

facts

Road safety - Speed

Speed has been identified as a key risk factor in road traffic injuries, influencing both the risk of a road crash as well as the severity of the injuries that result from crashes.

Excess speed is defined as exceeding the speed limit. Inappropriate speed is defined as driving at a speed unsuitable for the prevailing road and traffic conditions. Excess and inappropriate speed are responsible for a high proportion of the mortality and morbidity that result from road crashes. In high-income countries, speed contributes to about 30% of deaths on the road, while in some low-income and middle-income countries, speed is estimated to be the main contributory factor in about half of all road crashes.

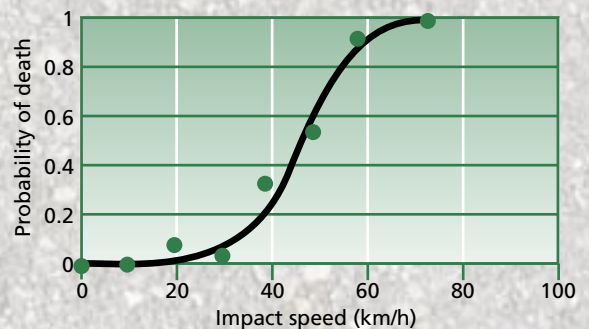
Controlling vehicle speed can prevent crashes happening and can reduce the impact when they do occur, lessening the severity of injuries sustained by the victims.

HOW DOES SPEED AFFECT TRAFFIC COLLISIONS AND INJURY?

- The higher the speed of a vehicle, the shorter the time a driver has to stop and avoid a crash. A car travelling at 50 km/h will typically require 13 metres in which to stop, while a car travelling at 40 km/h will stop in less than 8.5 metres.
- An increase in average speed of 1 km/h typically results in a 3% higher risk of a crash involving injury, with a 4–5% increase for crashes that result in fatalities.
- Speed also contributes to the severity of the impact when a collision does occur. For car occupants in a crash with an impact speed of 80 km/h, the likelihood of death is 20 times what it would have been at an impact speed of 30 km/h.

- The relationship between speed and injury severity is particularly critical for vulnerable road users such as pedestrians and cyclists. For example, pedestrians have been shown to have a 90% chance of survival when struck by a car travelling at 30 km/h or below, but less than 50% chance of surviving an impact at 45 km/h. Pedestrians have almost no chance of surviving an impact at 80 km/hr.

Pedestrian fatality risk as a function of the impact speed of a car



Source: Pasanen E, 1991.

WHAT FACTORS AFFECT SPEED?

Drivers' speed choice is influenced by a number of factors that can be considered as:

- driver-related factors (age, gender, alcohol level, number of people in the vehicle);
- those relating to the road and the vehicle (road layout, surface quality, vehicle power, maximum speed);
- traffic- and environment-related (traffic density and composition, prevailing speed, weather conditions).



WHAT CAN BE DONE TO MANAGE THE ADVERSE EFFECTS OF SPEED?

A number of interventions have been identified to be effective in the management and control of vehicle speed:

- Setting and enforcing speed limits are two of the most effective measures in reducing road traffic injuries.
- Studies suggest that a 1 km/h decrease in travelling speed would lead to a 2–3% reduction in road crashes.
- Experience in many countries has shown that the introduction of speed limits will only have a short lived effect on reducing speeds unless accompanied by sustained, visible enforcement of these limits.
- Speed cameras are a highly cost-effective means of reducing road crashes.
- In some countries, speed limits are posted that vary according to weather, traffic conditions, and time of day. This ensures that speed limits are responsive to local conditions and traffic circumstances, and are therefore more likely to be kept.
- Speed levels can also be affected by developing a safer infrastructure. This can involve modifying the road environment to reduce traffic flow and vehicle speed, thereby providing protection from crashes and reducing injury rates. Such measures include segregating high- and low-speed road users, or discouraging vehicles from entering certain areas.
- Traffic-calming measures have been widely used to reduce crash frequency in many high-income countries. These include the installation of physical speed-reducing measures, such as roundabouts, vertical changes in the road (for example speed humps), horizontal changes in the road (such as road narrowings or rumble strips). Proven traffic-calming

measures can be particularly useful where enforcement of speed control laws may be ineffective.

- The transition from high-speed to low-speed roads can create areas of high risk for crashes – for example, where vehicles exit motorways. Design features can be used to mark transition zones on busy roads approaching towns and villages that can influence drivers' speed. Slower-speed zones and roundabouts are examples of features that are useful in reducing the speed of vehicles.
- Appropriate speed can be imposed on traffic through design features that limit the speed of the vehicle itself. Legislation can be used to encourage the use of such features. This is already being done in many countries with heavy goods vehicles and coaches, and is estimated to contribute to a 2% reduction in the number of injury crashes. Corresponding action is needed for cars and other light vehicles.



WHO recommends that member countries set and enforce speed limits appropriate to the function of specific roads.