

PROTECTION MEASURES OF CHILDREN IN VEHICLES

THIRD UN GLOBAL ROAD SAFETY WEEK
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OUTLINE

- I- Facts and Statistics
- II- Risk Factors for Children and Young people as Road Users
- III- Keeping Children Safe Inside and Around Vehicles
- IV- Standards and Regulations supporting safety

I - FACTS AND STATISTICS

FACT FILE

World Health Organization

YOUTH AND ROAD SAFETY

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Fact 1

More than 1000 children and young adults under the age of 25 years are killed in road traffic crashes every day.

Road traffic injuries are the leading cause of death for 10-24 year olds.

FACT FILE

World Health Organization

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Fact 2

Most young people killed or injured in road crashes in low- and middle-income countries are pedestrians, cyclists, motorcyclists or users of public transport.

In high-income countries most young victims are novice drivers.

I - FACTS AND STATISTICS

Child Road Traffic Injury mortality rates per 100 000 population by WHO region and country income level
(Data refer to those under 20 years of age)

AFRICA		AMERICAS		SOUTH EAST ASIA	EUROPE		EASTERN MEDITERRANEAN		WESTERN PACIFIC	
LMIC	HIC	LMIC	LMIC	HIC	LMIC	HIC	LMIC	HIC	LMIC	
19.9	8.7	7.7	7.4	5.2	8.3	18.3	17.4	4.2	8.6	

HIC= High Income countries
LMIC= Low-Income and Middle- Income countries

Source WHO (2008)

The Number of Children injured or disabled as a result of Road Traffic crashes is estimated to be around 10 million each year.

Recent estimates from South East Asia suggest the figure could be higher, as **for every child who dies, 254 need hospital treatment- 4 of whom are left with a permanent disability.**



II- RISK FACTORS FOR CHILDREN AND YOUNG PEOPLE AS ROAD USERS



As pedestrians

5-14 year olds are most at risk

Children account for:

- * 5-10% of all road traffic deaths in HIC
- * 30-40% of all road traffic deaths in LIC and MIC



As cyclists

Child cyclists make up 3-15% of injured children and account for 2-8% of all road traffic deaths



As vehicle occupants

* Children in Vehicles account for up to 50% of all child road traffic deaths in HIC



As Drivers

Teenage Drivers are a high risk group in HIC

They are 15-33 times more likely to crash than older drivers

RISK FACTORS

- “ Unhelmeted cyclists, Motorcyclists or Motorcycle passengers
- “ Riding or walking in mixed traffic, Cycling on pavements or footpaths and not wearing reflective clothing
- “ Teenagers drivers and risk- taking behavior including drinking and driving, speeding, distractions and fatigue
- “ Poor supervision of children
- “ Lack of Playgrounds, sidewalks and bicycle lanes
- “ Lack of Safe and efficient public transport
- “ Unsafe use of child restraints systems in vehicles



III- Keeping Children Safe Inside and Around Vehicles

COMMON ACCIDENTS



Backover



Seat Belt Entanglement



Vehicle Rollaway



Trunk Entrapment



Power Windows



Improper Use of Child restraint systems



BACKOVER



- A back over incident typically occurs when a car coming out of a driveway or parking space backs over a child.
- Because kids can move unpredictably, you should actively check your mirrors while backing up.

TECHNOLOGY

Many cars are equipped with detection devices that provide rearview video or warning sounds, but they cannot completely take the place of actively walking around your car to make sure children are safely out of the way.



Vehicle ROLLAWAY

- With the key in the ignition, automatic transmissions may be shifted "out of park" if a child moves the gear selector, even if the vehicle's engine is off and the driver's foot is not on the brake.
- When the vehicle is set in motion, children may become scared and jump out of the vehicle only to be injured or run over. They can also be hurt inside the vehicle, especially if they are unbelted and the vehicle is in motion. Sometimes, the vehicle may end up running over someone else.

TECHNOLOGY

Many vehicles today have a BTSI (Brake Transmission Safety Interlock) which is a safety technology intended to prevent vehicles from accidentally being put into gear.



Power Windows



- Children can hurt themselves when a window closes on their finger, wrist, or hand. Some kids have been **strangled** by power windows.
- Properly restrain children in car seats or seat belts to prevent them from accidentally activating power windows and sunroofs.
- If available, activate the power window lock switch so that the children cannot play with the windows

TECHNOLOGY

Some vehicles have power windows that automatically reverse when an object (such as the child's arm or neck) is in the path of a closing window.



Seat Belt Entanglement

- A child may become entangled in a seat belt if they pull the seat belt all the way out and wraps the belt around their head, neck, or waist.

TECHNOLOGY

The majority of seat belts have a locking mechanism that is activated when the seat belt is pulled all the way out from the retractor.

If a child has an unused seat belt within reach:

- ~ Buckle unused seat belts.
- ~ Pull the seat belt out all the way to the end without yanking. Then, feed the excess webbing back into the retractor.



Trunk Entrapment

- Children are naturally curious and love to explore their surroundings. They could get trapped in the trunk if playing in it.
- Children being entrapped in vehicle trunks can suffer heatstroke, asphyxiation and death.

