

# **THE ROAD SAFETY SITUATION FOR CHILDREN IN BANGLADESH**

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# THE ROAD SAFETY SITUATION FOR CHILDREN IN BANGLADESH

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## ABSTRACT

The children are highly vulnerable in the traffic situation compared with many other countries of the world. The incidence of overall child involvement in road accident fatalities in Bangladesh is found to be very high, accounting for about twenty two percent. An elaborate analysis of accident data collected from police with a study period of seven year (1998-2004) it is evident that the involvement of children below 15 years of age in road accident fatalities is much higher than those in other developing countries. Of the total child fatalities of road accidents, on an average nearly eighty percent involved as pedestrians with the dominant age group of 5-10 years and thirteen percent of all children were bicycle users. Indeed, about one- third of total pedestrian fatalities are children under the age of 15 years. They are the dominant age group of pedestrian fatalities. The female child pedestrians are disproportionately higher than the male child pedestrians. It is found that almost thirty two percent for female child and twelve percent male child are involved in road traffic accidents. This paper aims to discuss the child safety issue which deserves urgent attention by addressing the special needs and requirements of the children. Significant reduction of accidents and injuries is possible through a safety conscious and systematic application of countermeasures encompassing traditional three E's- Engineering Enforcement and Education. Also the role of road safety education for children is discussed because it is essential for effective and sustained prevention of accidents and injuries in the longer term. The safety of the vulnerable road users especially children must be sufficiently catered for in the road safety engineering strategies and principles.

## 1. INTRODUCTION

In many OECD countries, road-related crashes are the number one killer of children under the age of 15. In fact, the number of children killed per annum on the roads in OECD countries was halved between 1984 and 2000. Nevertheless, at current rates, one child out of every 2 100 will die before their 15th birthday in a road-related incident, and a considerably higher number will suffer severe injuries or lifelong disabilities. The variation of children's road traffic fatality rates among the OECD countries are depicted in figure 1. Latest studies (WHO) suggest that "there are 1.2 million deaths from road traffic injuries each year in the world, 88 percent occurring in the developing world. For every death, there are far greater numbers of injuries- four persons with severe/permanent disabilities, ten persons requiring hospital admission, and thirty persons requiring emergency room treatment. The economic costs of this epidemic are enormous, ranging from 1 to 5 percent of GDP for every nation. And the problem is expected to accelerate" (Mackay, 2003). In Bangladesh vulnerable road users accounted for nearly 75 percent of road accidents. Pedestrian alone are responsible for 48% of urban accidents and 47% of rural accidents. In urban areas, pedestrian accounted nearly 62 percent of the total fatalities. Of the total pedestrian death nearly one-third are children under 16 years of age. In fact, children under 16 years of age represent about 21 percent of all fatalities (MAAP5). Indeed, the recent UNICEF study revealed that the road traffic injuries are the leading causes of fatalities to

children age group of 10-14 years. This clearly demonstrates the high risk of children in traffic accidents in Bangladesh. This paper discusses the current situation of child safety problem in Bangladesh and also focuses on a safety conscious and systematic application of countermeasures encompassing traditional three E's- Engineering Enforcement and Education.

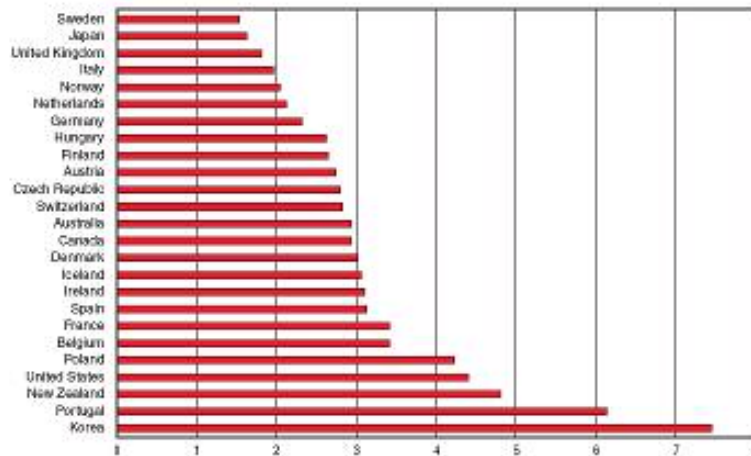


Figure 1: Total Traffic Fatality Rate among Children aged 0-14.  
(Mean for 1996-2000)  
(Source: OECD Observer, 2004)

## 2. RISK LEVEL OF CHILDREN IN ROAD ACCIDENTS IN BANGLADESH

The national road accidents statistics in Bangladesh (RSC, 2001) revealed a serious threat to the children. The incidence of overall child involvement in road accident fatalities in Bangladesh is found to be very high, accounting for about 21 percent. This involvement of children under 15 years of age in road accident fatalities is much higher than those in other developing countries. It is important to note that compared to industrialized countries, the proportion of fatalities to under 15 years of age in developing countries is approximately two and half times higher.

