedestrian skills, which involve practical roadside experience, have been shown to improve children's skills.
 - Education targeting both parents and children has produced good evidence of behaviour change and some evidence of casualty reduction.
- There is some evidence that training schemes can improve children's behaviour when cycling.
- **Speed cameras** - as speed is the single most important determinant for safety in traffic²⁶ speed cameras have been found to be an effective measure to reduce speeding. A systematic review of existing research on speed cameras consistently showed that speed cameras are an effective intervention in reducing road traffic collisions and related casualties²⁷.
 - Speed cameras in the United Kingdom caused a 35% reduction in people killed or seriously injured at camera sites, as well as a 56% reduction in the number of pedestrians being killed or seriously injured²⁸. Drivers surveyed agreed that speed cameras were to reduce speeds and not punish drivers.
- **Red light cameras** – installation of red light cameras yielded 70 to 90% reductions in red light violations within one year²⁹. Front-into-side crashes at intersections with traffic signals (the type of collision most commonly associated with red light running) were reduced in one community by 32 percent. There were 68 percent fewer front-into-side crashes involving injuries.
- **Mobilisation of political commitment combined with legislation** - the number of road deaths in France fell by 18.1% (1405 lives saved) in one year once President Jacques Chirac introduced a law which included measures such as automatic penalties, harsher sentences, and a probationary licence for new drivers³⁰.

Legislation

- Has proven to be the most powerful tool in the prevention of injuries whereas research has shown that the use of child restraints can make a big contribution to reducing the severity of road accident injuries, and that a child who travels without being suitably restrained runs a higher risk of injury and a higher risk of being injured more severely than a child who is properly restrained. The common rules on the protection of children therefore needed tightening up³¹.



EU legislation currently in force⁹ regarding children and road safety:

DIRECTIVE 91/671/EEC

The original Directive on seat belt and child restraint use, [Directive 91/671/EEC](#), only applied to cars and vans and, although addressing the mandatory use of child restraints gave scope for Member States to allow children of 3 years and older to be restrained by an adult seat belt. It also permitted Member States to exempt children younger than 3 years of age from wearing child restraints provided they are seated in the rear and if child restraints are not available in the car, i.e. **the original Directive did not require parents to buy and use child restraints for their children.**

http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_115/l_11520030509en00630067.pdf

DIRECTIVE 2003/20/EC is a new rule set up as a reinforced legislation that extends the scope of application of the above mentioned Directive to require the use of seat belts where provided by all motor vehicle occupants and for children to be restrained by an appropriate child restraint system conforming to UN-ECE standard Regulation 44.03) when travelling in passenger cars and light vans (M1 and N1 vehicles). This rule will have to be transposed into National law by 9 May 2006.

The main safety benefit of the new Directive is that it recognises that children, like adults, have the right to be protected when travelling in cars and therefore requires the adults responsible to ensure that the children are restrained by child restraints that are designed for their age and size. It also mandates the use of seat belts by truck drivers: this measure alone has the potential for saving 200 truck drivers' lives a year.

http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_115/l_11520030509en00630067.pdf

RECOMMENDATION 2004/345/EC is a non-binding suggestion of what would be advisable to do, where the enforcement of information actions in the context of national plans, combining information of the public in the form of publicity campaigns aiming at making the public conscious of road safety issues seem to be effective actions.

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32004H0345:EN:HTML>

Recommended Policy Actions

What is needed is the political will to implement, enforce and sustain road safety and prevention measures. The countries who dedicate themselves to improving road safety will save many children from death and disability.

- Adopt European standard for mandatory rear seat belt use in all Member States, as in the Czech Republic and Hungary wearing rear seat belts in the rear seats is not mandatory.
- Improve enforcement of child passenger restraints in all Member States of Europe, especially covering booster seat-aged children via fines.
- Create a European legislation for a voluntary agreement for the automobile industry regarding safer vehicle fronts so that they do less damage to vulnerable road users in accidents.
- Promote the culture on road safety through legislative enforcement, environmental modifications and, above all, educational campaigns. Children skills and behaviour may be improved and influenced at an early stage.

EU collaboration

- Provide resources for an annual child road traffic safety campaign communicating proven actions should be planned and implemented in Member States and co-ordinated throughout the European Union to provide high quality road safety education to improve children's skills and awareness of risk, and publicity to encourage use of safety equip-

ment such as seat belts and cycle helmets.

