Potential problems and solutions for children’s safety

P. Papantoniou, G. Yannis, A. Laiou, D. Pavlou
National Technical University of Athens

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Background

- Children in road traffic are defined as persons aged from 0 to 14 years old
- Each phase within childhood is characterized, and consequently defined, by distinctive levels of physical and psychological skills
- Key reasons that enlarge road safety problem in children:
  - the child due to a lack of necessary skills to interact safely in traffic
  - other road users (especially car drivers, due to a lack of special care and consideration)
  - traffic planning and traffic regulation due to a lack of child-friendly infrastructures, regulations and assistance for children
Objectives

- to present an overview of the extent of road safety problem of children in Europe and Internationally

- to present measures and interventions for enhancing children’s safety
Size and nature of the problem

- Children cannot be considered a **homogenous group** of road users, as their abilities or their mode of transport choice differ considerably.

- **Data** about the mobility patterns of children as road users in general is **scarce**

- **Road traffic injuries** are the second leading causes of death in children between 5-14

- There is a **downward trend** in Europe from 160 fatalities per 1 million inhabitants in 1991 to 51 fatalities per 1 million inhabitants in 2015

- There is still much scope to improve **road safety** for children
Children’s mobility characteristics

- Children are very mobile
- Most frequent journeys are to and from school and in leisure time
- Transport mode choice depends on traffic density, distance to school
- Independent and active mobility is increasingly restricted because of parent’s safety concerns
- While travelling by car is safer for child passengers than walking or cycling, the serious consequences include less independence; restricted development of skills and a higher risk of falling
Child cognitive development in relation to road safety

- **Sensori-motor age group** (up to the age of 2):
  - children focus on coordination of **awareness** and **movement**
  - children at this stage are more drawn **towards** rather than **away** from moving vehicles

- **Pre-operational age group** (2-6 years old):
  - **traffic education** can be attempted but in actual or simulated conditions rather than theoretically in a classroom
  - Difficulties arise when dealing with complex or **combinatorial situations** which require simultaneous processing of more than one feature (e.g. a child will have problems determining whether it is safe to cross the street between two parked cars (learned as dangerous) when the cars are located on a crossing (learned as safe))

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Road safety and social equity

- Statistics show that children whose parents are from lower income groups are more frequently involved in traffic crashes.
- The child road traffic injury mortality rate per 100,000 population in Europe in 2004 was 1.5 times higher for children from low and medium income families than for children from high income families.
- The situation is even worse in less developed countries.
- 96% of children who are killed in traffic crashes living in less-developed countries.
Use of safety belts and child restraints

• An accident at 50km/h without child safety seat is equivalent to a free fall from a height of 10 m and that a collision at only 15 km/h without a child safety seat can be fatal for children.

• Rearward-facing systems have been shown to reduce injuries between 90% and 95%.

• The use of child safety seats has been shown to reduce infant deaths in cars by approximately 71% and deaths to small children by 54%.

• For children aged between 4 and 7 years, booster seats reduce injury risk by 59%.

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Solution #1: Education

• New strategies/projects should aim at educating children on the dangers they face in everyday life and need to give more weight to the influence of parents, peers and teachers.

• There is a fine line between what can be learned unaided and learning that requires guidance.

• Schools and parents need to work together particularly on a subject that may be seen as peripheral but which has life-saving potential.
Solution #2: Educational systems

- **Safe Kids Organisation**
  - a network of associations which help provide information to families with the aim of reducing fatalities amongst young people
  - commence by educating the public about dangers faced in everyday activities through statistics
  - provide safety equipment such as helmets and child safety seats

- **Children’s Traffic Club**
  - focuses on reducing child fatalities is the UK
  - the website comprises games and activities aimed at 3 to 4 year old which see as the optimum age for intervention

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Solution #3: Intervention programmes – campaigns (1/3)

"Gehen geht" (walking works)

- a project by the Lower Austrian Environmental Consulting company
- It aims at increasing the safety of children on their way to kindergarten or school
- The parents of pre-school children are encouraged, by various means, to use environmental friendly modes for these journeys
- children become accustomed to the traffic environment and learn how to behave safely in traffic and are thus prepared for walking to school on their own
- traffic is reduced around kindergartens and around schools

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“EUCHIRES” - EUrope CHild REstraint System

A European project which aims to:

- **increase** the knowledge of how to use child-restraint seats correctly;
- **encourage** children to “make themselves safe” when going by car;
- **change behaviour** with respect to the use of seat belts; wearing seat belt and the use of child restraint seats should become a routine from early childhood onwards;
- **reduce** the number of traffic fatalities due to lacking or incorrect seat-belt use.

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Solution #3: Intervention programmes – campaigns (3/3)

Car Free Schools

A campaign carried out in Danish schools in 2009 and 2010 which

- **aimed** to make travelling to school a safer activity for children
- **addressed** the means of transport used by families, living in a residential area, for the school
- In each school a **map** was created with routes for cycling and walking to school in 2.5 km sections
- **Measures** such as traffic calming around schools and giving priority to bikes and pedestrians were implemented as a consequence of the project

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Solution #4: Road environment

- **Traffic calming measures**
  - The objective is that children of school age do not encounter cars in their play areas or in places where they habitually walk.
  - In exceptional cases, vehicles travelling at a maximum speed of walking pace are tolerated.

- **Crossing measures**
  - improve visibility conditions at junctions
  - Reducing the number of parking spaces on a given surface
  - the installation of so called “pavement-noses” at junctions
  - Crossing distances should be short
Solution #5: Equipment

• **Features** to be included in a vehicle:
  - Improved Emergency Braking System (EBS)
  - Electronic stability control (ESC)
  - Intelligent Speed Adaptation (ISA)
  - Intelligent Transport Systems (ITS)

• **Protective equipment**
  - Helmet in bicycles
  - Seat belts
  - use of rear-facing child **safety seats** is recommended as the safest type of restraint for the youngest children

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Conclusions (1/2)

• **Decreasing** number of child fatalities in traffic but also decreasing number of children

• The *safety of vehicles has improved* but there are compatibility issues for vehicles of different masses and between vehicles and non motorised users

• Highest percentage of child traffic fatalities is for *children as car passengers*, though they bear a lower risk than child pedestrians or cyclists

• Children from lower *socioeconomic backgrounds* have a higher risk of becoming traffic casualties

• The *mobility behaviour* of parents influences the behaviour of children
Conclusions (2/2)

- **Intervention programs** should take income level, location and children’s roles as road users into account.
- **Measures** are more likely to be effective if they take account of human factors.
- **Education**: parents, peers and teachers have significant influence on the younger generations.
- **Infrastructure**: Traffic calming, speed reducing, visibility enhancing measures are most effective.
- **Vehicles**: Driver Assist systems and child safety seats are effective, though airbags can endanger children.
- **Law**: Strict laws, regulations and enforcement are needed.

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