TECHNOLOGY

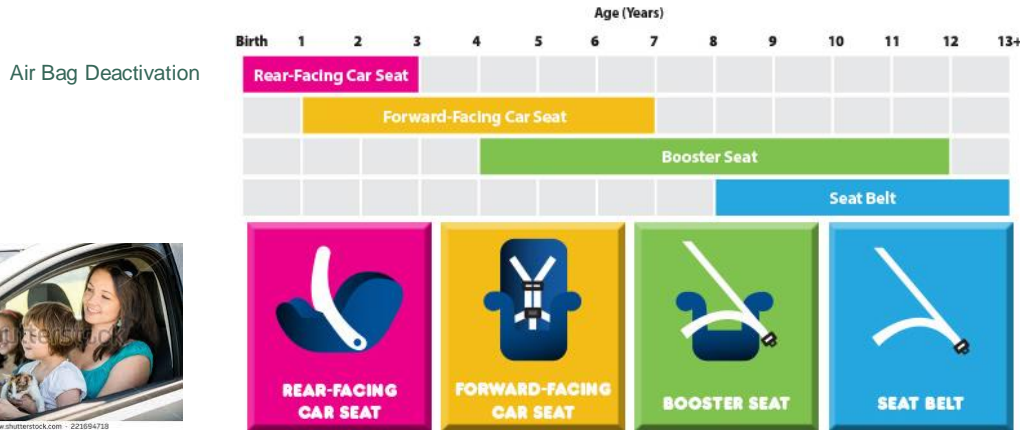
As of September 1, 2001, auto manufacturers were required to equip all new vehicle trunks with a **'glow in the dark'** trunk release inside the trunk compartment.





Improper Use of child restraints systems

There are several types of seats- from infant to convertible and booster- depending on the child's age and size.



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Fact 8

Mandatory use of child restraints can reduce child deaths by up to 35%.

Children should be placed in age- and weight-appropriate restraints.





IV- STANDARDS AND REGULATIONS SUPPORTING SAFETY

STANDARDS



STANDARDIZATION Organizations...have devoted lot of efforts to the preparation of Standards in the field of Road Safety, vehicle Safety, design and equipment

Hundreds of ISO standards routinely contribute to reducing injury and death on the world's roads. Below are just a few examples.

Intelligent transport systems
 Intersection support (ISO/TS 13184*), Cruise control (ISO 15622, ISO 22179)
 Collision / traffic warnings (ISO 15623, ISO/TS 15624)
 Manoeuvring aids (ISO 17386, ISO 22840*), Lane-change aids (ISO 17387),
 Low speed following (ISO 22178)
 Priority systems for emergency vehicles (ISO 22951)
 Safety and emergency calls / notifications (ISO 24978, ISO/TR 25109*, ISO/TR 26882*)

Driver risks
 Visual demand (ISO 16673)
 Suitability of information and control systems (ISO 17287)

Child restraint
 ISOFIX (ISO 13216***)
 Reducing misuse risk (ISO 13215***)
 Performance evaluation (ISO/PAS 13396*)
 Child seat detection system (ISO/TS 22239***)

Fuel safety (ISO 15501-1)

Tyres and rims
 Capabilities (ISO 10191)
 Wet grip (ISO 23671)
 Pressure monitoring (ISO 21750)

Pyrotechnic devices (e.g. for releasing airbags; protection of seabirds)
 Performance (ISO 19072***)
 End of life activation (ISO 26021)
 Functional safety (ISO 26262*)

Airbag testing (ISO 12097)

Seat belt anchorage (ISO/TR 1417)

Protective glazing (ISO 3537, ISO 15062)

Brakes
 Quality assurance (ISO 15484)
 Tests (ISO 6597)

Lights and signalling (ISO 303)

Injury prevention
 Vehicle impact (ISO 6487), Occupant restraint performance (ISO 6546)
 Injury risk assessment (ISO/TR 7881), Traffic accident analysis (ISO 12933***)
 Neck injury criteria (ISO/TR 13330*)

Heavy commercial vehicles
 Brakes (ISO 20916, ISO 21068)
 Obstacle detection (reversing) (ISO/TR 12155)

Pedestrian protection
 Head crash tests (ISO 14513, ISO 19650)
 Bioidentity of leg crash tests (ISO/TR 15766)

Bicycles
 Safety requirements (ISO 4210, ISO 8098)
 Tyres (ISO 5775***)

Motorcycles
 Rider crash protection (ISO 13232***)
 Brakes (ISO 6910)
 Lights (ISO 11440)

Glossary
 TS - Technical Specification
 TR - Technical Report
 PAS - Publicly Available Specification

VEHICLE SAFETY Standards

- ” Road Traffic / Safety Management
- ” Road Vehicles
- ” Car Seats/ Seat Belts
- ” Helmets
- ” Signals
- ” Light and Signaling
- ” Fuel Safety
- ” Information Technology
- ” Etcõ

Different kinds of standards available :

- ” Safety Requirements
- ” Performance
- ” Environmental Requirements
- ” Harmonized Test Procedures

ISO TC 22- Road vehicles

Published 700 standards and updates.

