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# Allianz Risk Pulse

## Focus: Mobility and Road Safety

# Traffic casualty risks are on the rise

Allianz Center for Technology laments severe deficits in road safety: Many accidents could be avoided

→ **Far too little attention is paid to traffic accidents, although they are one of the most frequent causes of death worldwide. Globally road deaths or injuries occur every six seconds and according to the World Health Organization (WHO) fatal road accidents are on the rise across the globe. However, mobility goes hand in hand with economic factors, prosperity and quality of life and is about more than moving people and goods by technical means. Mobility is a social activity with legal requirements, subject to safety awareness and norm compliance. Risk experts contend that the level of road safety is a question of the economic welfare and technical standards that a country can provide. To effectively fight the rise of road deaths, there is a need for a new safety culture – no traffic system can be safer than the willingness of all users to behave safely.**

Road fatalities are a global challenge: mourning a global 1.2 million fatalities and up to 50 million non-fatal casualties each year means mourning one victim every six seconds. Each traffic death leads to profound human sorrow. In more technical terms, a road death is a loss in developmental resources of any country. And while road accidents are among the major causes of death in every country around the world, traffic safety belongs to the most severely underestimated factors determining the global health status. Even in the media, road deaths usually take the attention backseat after political conflicts or major natural disasters.

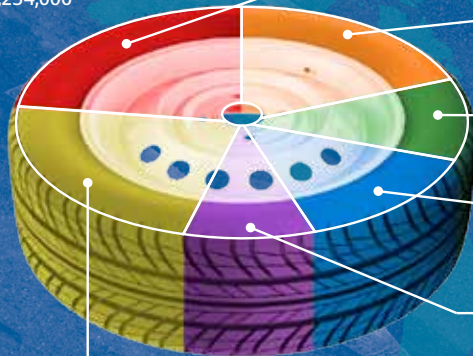


“The lower the per capita income the higher is the risk of becoming a victim to a traffic accident – we need to stop this worrying trend. Road safety must not be a question of income”, says Christoph Lauterwasser, CEO of Allianz Center for Technology (AZT)

## Worldwide Road Deaths by Region

This graphic shows WHO's modelled data on absolute road deaths.

Global  
1,234,000



Western Pacific

278,000 / 15.6

Africa

235,000 / 32.2

America

142,000 / 15.8

Eastern Mediterranean

176,000 / 32.2

Europe

118,000 / 13.4

South-east Asia

285,000 / 16.6

This graphic shows WHO's calculation of global road death rates per 100,000 population by region.\*

Global  
18.8



WHO defines the regions as follows: America includes North-, Middle- and South America. Europe includes the Russian Federation. Western Pacific includes Australia, Mongolia and China. South-East Asia includes India. Eastern Mediterranean includes Near East, Middle East and most Arab countries.

\* The accident rates have been shown as a pie diagram for more visual clarity, although this is not proper mathematical practice.

Source: Allianz / WHO

The current WHO list of leading causes of death places road traffic injuries at rank number nine – behind heart disease, HIV and other medical factors but ahead of terror and conflict (published rankings from 2004). In some global regions, the risk of dying from a road accident is ranked even higher. For example, an African person aged 15 to 44 is nearly as likely to die from “violence” as from a road accident (ranked 3 and 4 respectively). And even in highly volatile countries like Afghanistan, Iraq, Sudan, Yemen or Lebanon, people are more likely to be in a major traffic accident than to die from “war and conflict” (the former is ranked as cause number 6, the latter as cause number 9). Although the data does not reference the current political situation in these countries, and current dangers may have shifted, death by accident is significantly high.

