



TEN STRATEGIES FOR KEEPING CHILDREN SAFE ON THE ROAD



World Health
Organization



#SaveKidsLives



TEN STRATEGIES FOR KEEPING CHILDREN SAFE ON THE ROAD



Every four minutes a child is prematurely lost on the roads of this world. Many more are injured, often severely.

INTRODUCTION

For children aged 15–17 years, there is no greater threat to their lives than a road traffic crash.

Every four minutes a child is prematurely lost on the roads of this world. Many more are injured, often severely. These traumatic events cause immeasurable suffering and grief, and at times economic hardship for families and friends. In addition, they cost societies precious resources, diverting these from other pressing health and development challenges.

Many of the children who are victims of this man-made calamity are poor. Attempts to address road safety for children are, therefore, inextricably linked to notions of social justice, and should be part of global efforts to reduce poverty.

For countries in a phase of rapid motorization – many of them middle-income countries – roads are often built without due consideration for the communities they pass through. Historically, this was also the case in high-income countries. A shift in mind set is desperately needed to ensure that roads everywhere serve the needs of and are safe for all who use them, including children, but also other vulnerable groups such as pedestrians, cyclists and motorcyclists.

Such a change is imperative for ongoing efforts to promote healthy lifestyles. The walking, cycling and other physical activity that would do much to curb overweight and obesity in children will inevitably bring them into contact with the road. It is only if those roads are made safe that children will be inclined to use them and their parents and other caregivers will allow them to do so.

No single measure adequately addresses the vast range of risks to children on the road, however, there are steps that

each family, community, and country can take to improve road safety for children. In those countries which have demonstrated the greatest declines in road traffic death and injury, strong laws and stringent enforcement of those laws, and enhancements in the safety of roads and vehicles have proven to make a difference. The United Nations Decade of Action for Road Safety 2011–2020 offers a broad framework for taking these and other actions to keep children safe on the road.

How many children are killed in road traffic crashes each year around the world?

THE FACTS

186 300 children¹ die each year from road traffic crashes around the world – that’s more than 500 children every day. In fact road traffic injury ranks among the top four causes of death for all children over the age of five years.

Rank cause of death among children under 18 years of age, worldwide, 2012

Rank #	<5 years	5–9 years	10–14 years	<15–17 years
1	Preterm birth complications	Diarrhoeal diseases	HIV/AIDS	Road traffic injury
2	Lower respiratory infections	Lower respiratory infections	Diarrhoeal diseases	Self-harm
3	Birth asphyxia / trauma	Meningitis	Road traffic injury	Interpersonal violence
4	Diarrhoeal diseases	Road traffic injury	Lower respiratory infections	HIV/AIDS

Source: World Health Organization, Global Health Estimates, 2014.

¹ A child is someone under the age of 18 years as defined by the Convention on the Rights of the Child.

From where are the children who are most likely to be killed or injured in a road traffic crash?

While the road safety challenge is a global one, the children most likely to die in a road traffic crash live in the world's low- and middle-income countries, where 95% of road traffic fatalities among children occur. Rates vary across regions. Even within countries, children from economically poor backgrounds are at greatest risk.

Regional variation in road traffic death rates (per 100 000 population) of children under 18 years of age, worldwide, 2012

Africa		Americas		Eastern Mediterranean		Europe		South-East Asia	Western Pacific		World	
HIC	LMIC	HIC	LMIC	HIC	LMIC	HIC	LMIC	LMIC	HIC	LMIC	HIC	LMIC
6.3	15.6	3.9	6.9	8.5	11.2	2.9	5.6	6.9	2.0	5.7	3.4	9.1

LMIC = Low- and middle income countries; HIC = High-income countries.
Source: World Health Organization, Global Health Estimates, 2014.

How are age and sex factors in determining a child's risk of a road traffic crash?

Children of all ages are at risk of being involved in a road traffic crash. Boys account for nearly twice as many road traffic deaths as girls worldwide. This increased risk for boys is thought to be due to greater exposure to traffic, as well as a tendency for boys to take more risks than girls, especially as adolescents.

What is it about children that make them so vulnerable in traffic?