Scope:

These range from standards addressing basics such as wheels, braking systems and road holding ability, to crash protection, **child restraint systems and ergonomics**.

- Improve compatibility, interchangeability and safety,
- Provide the **requirements for harmonized test procedures** for evaluating performance of road vehicles and their equipment

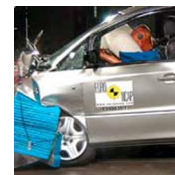
KIDS COME FIRST.....

The ISOFIX attachment system makes installing child car seats to the vehicle simple and safe thanks to **ISO 29061**.



The ISO 15830 standard provides the automotive industry with the performance specifications for the most advanced **human crash test dummy** for improving vehicle design and increasing passenger safety.

WorldSID (for World Side Impact Dummy), was developed to allow a single, universally accepted test device to be used for side impact testing meeting regulations worldwide.



REGULATIONS

European Union

- EU laws require that seatbelts in vehicles must be used by all passengers and that approved **Child Restraint Systems** have to be used when children are on board (Directive 91/671/EEC, as amended by 2014/37/EU)
- Regulation EC 78/2009 on the **type-approval of motor vehicles with regard to the protection of pedestrians** and other vulnerable road users (*requirements for the construction and functioning of motor vehicles and **frontal protection systems** in order to reduce the number and severity of injuries to pedestrians and other vulnerable road users who are hit by the fronts of vehicles and in order to avoid such collisions*)
- Approved Child Restraint Systems must meet the stringent safety requirements laid down by **UNECE Regulation No 44** or **UNECE Regulation No 129**.

UNECE Regulation No 44

'ISOFIX' is a system for the connection of child restraint systems to vehicles which has two vehicle rigid anchorages, two corresponding rigid attachments on the child restraint system and a mean to limit the pitch rotation of the child restraint system.

- 2.1.1. Child restraints fall into five 'mass groups':
- 2.1.1.1. group 0 for children of a mass less than 10 kg;
- 2.1.1.2. group 0+ for children of a mass less than 13 kg;
- 2.1.1.3. group I for children of mass from 9 kg to 18 kg;
- 2.1.1.4. group II for children of mass from 15 kg to 25 kg;
- 2.1.1.5. group III for children of mass from 22 kg to 36 kg.
- 2.1.1.6. ISOFIX Child restraint systems fall into 7 ISOFIX size classes described in Regulation No 16 Annex 17, Appendix 2:
- A — ISO/F3: Full Height Forward Facing toddler CRS
 B — ISO/F2: Reduced Height Forward Facing toddler CRS
 B1 — ISO/F2X: Reduced Height Forward Facing Toddler CRS
 C — ISO/R3: Full Size Rearward Facing toddler CRS
 D — ISO/R2: Reduced Size Rearward Facing toddler CRS
 E — ISO/R1: Rearward Facing infant CRS
 F — ISO/L1: Left Lateral Facing position CRS (carry cot)
 G — ISO/L2: Right Lateral Facing position CRS (carry cot)

UNECE Regulation No 44

Mass group		ISOFIX size category
0 — up to 10 kg	F	ISO/L1
	G	ISO/L2
	E	ISO/R1

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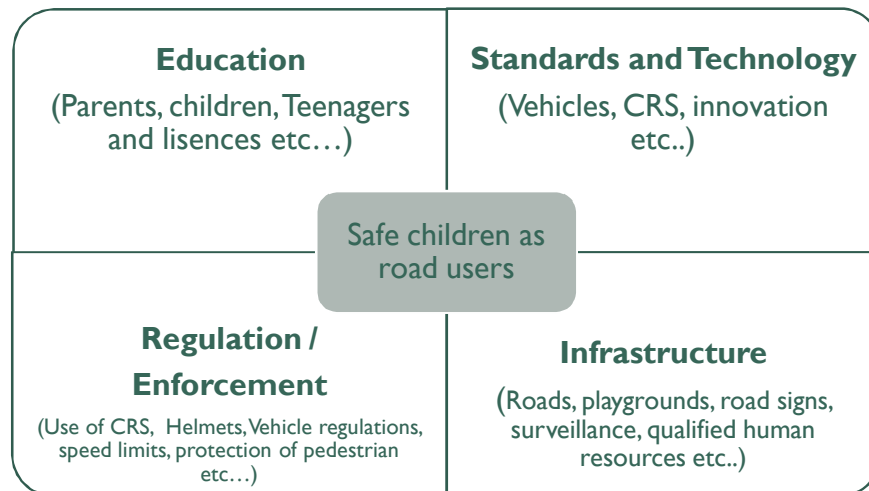
Official Journal of the European Union

9.9.2011

Mass group		ISOFIX size category
0+ — up to 13 kg	C	ISO/R3
	D	ISO/R2
	E	ISO/R1
1 — 9 to 18 kg	A	ISO/F3
	B	ISO/F2
	B1	ISO/F2X
	C	ISO/R3
	D	ISO/R2

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CONCLUSION





THANK YOU FOR YOUR ATTENTION

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