“Drunk driving and driver distraction are among the main reasons for serious traffic accidents which are avoidable”, says Christoph Lauterwasser, CEO of Allianz Center for Technology (AZT)

In 2009, the WHO’s Regional Committee for the Eastern Mediterranean region, which includes most of the so-called Arab world, posted road traffic injuries as “a growing public health concern”. Based on the 2009 “Status Report on Road Safety”, the WHO provides in-depth country by country road fatality tables. They show that Western Pacific, South-East Asia, and Africa stand for two thirds of all fatalities. According to WHO’s calculations, the fatality figure in most of the countries in these regions increased by a third from 2000 to 2010. There is of course a correlation to the high population density, but this is only part of the explanation. Instead, experts see high deficits in traffic systems and minimum standards of infrastructure. During the same period, Europe and America experienced a decrease. This positive trend can be tracked particularly in OECD countries – and there especially in EU member states, where a long-term and permanent reduction of road fatalities is evident, according to the OECD in 2011. Enhancements in law, education, rescue-services, and vehicle safety in these countries led to a 20 to 50% reduction of road death figures between 2000 and 2009.

According to WHO’s expert prognosis, the worldwide road traffic injuries rank among the causes of death will climb to the frightening fifth place by 2030. While most European countries may see a slight

Road Deaths	
The Top 20 Nations by absolute numbers*	The Top 20 Nations by population**
1 India	1 Eritrea
2 China	2 Cook Islands
3 USA	3 Egypt
4 Russia	4 Libya
5 Brazil	5 Afghanistan
6 Iran	6 Iraq
7 Mexico	7 Angola
8 Indonesia	8 Niger
9 South Africa	9 U.A.E.
10 Egypt	10 Gambia
11 Vietnam	11 Iran
12 Thailand	12 Mauritania
13 Ukraine	13 Ethiopia
14 Pakistan	14 Mozambique
15 Japan	15 Sudan
16 Saudi Arabia	16 Tunisia
17 Malaysia	17 Guinea-Bissau
18 South Korea	18 Kenya
19 Venezuela	19 Chad
20 Turkey	20 United Republic of Tanzania
...	...
24 Germany	165 Germany

\*This graph ranks the countries based on the reported absolute number of road deaths.  
 \*\*This graph ranks the countries based on estimated road deaths per 100,000 population.  
 Source: Allianz compilation of estimated road deaths based on WHO status report, 2009.

decrease of road deaths in the same time period, most other nations face an increase, especially those which are classified as low income countries by the World Bank.

**Traffic is not just about cars: Pedestrians and cyclists at highest risk**

Global traffic safety experts must take large cultural differences into account: in many regions of the world, traffic is not just or not even mainly about cars. Two- and three wheelers of all sorts – powered by



Traffic chaos in Pakistan: The global death risk per mileage travelled is highest for powered two-wheelers, pedestrians or cyclists.

Source: Allianz / WHO

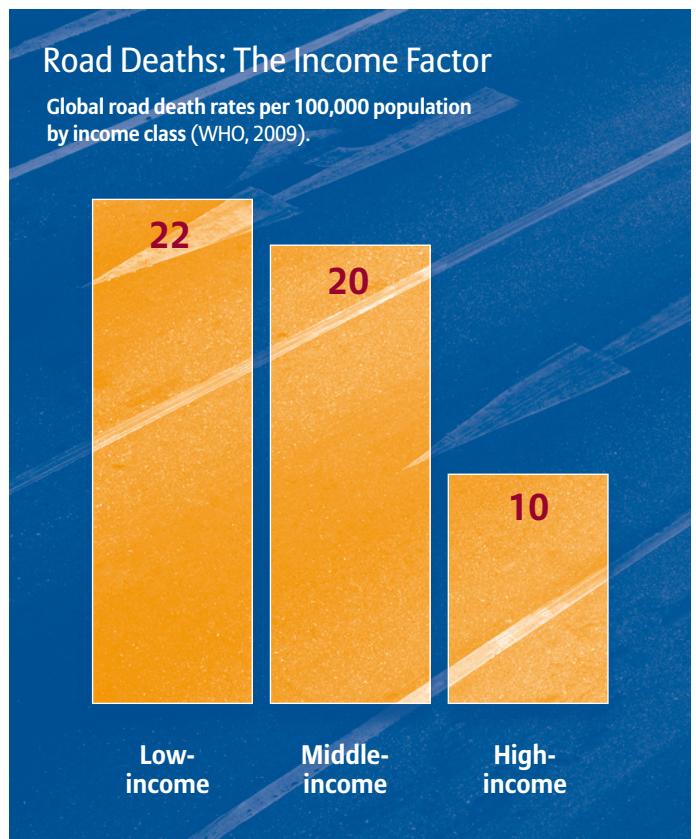
Source: Allianz / picture-alliance / dpa