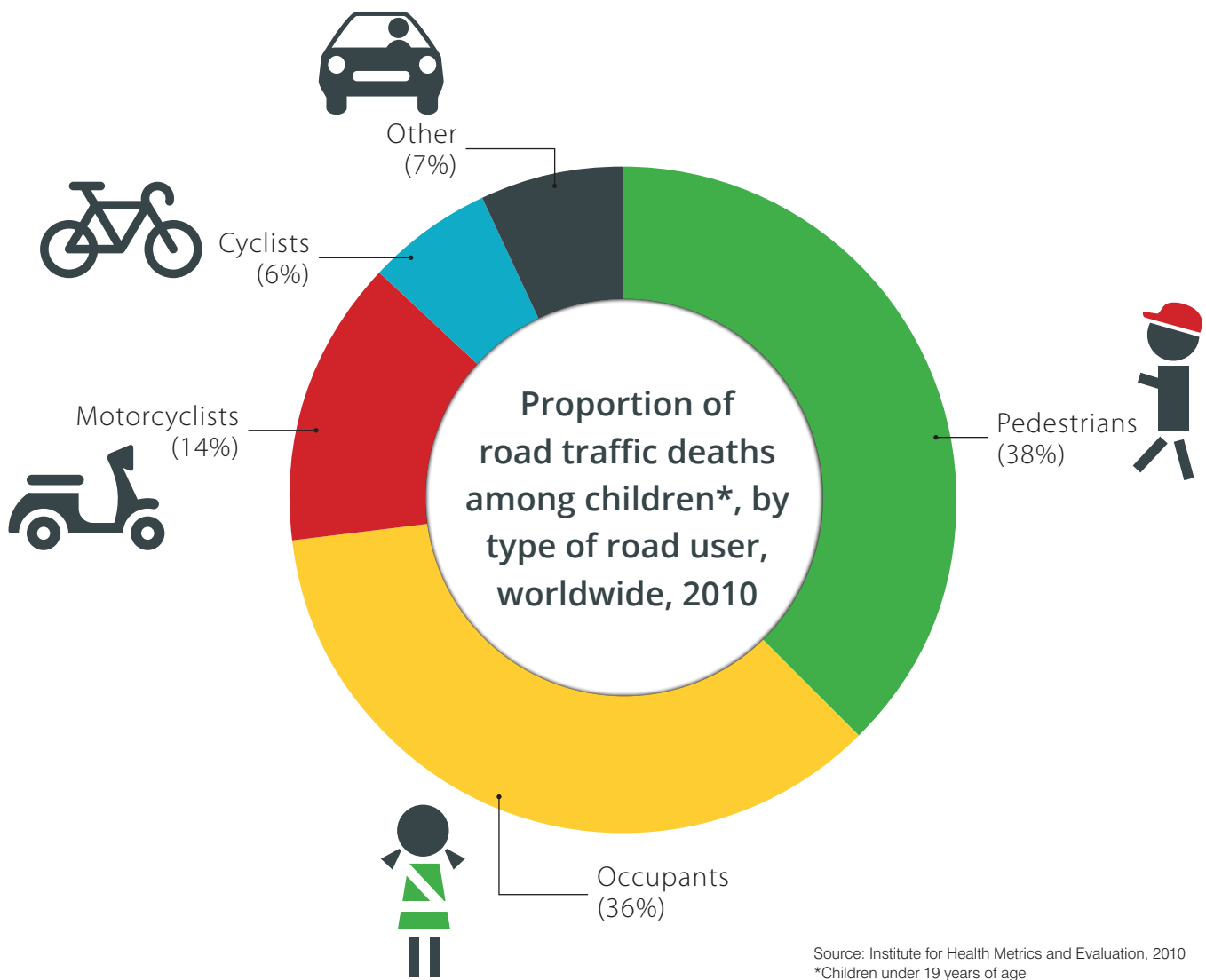
Younger children are limited by their physical, cognitive and social development, making them more vulnerable in road traffic than adults. Because of their small stature, it

can be difficult for children to see surrounding traffic and for drivers and others to see them. In addition if they are involved in a road traffic crash, their softer heads make them more susceptible to serious head injury than adults. Younger children may have difficulties interpreting various sights and sounds, which may impact on their judgement regarding the proximity, speed and direction of moving vehicles. Younger children may also be impulsive, and their short attention spans mean that they struggle to cope with more than one challenge at a time. As they grow older, children of adolescent age are especially prone to take risks, compromising their safety on the road.

Which modes of transport place children most at risk of a road traffic crash?

It might come as a surprise that of the children injured or killed on the roads worldwide each year, 38% are pedestrians. In the low- and middle-income countries where these fatalities most often occur, children walk along roads where there is a mixture of different modes of transport – some moving at high speed – and where infrastructure such as sidewalks, cross walks and safety barriers is lacking. Children who travel by car make up another 36% of those killed. Most of these children are from high-income countries. They are at greater risk both in the front and the back seat of a vehicle when they are unrestrained. The remainder of the children who are killed on the roads each year travel by bicycle or motorcycle, often without helmets, or are drivers themselves.

