

INTRODUCTION

Pedestrian Safety Global Technical Regulation Preamble

A. STATEMENT OF TECHNICAL RATIONALE AND JUSTIFICATION

I. INTRODUCTION

(a) Pedestrian Accident situation and its analysis

Collected road accident statistics indicate that a significant proportion of road casualties are pedestrians and cyclists who are injured as a result of contact with a moving vehicle.

The majority of these injuries are caused by being struck by the front structure of the vehicle. Most of these accidents take place in urban areas where serious or fatal injuries can be sustained at relatively low speed, particularly in the case of children.

The group collected data from IHRA (International Harmonised Research Agenda) (INF GR/PS/3 and 31), Germany (INF GR/PS/12, 13 and 25), Italy (INF GR/PS/14), the UN ECE (INF GR/PS/15), Spain (INF GR/PS/16), ACEA (INF GR/PS/17), Canada (INF GR/PS/20), the Netherlands (INF GR/PS/21), Sweden (INF GR/PS/41) and Korea (INF GR/PS/70). This data showed that every year in the European Union about 8000 pedestrians and cyclists are killed and about 300,000 injured; in North America around 5000 pedestrians are killed and 85,000 injured; in Japan 3300 pedestrians and cyclists are killed and 27,000 seriously injured; in Korea around 3600 pedestrians are killed and 90,000 injured.

For a detailed analysis, only the IHRA Pedestrian Safety working group (IHRA/PS) can provide full accident study results. The group used the IHRA data as the basis for its study. The data was sourced from Australia, Germany, Japan and the United States.

The following are the IHRA/PS study results.

(i) Distribution of the injuries

Comparing the ages of those involved, statistics show the highest frequency of accidents is for children of 5 to 9 years old, and for adults over 60 years old. Children (aged 15 and under) account for nearly one-third of all injuries in the dataset, even though they constitute only 18 per cent of the population in the four countries included in the IHRA data.

The frequency of fatal and serious injuries (AIS 2-6) is highest for the child and adult head and adult leg body regions.

[Insert Tables from PS 131](#)

Each of these body regions covers more than 30 per cent of total accidents and the group believes it should focus on protecting these body regions.

For the vehicle parts, the major sources of adult head injuries are the top surface of bonnet/wing and windscreen area. For the child head injuries, this is the top surface of the bonnet/wing. For the adult leg injury, the major source is the front bumper of vehicles.

(ii) Crash Speeds

Nevertheless, it is considered that there is scope to mitigate the severity of injuries to pedestrians by improving the front structures of motor vehicles. Crash speeds between vehicles and pedestrians are collected from pedestrian accident data and the cumulative frequency of the crash speeds shows that a crash speed of up to 40 km/h can cover more than 75 per cent of total pedestrian injuries **[Need to elaborate a little and provide citation. Is this all AIS?]** in all regions. If a speed of up to 40 km/h is considered, it will significantly reduce the levels of injury sustained by pedestrians involved in frontal impacts with motor vehicles.

(iii) Target population for this gtr

The IHRA injury data were further analysed to assess the injury distribution by body regions. Four specific pedestrian body to vehicle contact regions were examined. It was found that 40 km/h or less pedestrian vehicle impacts accounted for 58 percent of child head-to-hood contacts, 40 percent of adult head-to-hood contacts, 19 percent of adult head-to-windshield contacts and 50 percent of adult leg-to-bumper contacts. Furthermore, hood impacts account for 41 percent of child head injuries and 19 percent of adult head injuries, windshield impacts represent 49 percent of adult head injuries, and bumper impacts account for 64 percent of adult leg injuries. Based on these distributions of injuries by injury source and vehicle contact area, the target population for this gtr is 24 percent of all child pedestrian head injuries, 17 percent of all adult pedestrian head injuries, and 32 percent of adult leg injuries.

(iv) Targeted motor vehicle categories

Clearly the maximum benefit from making vehicles pedestrian friendly would occur if all types of vehicles comply with these technical provisions, but it is recognized that their application to heavier vehicles (large trucks and buses) would be of limited value and may not be technically appropriate in their present form. For this reason, the scope of application will be limited to passenger cars, sport utility vehicles (SUV), light trucks and other light commercial vehicles. Since these vehicle categories represent the vast majority of vehicles currently in use, the proposed measures will have the widest practicable effect in reducing pedestrian injuries.

(b) Other safety measures