small engines or human power – belong to the most common means of transport in many countries. Long distance walking or even having animals in traffic is still a matter of course for various regions in the world. Traditional traffic safety thinking that focuses on the crashworthiness of cars will not save the lives of those most at risk.

Overall, the global death risk per mileage travelled is highest for powered two-wheelers, pedestrians or cyclists. In the EU, those in a motor vehicle have a nine time lower death risk (WHO, 2004). In this way, income is a major factor in becoming a victim to a traffic accident.

For example in Indonesia, 61% of traffic deaths are of 2- and 3-wheeler drivers or passengers. In Brazil more than 50% of traffic fatalities are pedestrians and 2- and 3-wheelers. In Russia one third of traffic deaths were motorized drivers against two thirds being pedestrians, two-wheelers and car passengers. Figures for the Western Pacific Region show that the “vulnerables” are at highest risk in low-income countries (70% vs 47%). But also for the European region, which includes many high-income nations, the amount of unprotected victims sums up to 39%, a whole 28% being pedestrians. In high-income regions, young people and seniors are at highest risk. For example in Germany, two thirds of the road deaths of those aged 65 years or more are cyclists, pedestrians and passengers; only one third of the seniors struck by a fatal car accident was actually driving a car. For adults, this figure is the opposite: three quarters die as drivers, while only one quarter dies as a “vulnerable”.

There is one category of fatal car accidents, which does not follow any income or regional trends: young drivers are unfortunately acknowledged to be overrepresented in the crash-risk statistics all over the world. “Road traffic injury” is listed as the leading cause of death worldwide for those aged 15 to 29.



### Road crash casualties: a tragedy of poverty

Studies done by the World Bank have uncovered the relationship between traffic safety and the economic state of a country. Traffic crash fatality rates correlate with the per capita gross domestic product (GDP) according to Elizabeth Kopits & Maureen Cropper, who published a study on this in 2003. Today, more than 90 percent of all road deaths occur in low- and middle-income countries, according to WHO. Globally, the road death rate for low income nations is double the rate in high income nations.

The situation of low-income nations also becomes clear when looking at the vehicles. Here too, the low-income countries lead another gruesome statistic: they account for 42 percent of all traffic accident fatalities worldwide, even though they count little more than 9 percent of all registered vehicles. According to WHO's status report on road safety in the African region, Africa accounts for nearly 20% of global road deaths, while having less than 2% of all vehicles. High-income countries on the other hand have more than half of all registered vehicles but face only 8.5 percent of all fatalities.

Apart from the psychological aspects of death and physical handicap, the financial implication for the individuals affected and their family is of course much worse in low-income regions. In some parts of the world, the loss of a small moped can economically destroy an entire family.

The globalization impact on society is reflected in changing national mobility structures and habits – economic growth does lead to changing mobility patterns. Many developing countries show a rapid increase in motorized traffic. However, economic growth does not automatically lead to better safety. The development in mobility exposure is accompanied by a very negative development: at least a temporary rise in per vehicle or per mileage accident rates.