Globally, children in low- and middle-income countries have a road traffic death rate nearly three times as high as those in high-income countries.



TEN STRATEGIES FOR KEEPING CHILDREN SAFE ON THE ROADS

Safer roads for all will mean safer roads for children. The Global Plan for the Decade of Action for Road Safety 2011–2020 highlights what's needed to improve road safety for everyone. For governments, this includes legislating around key risks such as speeding, drinking and driving, helmets, seat-belts, and child restraints and enforcing the laws in place; building roads and obliging manufacturers to produce vehicles with appropriate safety features; and having systems in place to provide prompt emergency care for the injured. Additional actions which focus on children specifically can help to better protect them as they travel the roads. The ten strategies described below are those which are best known – especially when implemented as a package of measures – to keep children safe on the roads.

1 Controlling speed

Speed is a contributing factor in around one-third of all fatal road traffic crashes in high-income countries, and up to half in low- and middle-income countries. Long, straight roads which pass by schools, residences and businesses and which facilitate travel at high speed place children at significant risk. The following strategies can reduce speed:

- setting and enforcing speed limits appropriate to the function of each road;
- setting and enforcing a maximum speed limit of 30 kilometers per hour on roads with high concentrations of pedestrians;
- enforcing speed limits through the use of automatic speed cameras;
- building or modifying roads to include features that limit speed such as traffic lights, roundabouts, and speed humps.

Reducing vehicle speed is paramount to protecting children on the roads.



"20 is plenty" speed zones in the United Kingdom

Over the last 20 years, 20 mile per hour zones ($\approx$ 30 kilometer per hour) have been introduced around schools and residences in London, United Kingdom. In addition to setting this speed limit, infrastructure such as speed humps and chicanes (features creating extra turns in a road) have been installed on these same streets. Children 0–15 years have benefitted since the introduction of these "20 is plenty" zones, by a 46% reduction in deaths among pedestrians and a 28% reduction in deaths among cyclists during the period 1987–2006

2 Reducing drinking and driving

A major risk to children as pedestrians, cyclists and passengers in vehicles are people who drink and drive. Consuming alcohol before driving increases not only the chance of a road traffic crash occurring, but also the likelihood that death or serious injury will result. The risk of a road traffic crash begins to rise significantly when a driver has a blood alcohol concentration (BAC) of around 0.04 g/dl.

Inexperienced young drivers with a BAC level of 0.05 g/dl have a 2.5 times higher risk of a road traffic crash compared with older, more experienced drivers.

The following strategies can reduce drinking and driving:

- setting and enforcing BAC limits of 0.05 g/dl or less for all drivers, and lower BAC limits of 0.02 g/dl or less for young drivers;
- enforcing drinking and driving laws through sobriety check points and random breath testing;
- restricting the sale of alcohol by legislating a minimum purchase age and regulating the types of establishments which sell alcohol and their hours of operation;
- limiting the marketing of alcohol to children.

3 Using helmets for bicyclists and motorcyclists

For children, wearing a helmet is the single most effective strategy for reducing the risk of injury to the head while riding bicycles or motorcycles. For cyclists of all ages, the appropriate use of a helmet decreases the risk of a head injury by 69%, while for motorcyclists of all ages, the appropriate use of a helmet reduces the risk of death by 40% and the risk of serious head injury by more than 70%. The following strategies can ensure the use of helmets:

- mandating and enforcing motorcycle helmet laws that stipulate the type and fit of motorcycle helmets by age group;

Helmet use by children in Viet Nam

At the end of 2007, the Government of Viet Nam passed a law making it compulsory for all motorcycle drivers and passengers, including children, to wear helmets while riding a motorcycle. Following the introduction of the law, rates of helmet wearing increased to over 90%. The result was reductions in the number of head injuries and deaths from motorcycle crashes. However, the law did not allow police to enforce helmet wearing among children under 14 years of age, nor did it allow adults to be penalized when a child under their care did not wear a helmet. As a result, rates of helmet wearing among children remained low at under 40%. However, the law was changed in April 2010 to allow enforcement of the law among children over the age of six years, making the adult driver responsible. As a result helmet wearing rates among children increased to 56% during the period 2010 to 2013.



- putting in place internationally recognized manufacturing standards for motorcycle helmets, which ensure that they are suitable for children;
- ensuring the availability and affordability of motorcycle helmets for those who need them;
- supporting community-based initiatives targeting children by educating their parents about motorcycle and bicycle helmet use and providing free or discounted helmets for children.

