MANAGING SPEED

World Health Organization

DECADE OF ACTION FOR ROAD SAFETY 2011-2020

Save Lives #SlowDown

WHO/NMH/NVI/17.7

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Introduction

Road transport systems have contributed enormously to the development of most countries in the world. By improving people's ability to access education, employment and health care and enhancing the efficiency of businesses to provide goods and services, such systems have resulted in a number of positive economic and social benefits.

However, there are also adverse consequences resulting from ever expanding road transport systems and the services they facilitate. Rapid motorization has frequently been accompanied by corresponding increases in road traffic deaths and injuries, while many urban areas now face the additional challenges of increasing levels of air pollution – and associated rises in respiratory diseases – and increasing congestion, which in turn are linked to reduced levels of physical activity and other health consequences.

Speed has a positive effect on mobility in terms of reducing transport times, but it impacts negatively on road safety, affecting both the likelihood of a road traffic crash and the severity of its consequences. Speed also has adverse effects on levels of environmental and noise pollution, and the "liveability" of urban areas.

Over the last decade, along with greater global attention to reducing speed as part of efforts to reduce road traffic deaths and injuries, there has been a growing movement – often instigated at local level – concerned with strategies to manage speed in communities, and the potential benefits in terms of safer and more liveable streets.

Road traffic injuries: a global health and development problem

Approximately 1.25 million people die every year on the world's roads as a result of road traffic crashes. They are the number one cause of death among young people aged 15–29 years. As well as the public health impact of road traffic injuries, the disproportionate impact of road traffic crashes on the younger age groups makes them an important development problem: road traffic crashes are estimated to cost countries approximately 3% of their GDP, with the economic losses in low- and middle-income countries equivalent to 5% of GDP.

Road traffic deaths are not evenly distributed around the world. Low- and middle-income countries represent 90% of the world's road traffic deaths, although people in these countries only own around half of the world's vehicles. The risk of dying on the roads also depends in great part on where people live: Europe has the lowest number of road traffic deaths per 100 000 population while Africa has the highest rate (see Figure 1).

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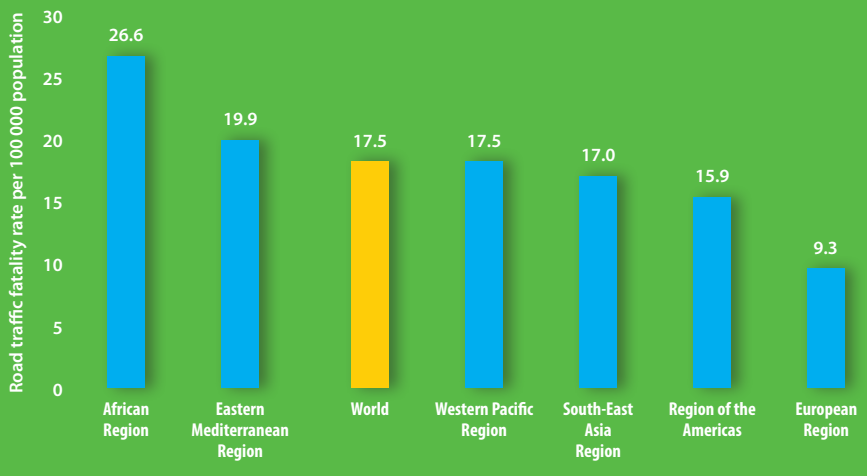
FIGURE 1
Road traffic fatalities per 100 000 population, by WHO region

Source: *Global status report on road safety 2015*. Geneva, Switzerland, WHO, 2015.



As well as disparities in rates, the distribution of road user deaths varies considerably between and within regions. At a global level, about half of all road user deaths (49%) are among vulnerable road users, i.e. pedestrians, cyclists and motorcyclists. However, this distribution varies considerably by region and by country, revealing common transport modes. In countries in the African region, for example, where walking and cycling are an important mode of transport for a large proportion of the population, 38% of deaths are among pedestrians, while in the South-East Asia and Western Pacific regions, motorcyclists comprise the majority of road traffic deaths (33% and 34% respectively).

A global response to road safety

In 2011 the United Nations declared a Decade of Action for Road Safety, which had the target of stabilising and then reducing the number of global road traffic deaths. In September 2015, this goal was augmented by a much more ambitious target within the Sustainable Development Goals[1] which, within its health goal, calls for a reduction in the absolute number of road traffic deaths and injuries by 50% by 2020 (see Box 1).

[1] http://www.un.org/sustainabledevelopment/sustainable-development-goals/

BOX 1

Road safety in the 2030 Agenda for Sustainable Development

SDG Goal 3: Ensure healthy lives and promote well-being for all at all ages
Target 3.6: By 2020, halve the number of global deaths and injuries from road traffic accidents.

SDG Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable
Target 11.2: By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all.

A 5% cut in average speed can result in a reduction of 30% in the number of fatal road traffic crashes.

A safe systems approach to road safety

Although road traffic injuries have been a leading cause of death and injury globally for many years, most road traffic crashes are both predictable and preventable. There is considerable evidence on interventions that are effective at making roads safer: countries that have implemented these interventions have seen corresponding reductions in road traffic deaths. The most successful examples of where sustained reductions in the numbers and rates of road traffic deaths have been achieved are where a "safe systems approach" has been implemented (see Figure 2). This approach to road safety recognizes that the human body is highly vulnerable to injury and that humans make mistakes. A set of complementary interventions are put into place to create safer roads, safer vehicles, safer speeds, and safer behaviour by road users. Together these elements work to accommodate driver error. All parts of the system need to be strengthened so that if one part of the system fails, other parts will still protect people involved. Adopting a safe systems approach necessitates the involvement and the close collaboration of many sectors including transport, health, police, industry and civil society.