The World Bank predicts a remarkable increase of fatalities in prospering emerging nations until 2020. In India, the traffic death rate will increase by 147%, in China by 92%. A similar trend occurred in post-war West Germany – well into the prosperous 1960s. The peak of road deaths in Germany was reached in the early 1970s. Since then, Germany has countered with many effective safety regulations like the mandatory seat belt, urban speed limits, or licensing improvements. Accordingly, the death rates have been decreasing ever since.

### The key to more road safety: “Safety culture”

How can we avoid the fatal delay between economic growth and the decrease of road fatalities? How can growth be combined with the appropriate traffic safety structures from the beginning? The United Nations’ “Decade of Action for Road Safety”, which runs between 2011 and 2020 was set up to address exactly these issues by bundling expert know-how and tried and true safety features, which are considered to be international standard regardless of economic situation or political system.

Money and infrastructure are just one part of the solution in the fight against traffic deaths. Safety culture research shows that mobility is more than the sum of vehicles, street-kilometres, driver’s licenses and safety instruments. It is also more than moving goods and people. Mobility is a living social process. William A. Tillman and George E. Hobbs, two leading transport psychologists, wrote as early as 1949 that the driving style mirrors the driver’s day-to-day behaviour. The same can be said for the entire traffic system of a society: no traffic system can be safer than the willingness of all users to comply with its norms.

While economic indices of transport grow, the legal and social frameworks for safer roads must grow as well. Safety on the roads is a product of operating reliability, legal certainty and of the acceptance to delegate individual rights to the community. So while money will buy safer vehicles, construct better roads and pay for educational campaigns, safety will not come from prosperity alone. Road risks are after all “man made”.

“The goal of reducing the world’s road accidents can be achieved only by a joint effort to optimize operating liability, legal certainty and the willingness of the drivers to rethink their behaviour”, says Christoph Lauterwasser, CEO of Allianz Center for Technology (AZT).

The World Bank’s “Global Road Safety Facility Strategic Plan” (2009) points out that safety management capacity weaknesses are widely evident in developing regions and hinder improvements in road safety. But the same criticism comes from WHO representatives for the Eastern Mediterranean region – a region, which includes better income nations as well.

Motorized transport in the industrialized world is only just celebrating its first centenary. The last 100 years have seen the development of vehicles and road design, transport law, safety, education and driver behaviour improvement. It is a century of experience with safe and unsafe behaviours – on the road, behind the wheel and in many other areas of life. Over the decades, a safety culture has developed, which those nations, who are only just developing their road and transport systems, can and should profit from.

## Allianz supports “Vision Zero”

→ “Vision Zero”, which lobbies for a reduction of road traffic victims to zero, is promoted by the OECD and supported broadly by governments and NGOs. “Vision Zero” may sound overly ambitious, but it has a very simple message: any accident could have been avoided.

“Vision Zero” is an action paper, which calls on all nations to implement the following:

- adopt a highly ambitious vision for road safety
- set interim targets to move systematically towards the vision
- develop a Safe system approach, which is essential to achieve the targets
- exploit proven interventions for early gains
- conduct sufficient data collection and analysis to understand crash risks and current performance
- strengthen the road safety management system
- accelerate knowledge transfer
- invest in road safety
- foster commitment at the highest level of government

The “Vision Zero” philosophy asks to fight every single accident case. It tells us what working-package to carry out next. It reminds us with every death that we could have done more.

Together with OECD and the European Transportation Safety Council (ETSC), Allianz supports “Vision Zero” in various fields. Most recently, Allianz and the FIA Road Safety Fund have started a cooperation under the UN umbrella. The Allianz Center for Technology (AZT Automotive), which is the road safety center of competence of Allianz, is a signatory of the “European Road Safety Charter”. The AZT safety projects follow WHO’s aim to enhance global road safety.

### Safer roads: what must change

WHO and the World Bank agree that political will, law implementation, organizational management structures for road safety, proper accident documentation and rule enforcement are necessary basics. Several UN member states are still lacking some of these ingredients – to some extent.