- Ensure that child road traffic safety is incorporated into the training of traffic engineers and urban planners.
- Provide resources for encouraging vehicle designers and manufacturers to find innovative ways to protect child pedestrians and cyclists from cars.
- Expand the use of Automated Enforcement Systems (speed cameras, red light cameras) throughout Europe to help reduce the number of red-light-running violations and speeding.
- Expand the knowledge of parents and the technology of child restraint systems in order to have children travel rearward facing longer.
- Mainstream programme and research funding, resources and skilled, committed-work force put together may contribute to improve performances.
- Involve stakeholders such as practitioners, policy-makers, parents and trainers in the translation of evidence into practice in order to promote optimal dissemination.

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Figure 1

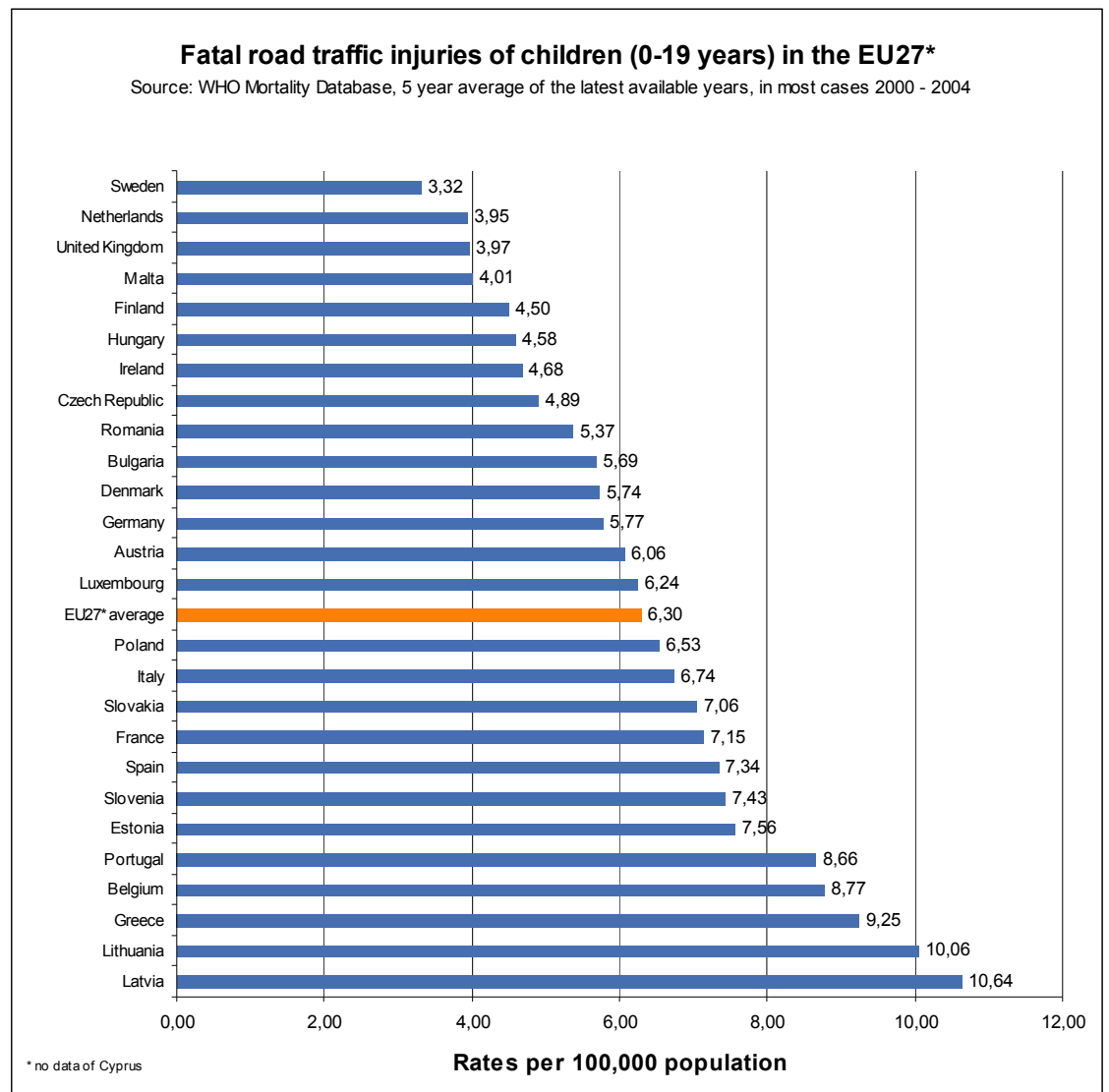




Figure 2

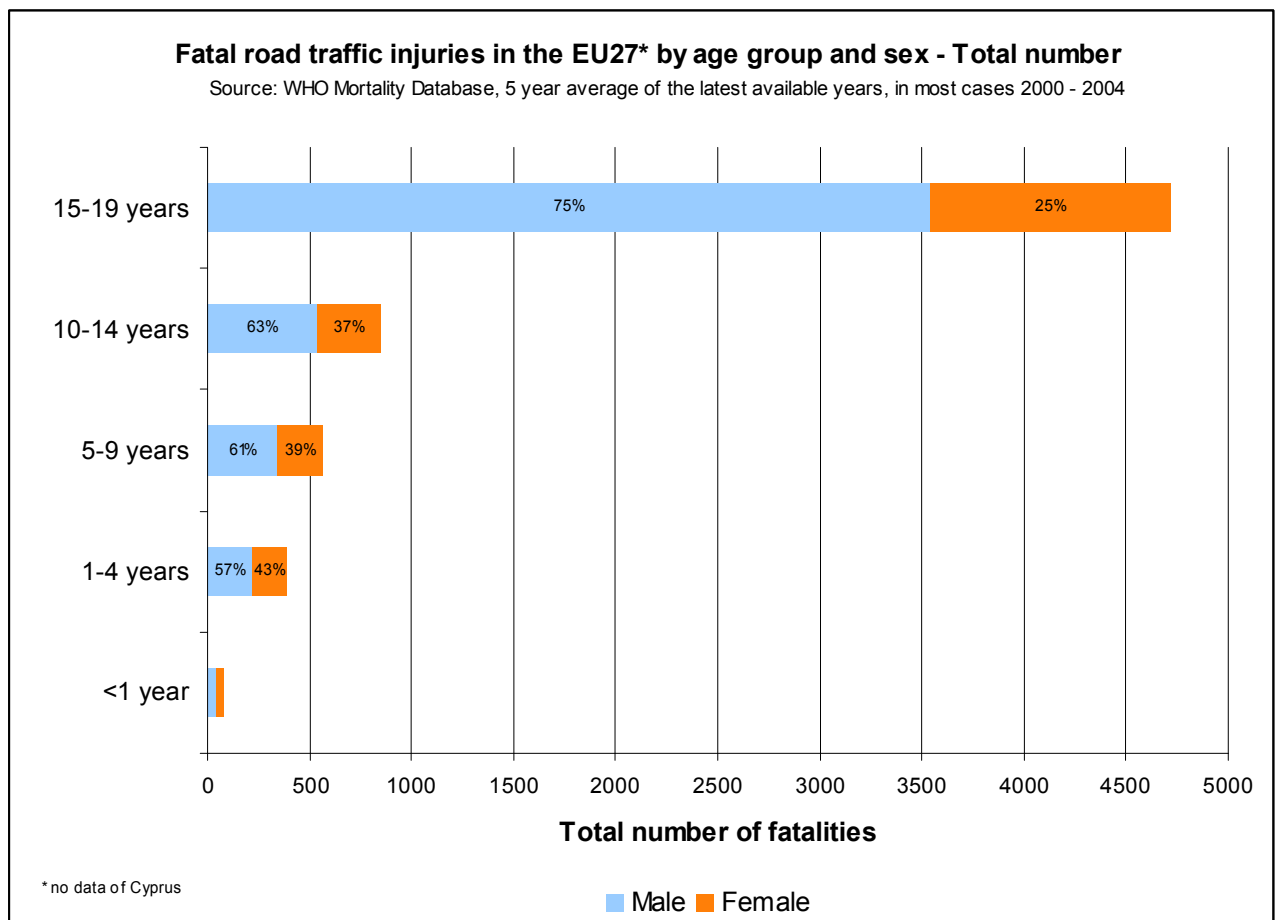




Figure 3

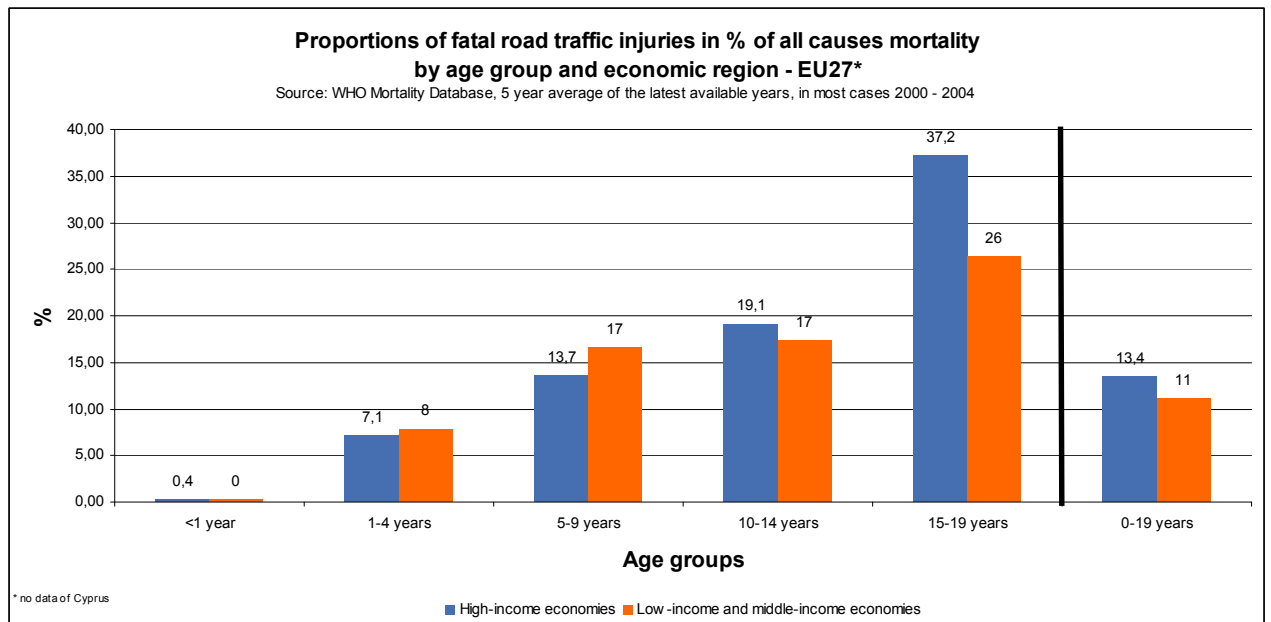