Of the total child fatalities of road accidents, nearly 82 percent involved as pedestrians with the dominant age group of 5-10 years. Indeed, about one-third of total pedestrian fatalities are children under the age of 15 years. They are the dominant age group of pedestrian fatalities. The female child pedestrians are disproportionately higher than the male child pedestrians (44.6% Vs 28.9%).

## 3. ROAD SAFETY SITUATION FOR CHILDREN IN BANGLADESH

Accident Research Centre (ARC) of Bangladesh identified pedestrians as the most vulnerable road user's group in developing countries like Bangladesh. The incidence of risk of children in road accident is also very serious in Bangladesh. Children, in general, are involved in more accidents in developing countries than those in developed countries. Every year more about three thousand people are killed in road accidents (according to the reported data) in Bangladesh and 21% (Table 1) of them are children. But this figure is only about 4% in the developed countries. Figure 1 shows the children fatalities rates in different countries including Bangladesh.

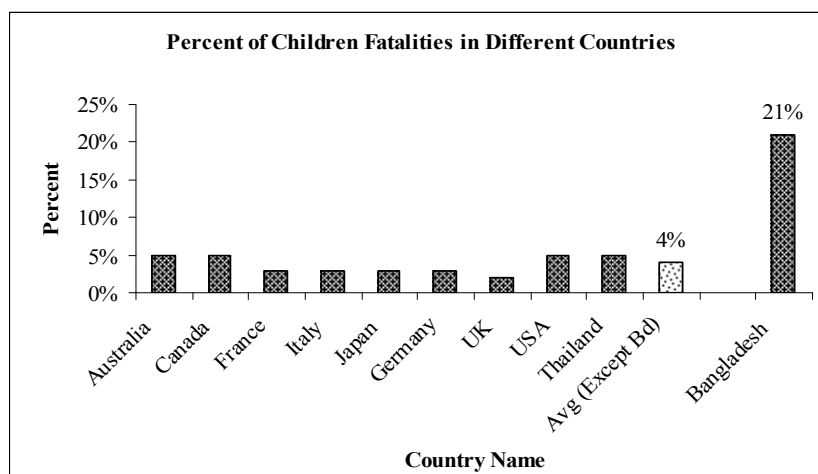


Figure 2: Percentage of Children Fatalities in Different Countries (Source: IRTAD-2005 and ESCAP-2006)

Table 1: Children Fatalities and Injuries in Bangladesh (1998-2004)

Year	Total Fatalities	Fatalities (known age)	Children Fatalities	Per cent	Total Injuries	Injuries (known age)	Children Injuries	Per cent
1998	2358	1911	414	22	3297	2398	238	10
1999	2893	2266	440	19	3469	2459	217	9
2000	3058	2299	473	21	3485	2265	225	10
2001	2388	1665	343	21	2565	1506	175	12
2002	3053	1831	385	21	3285	1446	137	9
2003	3334	2024	395	20	3740	1667	172	10
2004	3150	1741	371	21	3026	1249	115	9
<b>Avg</b>	<b>2891</b>	<b>1962</b>	<b>403</b>	<b>21</b>	<b>3267</b>	<b>1856</b>	<b>183</b>	<b>10</b>

(Source: Police reported MAAP Database)

### 3.1 Children Accident in Urban and Rural Areas

Children fatality rates in rural and urban areas are significant among all aged groups of people. Children in rural areas are more vulnerable to road accident than those in urban areas (Figure 2). Fatality rate in rural areas (74%) is about three times higher than those of the urban areas (26%).