4 Restraining children in vehicles

For children who are occupants of a vehicle, a range of restraints is available to protect them. These include infant car seats, child car seats, booster seats and seat-belts, and their use depends on the age, weight and height of the child. As compared to using seat-belts alone, booster seats are estimated to reduce by 59% the risk of children aged four to seven years sustaining significant injuries during a road traffic crash. The following strategies can increase the uptake of child restraints and their appropriate use:

- mandating and enforcing child restraint laws for all private vehicles;

4

Overall, child restraints reduce the likelihood of a road traffic fatality by approximately 70% among infants and between 54% and 80% among young children.

- putting in place internationally recognized manufacturing standards for child restraints;
- ensuring the availability and affordability of child restraints for those who need them;
- obliging vehicle manufacturers to have plug-in attachments for car seats in all private vehicles, such as ISOFIX anchorage systems which fix child restraints in place;
- promoting child restraint loan schemes and educating families on how to use restraints.



5

5 Improving children's ability to see and be seen

Seeing and being seen are fundamental prerequisites for the safety of all people who travel the roads, but are particularly important for children due to their particular vulnerability. The following strategies can be used to improve visibility:

- wearing white or light-coloured clothing;
- using retro-reflective strips on clothing or articles such as backpacks;

- forming “walking buses”, interventions through which adult volunteers accompany groups of children wearing reflective vests along established routes;
- appointing crossing guards who wear reflective vests around schools;
- using headlamps on bicycles as well as front, rear and wheel reflectors;
- using daytime running lights on motorcycles and vehicles;
- making sure that streets are as “uncluttered” as possible and enhancing street lighting.

Daytime running lights on motorcycles are known to reduce rates of road traffic crashes among that group by 29%.

6 Enhancing road infrastructure

Historically, roads have been built primarily for the benefit of motorized transport, with little consideration of the needs of the communities they pass through. Building new and modifying existing road infrastructure with a concern for safety would enhance the livability of these communities and reduce risks to children from road traffic crashes. Strategies to enhance road infrastructure include:

- implementing physical measures such as traffic lights, roundabouts, speed humps, cross walks, over passes, median strips, and street lighting on busy roads;
- separating different types of traffic and road users through mechanisms such as raised pavements for pedestrians, dedicated lanes for pedestrians and cyclists, and median barriers to separate vehicle traffic moving in different directions;
- creating car-free zones to enhance the safety of pedestrians;

Safety around schools in Kenya

Providing a safe environment around schools is essential to keeping children safe. In Naivasha, Kenya, local authorities have taken a number of steps to improve safety around schools. These include building pedestrian crossings, dedicated foot and cycle paths, and speed humps; reducing and enforcing speed limits of 30 km/h; increasing visibility through improved street lighting; enhancing the visibility of children by encouraging the use of reflective backpacks; and providing appropriate supervision by means of crossing guards.

- introducing school safety zones which include a package of speed reduction measures, car-free zones, safe drop-off and pick-up points, and crossing guards;
- increasing crossing times at signalized intersections that are close to schools;
- designating play areas for children away from the road;
- investing in safe public transport.

7

7 Adapting vehicle design

Optimal vehicle designs and standards can contribute to the safety of children both inside and outside a vehicle, including those on bicycles and motorcycles. Many vehicle safety measures protect all road users, but some are specific to children or have the potential to reduce risks for children more than adults. These strategies include:

- mandating the installation of energy-absorbing crumple zones to protect passengers inside a vehicle in the event of a road traffic crash;
- redesigning vehicle fronts to make them more “pedestrian friendly”;



- equipping vehicles with cameras and audible alarms that can detect small objects missed by the rear-view mirror;
- installing alcohol interlock systems in the vehicles of people convicted of drinking and driving.

8 Reducing risks for young drivers

In some countries, children as young as 15 years old are allowed to drive. Young, novice drivers account for a large number of road traffic crashes globally. Contributing factors include speeding, drinking or drugs and driving, and texting and driving. Greater restrictions on driving, such as those offered through graduated driver licensing programmes, can result in significant reductions in road traffic crashes and fatalities overall. Such programmes follow a gradual, phased approach, so that a novice driver can gain experience behind the wheel, with restrictions until full driving privileges are granted. In settings where these programmes exist, road traffic crashes among this group have declined by as much as 46%. Graduated driver licensing schemes which implement the following strategies can have a major impact on the safety of children:

- lowering BAC levels for young or novice drivers;
- driving with a responsible adult for a designated period of time while learning to drive;
- restricting nighttime driving and driving with passengers;
- insisting on zero tolerance for any traffic offenses, including texting while driving.