FIGURE 2
The safe systems approach to road safety

Source: *Safer roads, safety Queensland. Queensland's road safety strategy 2015-21*. Department of Transport and Main Roads, Queensland Government, Australia, 2015.

Speed and road traffic injuries

Speed is at the core of the road traffic injury problem. More particularly, excessive or inappropriate speed is a key risk factor for road traffic collisions, deaths and injuries. Excessive speed is a problem common to all countries. A study among OECD countries showed that typically, 40–50%, and up to 80%, of drivers were driving above the posted speed limits, while a similar proportion of vehicles travelling at excessive speed has been found in low- and middle-income countries.

Excessive speed is when a vehicle exceeds the posted speed limit for a particular road.

Inappropriate speed is when a vehicle travels at a speed that is unsuitable for the prevailing road, weather and/or traffic conditions but within the speed limits.

What is the contribution of speed to road traffic deaths and injuries?

In high-income countries, speed contributes to about a third of deaths on the roads. In the United Kingdom, for example, speed is responsible for 28% of all road traffic crashes resulting in deaths, while this figure is 30% in Australia. In low-and middle-income countries this proportion is likely to be greater, given the higher proportion of deaths among vulnerable road users.

What is the effect of speed on a crash and the severity of road traffic injuries?

Speed is a contributing factor in the severity of all road traffic crashes. As average speeds rise, so too does the likelihood of a crash resulting in injury. If a crash does happen, the risk of death and serious injury is higher at higher speeds. An increase of 1 km/h in mean vehicle speed results in an increase of 4–5% of fatal crashes. While those travelling in vehicles are much more likely to be injured in both frontal and side impact collisions when travelling at high speeds, the relationship between speed and injury severity is particularly critical for road users who are "vulnerable", i.e. pedestrians, cyclists and motorcyclists, as well as for children and the elderly.

An adult pedestrian has less than a 20% risk of dying if struck by a car travelling below 50 km/h, but almost a

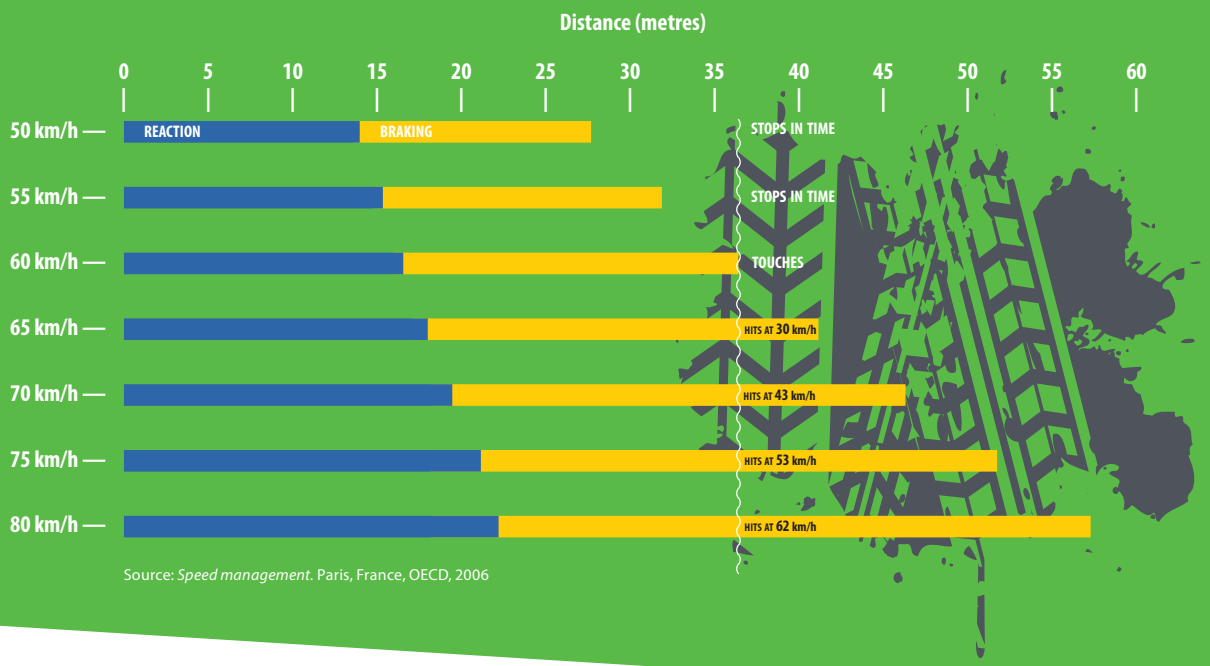
60%

risk of dying if hit at 80 km/h.

What is the relationship between speed and stopping distances?

The higher the speed of a vehicle the greater the stopping distance required, and hence the increased risk of a road traffic crash. For instance, when travelling at 80 km/h on a dry road, it takes around 22 metres to react to an event (the distance travelled during a reaction time of approximately 1 second) and a total of 57 metres to come to a standstill, while at 50 km/h, it takes around 14 metres to react to an event, and a total of 27 metres to come to a standstill (see Figure 3). The latter speed would allow a vehicle to stop in time, successfully avoiding a crash.

FIGURE 3
Stopping distance at different speeds (including reaction time of around 1 second)



Source: *Speed management*. Paris, France, OECD, 2006

What are the factors which influence speed?