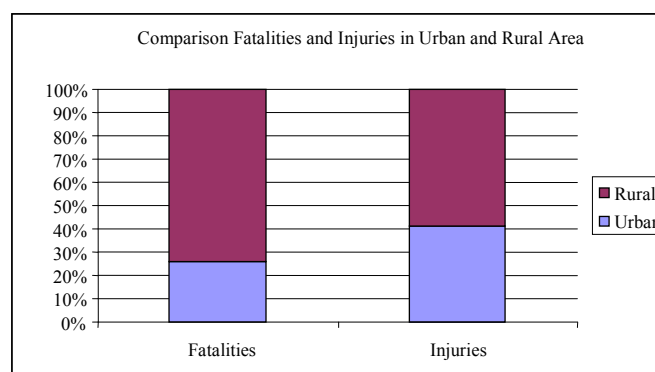


Figure 2: Comparison of Fatalities and Injuries in Urban and Rural Area (1998-2004) (Source: Police reported MAAP Database)

### 3.2 The Distribution of Fatalities and Injuries by Road Classes

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The distribution of fatalities and injuries involving children by road classes is shown in Figure 3. It can be seen that 37 percent of the children fatalities occurred on the National Highways, which is about one third of the total children fatalities. From Figure 3 it is also seen that the National Highways contributing at least 37% of all children fatalities is two times higher than those Urban Roads (16%) whilst children injury rates are more or less same for both in National Highways and Urban Roads (32%).

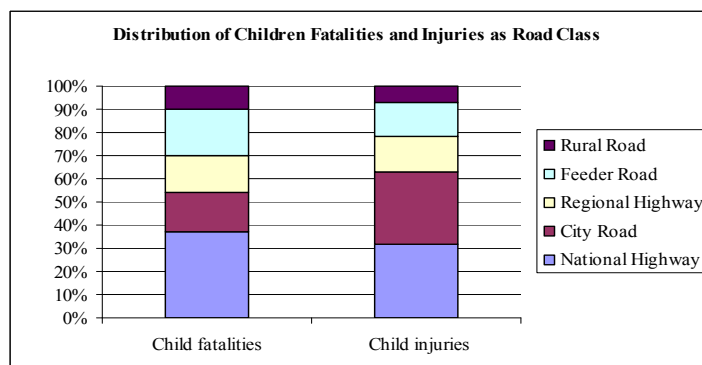


Figure 3: Distribution of Children Fatalities and Injuries as Road Classes (1998-2004)  
(Source: Police reported MAAP Database)

### 3.3 Child Fatality/Injury by Age Group

It is important to determine which age groups of children who are dominant in accidents. Table 2 presents the distribution of children fatalities and injuries by different age groups. The dominant age group of 6-10 years in fatalities, 51 percent, perhaps reflects their inability to cope with the complexity of traffic. However this needs further investigations. The 11-15 years age group also predominates in casualties.

Table 2: Age-wise Distribution of Children Fatalities and Injuries (1998-2004)

Children Age	Fatalities	%	Injuries	%
0--5	541	19%	223	17%
6--10	1436	51%	506	40%
11--15	844	30%	549	43%
(Total)	2821	100%	1279	100%

(Source: Police reported MAAP Database)

### 3.4 Hourly Distribution of Child Fatalities and Injuries

In Figure 4 the time distribution of child fatalities and injuries are presented which shows that child casualties peaked during 10-12 noon with the high level of their involvement during the entire day period.

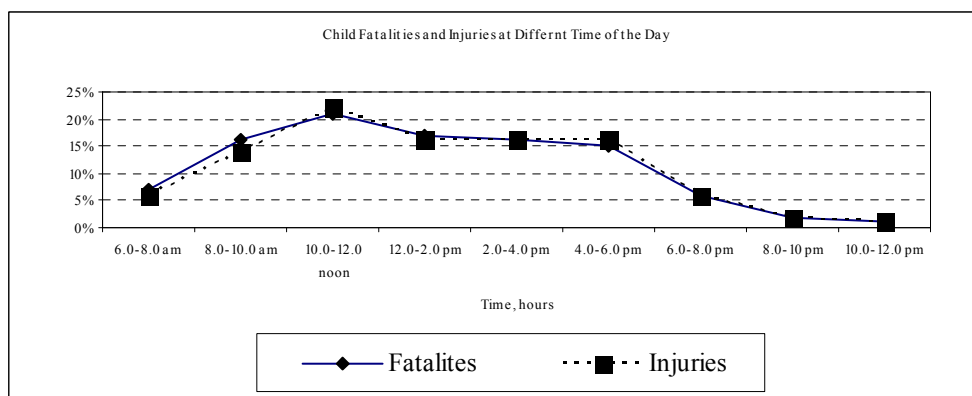


Figure 4: Hourly Distribution of Child Fatalities and Injuries (1998-2004)  
(Source: Police reported MAAP Database)

The periods with the greatest involvement of children in accidents thus seem to be related with the school activities. Again these aspects require further examination.