In settings where graduated driver licensing programmes exist, road traffic crashes among this group have declined by as much as 46%.

Graduated driver licensing programmes in Australia

In July 2007, Queensland, Australia, enhanced its former graduated driver licensing programmes to include: an extension of the learner period from six to twelve months, an increase in the number of supervised driving hours to 100 hours with either a parent or professional, and ten hours of required nighttime driving. Additionally, there are explicit aspects of the current programme which address distracted drivers, for example, by prohibiting mobile phones use. Driving hours in the current system have to be certified in a logbook and presented prior to the practical driving test.

9

Because of their young age and extraordinary capacity for recovery, children benefit from timely and high-quality injury care like no other group.

9 Providing appropriate care for injured children

While strengthening a country's emergency care and rehabilitation services is the best approach to improving outcomes for all road traffic victims, there are special considerations for children. Key strategies for improving the care of injured children include:

- Providing caretaker and teacher education on safe immediate stabilisation of injuries, and establishing advance plans for activating formal or informal systems to transport injured children to care facilities;
- Training prehospital and facility-based providers in the physiologic differences between children and adults, and on how to meet the distinct treatment needs of children;
- Where formal prehospital systems exist, equipping emergency vehicles with child-sized medical equipment and supplies;
- Making hospitals as "child-friendly" as possible to minimize additional trauma for injured children;
- Improving paediatric-specific rehabilitation services, especially home-based rehabilitation prescriptions, and including access to community-based rehabilitation centres;
- Improving access to counselling services both to mitigate the psychological impact of road traffic injury on children and their families and to address practical considerations, including legislative and financial queries.

10

10 Supervising children around roads

Young children have a limited capacity to evaluate risk. As such, parents and other caregivers can play an important role in helping the children in their care to interpret what is happening around them. Their supervisory role is particularly useful for ensuring the safety of children in complex road environments. Supervision alone cannot replace the interventions described above, but it can complement and



reinforce these other measures. Supervision would include, for example, ensuring that children use helmets, car seats, and seat-belts and abide by the protocols established for school safety zones. Supervision, in combination with the other strategies highlighted in this document, will help to reduce the probability of a child being involved in a road traffic crash.

Road traffic death and injury are eminently preventable. The countries which have garnered the political will needed to address this issue have demonstrated this, and in doing so have spared the lives of hundreds of thousands of children and saved their nations countless resources. The strategies highlighted in this document are among those best known for keeping children safe on the road. If implemented by all countries, they would do much to achieve the goal of the Decade of Action for Road Safety 2011–2020 to save five million lives. In addition they would make a significant contribution towards creating more vibrant and liveable communities and attaining safe and sustainable transport to the benefit of all who use the roads.

CONCLUSION

The background image shows a vibrant, cluttered street scene. In the foreground, two young girls are running away from the camera on a paved road. One girl is wearing a white sleeveless shirt and plaid shorts, while the other is in a pink shirt. In the middle ground, a boy in a purple t-shirt and blue shorts stands near a man in a pink shirt. A woman is seated at a small table in the background. The street is lined with various signs, including 'SMART LIVE MORE', 'PANGGIL-ENTRY', 'Xpress load', and 'TALK N TEXT'. A colorful woven curtain hangs on the left, and a black and white dog is visible in the lower left corner.

***"The future of a country
is its young people. We
cannot afford to lose our
children to road traffic
crashes."***

Dr Margaret Chan
Director-General
World Health Organization

Acknowledgements

WHO wishes to acknowledge the contributions of the following people to the development of this document: David Meddings, Margie Peden and Tamitza Toroyan for the research on which the document is based; Kacem Iaych for compiling the data; Cinnamon Dixon for the initial drafting; Gayle DiPietro, Adnan A Hyder, Olive Kobusingye, Etienne Krug, Joan Ozanne-Smith, Hala Sakr, Chamaiparn Santikarn, Dinesh Sethi, David Sleet, Tomasz Szymanski, Elizabeth Towner, and David Ward for their review of the initial draft; Laura Sminkey for the final drafting; and H       Dufays for support to the document's production. WHO also wishes to acknowledge the financial contribution of the FIA Foundation to the document's development and publication.

Photo credits

pp. 2–3    AMEND; 11    Bloomberg Philanthropies, 2013; 12    Shutterstock; 14    Shutterstock; 17    AA South Africa; 18–19 Shutterstock.



DECADE OF ACTION FOR
ROAD SAFETY **2011–2020**

www.who.int/roadsafety/decade_of_action

WHO/NMH/NVI/15.3

© World Health Organization, 2015. All rights reserved.