Figure 4

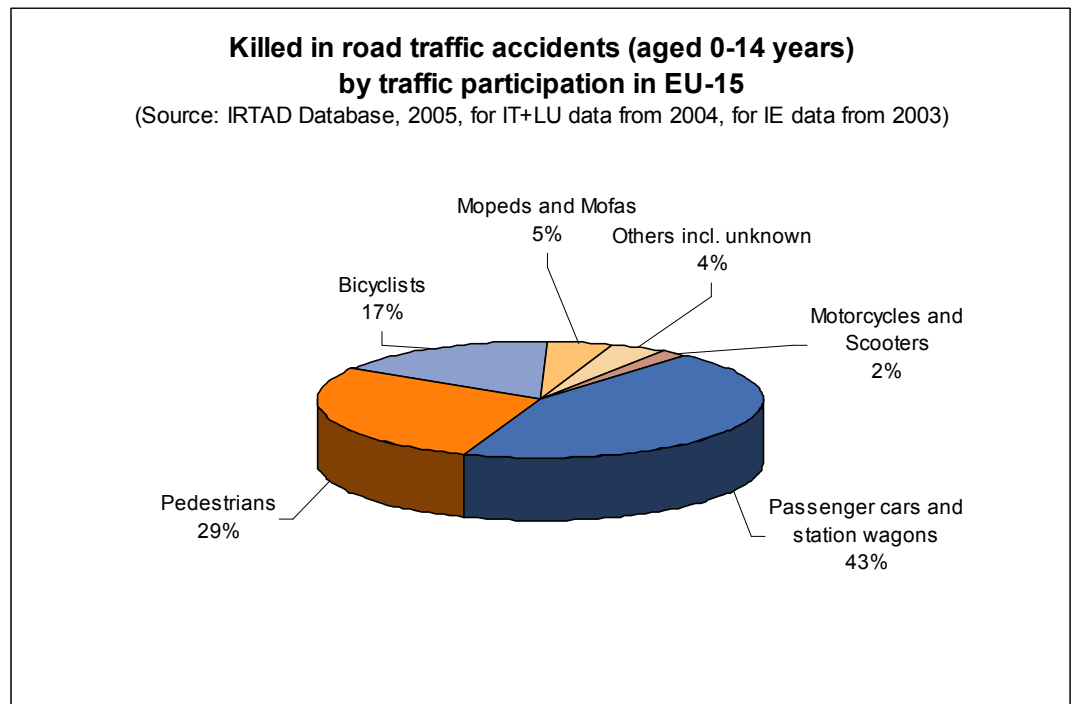


Figure 5

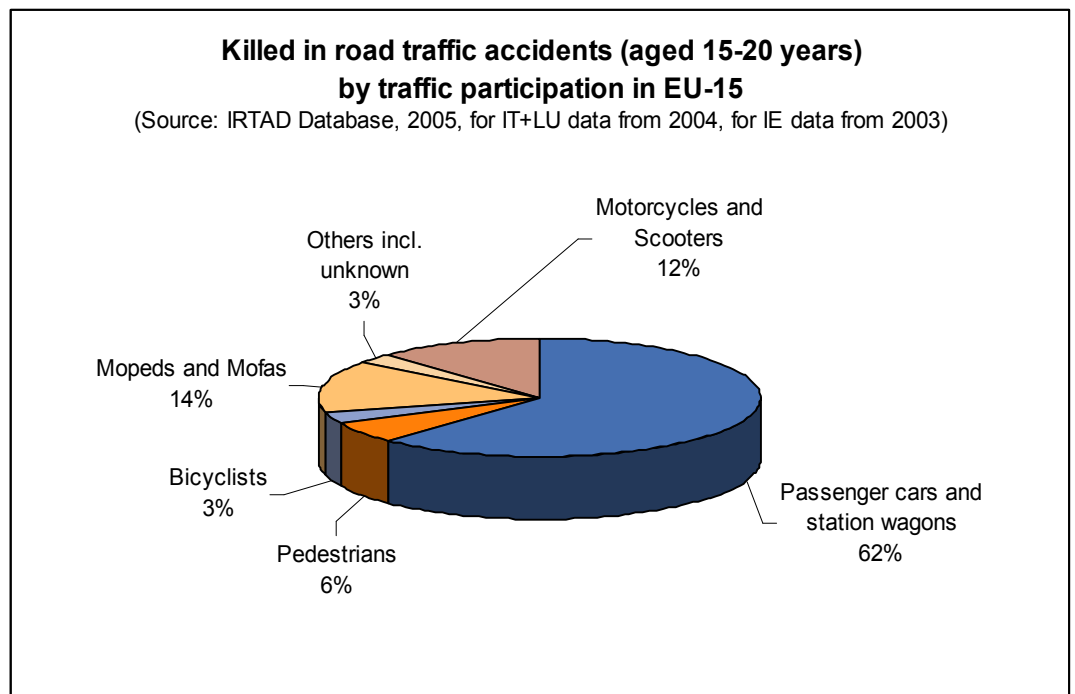




Figure 6

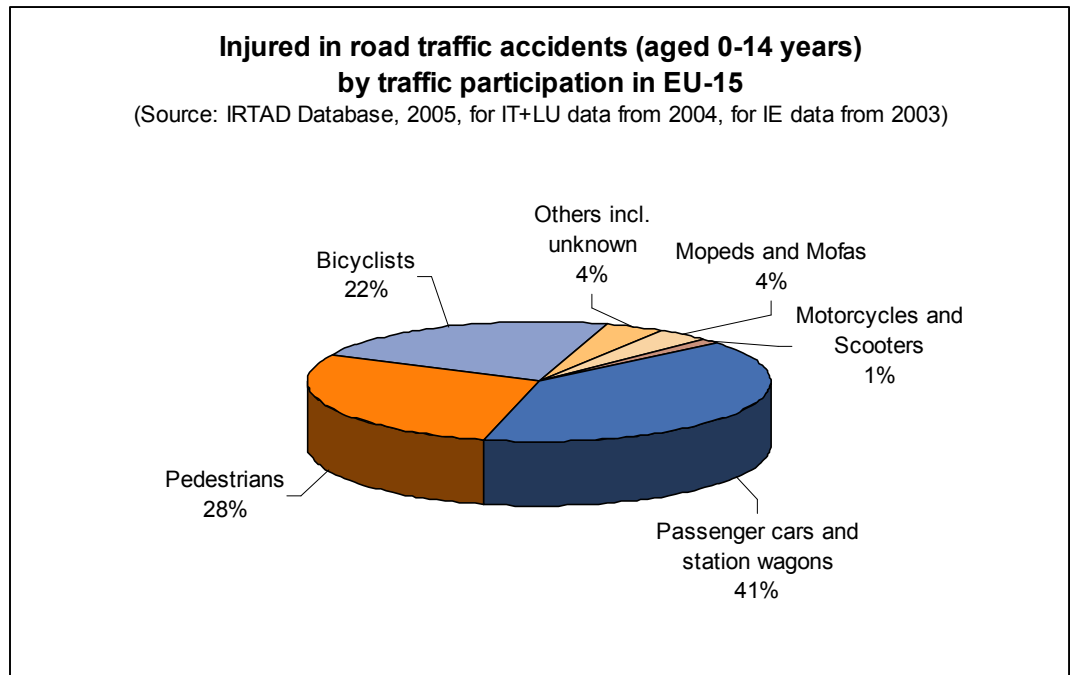
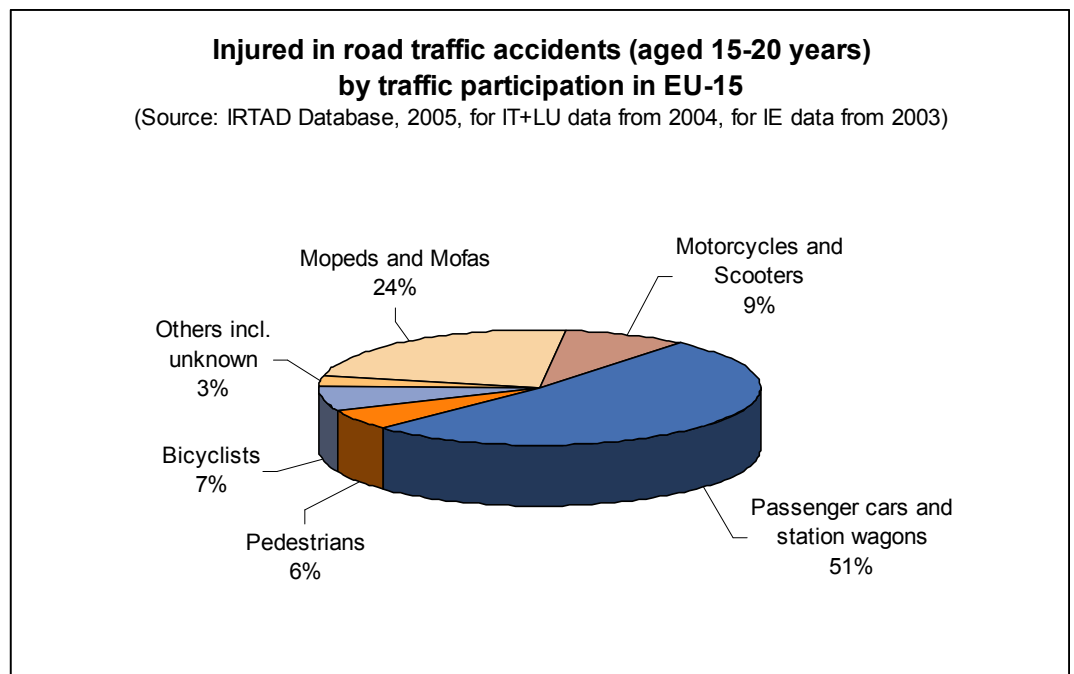


Figure 7



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