#### 4. THE RISK OF CHILDREN AS ROAD USERS

##### 4.1 Children as Pedestrian

Children as pedestrian are more likely to fall in accidents than those of passengers or bicyclists. In many developing countries, pedestrians are particularly vulnerable groups of road users. In Asia, Africa, the Caribbean and the Middle East, more than 40 percent of reported road accident deaths are pedestrians, compared to only about 15 percent in Europe and the United States (IRTAD, TRL). Furthermore, certain pedestrians, such as the young, have been identified as being especially at risk in these road accidents. Accidents involving children less than 16 years of age on average contribute to 20 percent of pedestrian fatalities in developing countries making them a major safety issue and cause for concern (IRTAD, TRL).

For Bangladesh about 50% of reported road accident deaths and 17% of reported road accident injuries are pedestrians. Among them, the children pedestrian fatality rate is 32% and injury rate is 25%; i.e. one third of the pedestrian dying in road accidents is under the age 16 years, which is very large in amount.

Table 3: Child Pedestrian Fatality in Bangladesh

Year	Pedestrian Fatalities (known age)	Child Pedestrian Fatalities	Child Percent among all Fatalities	Child Percent as Pedestrians of total Child Fatalities
1998	1013	326	32%	79%
1999	1174	363	31%	83%
2000	1148	376	33%	79%
2001	859	282	33%	82%
2002	967	308	32%	80%
2003	1016	323	32%	82%
2004	916	284	31%	77%
Average	1013	323	32%	80%

(Source: Police reported MAAP Database)

It is of particular concern that, children pedestrian fatalities are 80% of the total estimated children fatalities (Table 3). From the analysis, it has been found that children are more vulnerable to road accidents as pedestrians.

#### 4.2 Distribution of Child Pedestrian Fatalities and Injuries in Different Actions

Every year about 32% children die in road accidents as pedestrians. Although investigators have categorized pedestrian actions leading to injury into more than 30 types, relatively few actions account for the majority of injuries in children. "On road edge or shoulder" types of injuries, in which the child walks along roadside or shoulder, account for 47% of the total injuries among children. "Crossing Road" types of injuries, in which the child crosses the road at an intersection or other place, account for 30% of the total injuries among children. This two are the major causes of children pedestrian road accidents in Bangladesh. The accident due to playing on or besides roads is about 4%.

Table 4: Distribution of Child Pedestrian Fatalities and Injuries in Different Actions (1998-2004)

Pedestrian action	Fatalities	Percent	Injuries	Percent
On Road Edge	1055	47	305	48
Crossing Road	680	30	155	24
On Road	179	8	43	7
Playing on or beside Road	101	4	17	3
Others	244	11	114	18
Total	2259	100	634	100

(Source: Police

Database)

reported MAAP

#### 4.3 Distribution of Child Pedestrian Fatalities and Injuries by Sex

Fatality and injury rates of boys is about more than two times than those of girls. As pedestrians, male children fatality rate is 64% and injury rate is 68%, whereas it is 36% and 32% respectively in case of female children (Figure 5).

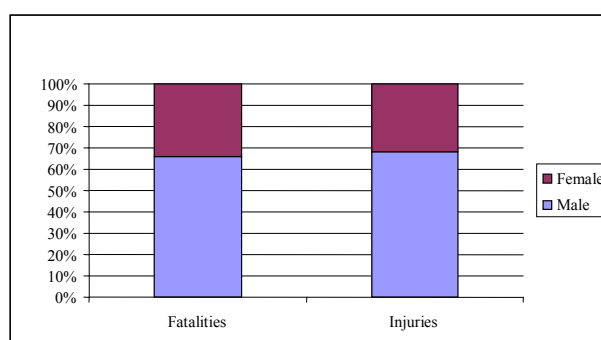


Figure 5: Distribution of Children Pedestrian Fatalities and Injuries by Sex (1998-2004)  
(Source: Police reported MAAP Database)

#### 4.4 Distribution of Child Pedestrian Fatalities and Injuries by Age Group

From the age wise distribution of fatality and injury of child pedestrian it is evident that the age group 6-10 is the most vulnerable of all and contributes almost 56% of all child fatalities.