The promotion of *passive safety* (that is addressing the impact of an accident) by promoting seat-belt use, child restraints or helmets – the US Insurance Institute for Highway Safety has called these the “*low hanging fruits*” – still needs to be implemented in many countries. For example in the African region, seat-belt law is often still reserved for the front seats only. In the Eastern Mediterranean region, only 30 percent of the countries have seat-belt laws for all car occupants and only 10% have child safety restraint laws (WHO Report for the Eastern Mediterranean Region, 2010). Helmet use for 2- and 3-wheelers urgently needs to be promoted and technical standards for helmets need to be introduced. Promoting active safety, which means addressing prevention, needs to continue at a faster pace: a lack of school educational modules or even lax driver licensing illustrates this problem. Apart from awareness campaigns, laws and controls for high risk groups such as long-distance truck drivers must also be put in place.

Alcohol and drugs (medical or illicit) are a major topic for any nations’ road safety work. According to the OECD, alcohol is responsible for 10 to 32 % of all fatal crashes. No-alcohol driving laws and their enforcement are a necessity – most people will agree.

Driver distraction and fatigue are widely researched causes of accidents, which are much less recognized by the public. One third of all accidents are related to the fact that drivers do not pay proper attention to traffic. Campaigning against distraction is important and the messages must reach all individuals, regardless of their social sphere and regardless of the region, where they live. Death statistics don't make a difference between the driver of a rental car, who gets distracted by using a business smart-phone or the rider of a tuned moped, who is listening to an i-pod.

In urbanized high-income nations with highly dense traffic, advanced driver assistance systems have great potential to fight accidents. Obstacle detection (including pedestrians) and enhancements in sensor technology that support the driver's vision are just two examples that help to reduce accidents or their severity. However, while basics such as vehicle electronic stability control (ESC) are mandatory in many high-income nations, they are considered a luxury elsewhere. Thus, intelligent transport systems, modern street-based and in-vehicle technologies yet wait to find their way to the masses.

### Further reading:



"The Annual Reports of the Global Road Safety Partnership" (Geneva).

WHO Reports. World Report on Road Traffic Injury Prevention (Geneva, 2004), Global Status Report On Road Safety. Time For Action (Geneva, 2009), Regional Status Reports on Road Safety for Africa, America, Eastern Mediterranean, Europe, South-East Asia, Western Pacific (2009 and 2010).

World Bank Global Road Safety Facility Strategic Plan 2006 – 2015 (2009).

The OECD's International Transport Forum Reports. Towards Zero. Ambitious Road Safety Targets and the Safe System Approach (2008). IRTAD Road Safety 2010 Annual Report (2011).

Kopits, Elizabeth., & Cropper, Maureen. Traffic Fatalities and Economic Growth. Washington, DC: The World Bank (2003).

Public transportation safety is another neglected field, according to WHO, in many low-income regions. And yet, the individuals' dependence on this mode of travel is especially high in such areas. Death and accident rates are high and often unreported. Deficits in driver training increase the risk. Safety standards and modern vehicles are badly needed.

The "Global Road Safety Partnership" program was founded within the framework of the "UN Decade of Action for Road Safety" specifically to support the low- and middle-income nations in their efforts to decrease road fatalities. Five pillars were identified for this program, which need special attention: Safer roads, safer vehicles, education of road users, improvements in road safety management, as well as trauma care & rehabilitation.

But you need education and a change in mindset in the entire culture if you want people to abstain from drunk driving, to refuse speeding, to drive defensively and to respect other traffic participants. No plan for action works, when focusing on operational safety without taking the psychological, sociological and political aspects into account. And trying to change people's way of thinking also does not work, unless the right legal framework is in place. Safer road construction must be based on accident hotspot analyses, not on influences. And if you buy your child a bicycle helmet, you must have the certainty, that it will not be stolen by the local gang. Scientific safety measures always must take social realities into account. Only when all of these factors work together, then the goal of reducing the world's road accidents can be reached.



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