Table 5: Age-wise Distribution of Children Pedestrian Fatalities and Injuries (1998-2004)

Children Age	Fatalities	%	Injuries	%
0--5	408	19%	66	13%
6--10	1216	56%	261	50%
11--15	561	25%	197	37%
(Total)	2185	100%	524	100%

#### 4.5 Children as Passenger

In Bangladesh, 37% of fatalities and 63% of injuries, due to road accidents, are passengers. On average, children as passenger represented about 10 percent of the passenger fatalities (Table 5).

Table 6: Passenger Fatality and Child Fatality in Bangladesh

Year	Total fatalities	Total Passenger fatalities	Percent	Passenger fatalities with known age	Children Fatalities as Passenger	Percent
1998	2358	848	36	692	78	11
1999	2893	1079	37	864	70	8
2000	3058	1212	40	917	89	10
2001	2388	859	36	599	52	9
2002	3053	1059	35	670	69	10
2003	3334	1243	37	777	67	9
2004	3079	1142	37	627	81	13
Average	2880	1063	37	735	72	10

Source: Police reported MAAP Database

#### 4.6 Children and Bicyclists

Total bicyclist accidents in Bangladesh are 1038 (in the years between 1998-2004), which is 4% of the total accidents. Of the total fatalities the bicyclist represents 4 percent. Among the total bicyclist fatalities, the children involvement is 13 percent, which is 2 percent of the total child fatalities.

### 5. THE RISK TO CHILD SAFETY ON ROADS

It is not just a question of safety aids such as child safety seats in cars, bicycle helmets or pedestrian crossings. Education, training and publicity can help children develop into safe, active and independent road users, as well as helping drivers and other adults make the roads a safer place for children. Improvements to the man-made environment beyond their homes can also facilitate children's safe mobility. This paper has tried to look at the current situation in child safety on the roads in Bangladesh, as well as the latest research results and examples of best practice to portrait how child casualties can be reduced still further. There is indication that traffic accidents tend to predominate over diseases as the single biggest threat to the children in many developing countries and the threat of road accidents to children will further increase with increases in motorization and urbanization. Several factors as outlined below contribute to the risks to children in developing countries (ADB 1996).

- (1) both speed and volume of motor vehicles will increase, especially on rehabilitated roads.
- (2) roadside friction will continue as poor land use planning, operational control, and limited road space lead to conflicting uses of road and road margins;



- (3) road improvements tend to focus on motor vehicle requirements and not on pedestrian needs.
- (4) traffic police can offer only limited help as they are poorly equipped to control motor vehicle traffic and not properly trained to consider pedestrian needs; and
- (5) most parents are unable to provide road safety training to children as they themselves never received any such training and even if they did, traffic conditions have changed dramatically since their childhood.

## **6. CHILD ROAD SAFETY IMPROVEMENT OPTIONS**

The main focus of child road safety might be highlighted on successful programs and strategies that could be adopted by the developing countries like Bangladesh to improve children's safety on the roads and to identify possible further improvements. The success in improving safety for children on road in Bangladesh could be achieved through combined measures to address the behavior of all road users, to improve the road environment and to design vehicles that better protect both their occupants and those at risk outside the vehicle. Child road safety policy and practice should focus three key areas: education, training and publicity; the road environment; and vehicle standards and safety equipment particularly emphasizing safety of children as pedestrians.

### **Education, training and publicity**

Educational measures need to be modified to the child's stage of development, starting with practical training pedestrians as pedestrians, then bicyclist skill, and increasingly involving higher-level skills to match children's increasing independence as pedestrians, passengers and bicyclists. All road users have a duty to keep children safe, so it is also important to target drivers through training and publicity and to make parents aware of their key role in improving the safety of their children. In particular, parents are important role models for their children and can inculcate safe behavior as pedestrians and passengers.

### **Children in the road environment**

Helping children and other road users to adapt their behavior in order to interact safely with traffic in the road environment is only part of what is needed to keep children safe. Traffic engineers, urban designers and planners have a duty to design systems that take account of children's mobility needs, travel behavior and differences in perceptual and reactive capabilities in order to maximize their safety and mobility. Children cannot be expected to comprehend aspects of the built environment and react to stimuli in the same way as adults.

### **Vehicle standards and safety equipment**

The third element to children's road safety is the design of vehicles and safety equipment. Vehicle standards cover both "primary safety" measures that reduce the risk of a crash occurring and "secondary safety" measures that are designed to prevent or minimize injury in a crash. It is these secondary safety measures that are most likely to be specifically designed to increase child safety.

### **Regulatory and engineering Measures**

Vulnerable road users are much more susceptible to accidents when vehicle speeds are high and can even suffer fatal injuries in accidents with motor vehicles at moderate speeds. Thus the most critical and effective measure which should be immediately adopted in every country is to reduce and control speeds particularly in urban areas. This measure alone will greatly reduce the overall number of road deaths as shown by the experience all over the world (e.g. the number of fatalities was reduced by 32% in urban areas after speed limits of 50 km/h were enacted and strictly enforced in Hungary).

#### **6.1 Education and Training for the Children**

Young children do not have the skills to stay safe in traffic. They often can't see past parked cars and they don't have the experience to judge the speed and distance of an oncoming car. Parents and carers should teach children good traffic safety habits early. Also, parents should be awarded for their child's school or pre-school to consider road safety education programs.

Children learn about road safety by watching others. Every parent should always set a good example in front of them. The following tips will help to in assisting children to be safe in traffic.

- Children up to five years of age. Always carefully supervise your children in traffic situations:
  - **Hold** your child's hand when you are near cars.
  - **Explain** what you are doing when you cross the road together. This helps your child to understand how you decide when it is safe to cross.
  - **Set** a good example for your child to copy.
  - **Involve your child** in choosing safe places to play.
  - **Ensure** your child always rides on the footpath or a bicycle track with supervision.
  - **Make sure** you get your child in and out of the car on the kerb side.
  - **Insist** that children wear an appropriate and properly adjusted child restraint or seat belt on every car trip.
  - **Ask** your child's pre-school to run a road safety program.
  
- From five to nine years of age. Supervise your child at all times near traffic:
  - **Talk** about signs and traffic lights. Identify and discuss places where it is safe to cross the road.
  - **Teach** you child how to cross roads using the 'stop, look, listen and think' process - stop at the kerb, look and listen for traffic and then decide whether it is safe to cross. Take the trip to school together along the safest footpaths and use safe crossing places.
  - **Supervise** your child on the way to and from school.
  - **Limit bike riding** to parks, playgrounds or schoolyards and on the footpath with supervision - never on the road without an adult.
  - **Insist** that your child wears an approved helmet when riding a bike.
  - **Insist** that your child wears an appropriate and properly adjusted seat belt or child restraint on every car trip.
  - **Ask** at your child's school what traffic safety programs are being taught.
  
- From 10 to 13 years of age. Children of this age can cope more safely in traffic on their own, but you can still help:
  - **Check** that your child always 'stops, looks, listens and thinks' when crossing the road.
  - **Tell** your child about road laws in simple terms. Go for rides and walks together.
  - **Plan** safe routes to school and places your child often visits.
  - **Talk** about where the child can safely ride.
  - **Insist** that an approved bicycle helmet is worn.
  - **Make sure** your child wears colours that are easy to see.
  - **Insist** that properly adjusted seat belts are worn on every car trip.

The following points need careful considerations regarding children road safety-

- Young children do not have the skills to be in road traffic on their own.
- An adult should always be with children in traffic situations.
- Children learn road safety habits by watching and copying others, so set a good example.
- Explain traffic movement, road safety and road rules to your child
- Make sure your children wear helmets when riding and are properly secured when travelling in cars.

## 7. CONCLUSIONS

The safety of the vulnerable road users especially children must be sufficiently catered for in the road safety engineering strategies and principles. Vulnerable road users are much more susceptible to accidents when vehicle speeds are high and can even suffer fatal injuries in accidents with motor vehicles at moderate speeds. Thus the most critical and effective measure which should be immediately adopted in every country is to reduce and control speeds particularly in urban areas. This measure alone will greatly reduce the overall number of road deaths as shown by the experience all over the world (e.g. the number of fatalities was reduced by 32% in urban areas after speed limits of 50 km/h were enacted and strictly enforced in Hungary).

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