

DIFFERENT DRIVERS & VEHICLES. SAFETY FOR ALL



PERSPECTIVES AND STRATEGIES FOR DRIVING INSTRUCTION AND TESTING
BASED ON VEHICLE AUTOMATION AND ROAD ACCIDENT SCENARIOS

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INTRODUCTION

What is a good driver ?

What should he/she learn in order to drive safely ?

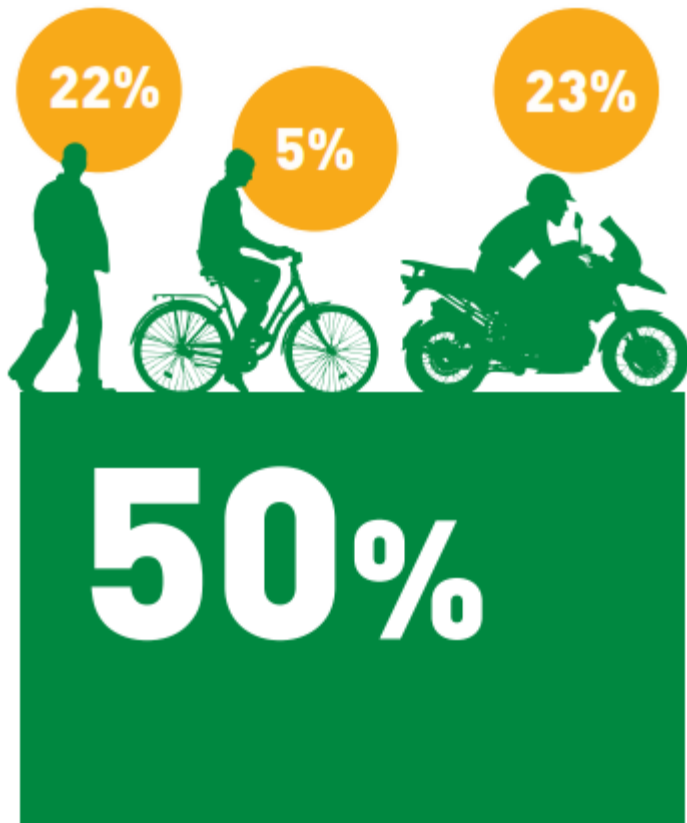


Source: UN strategy for road safety 2018

Education, and specially awareness driving training is needed.

INTRODUCTION

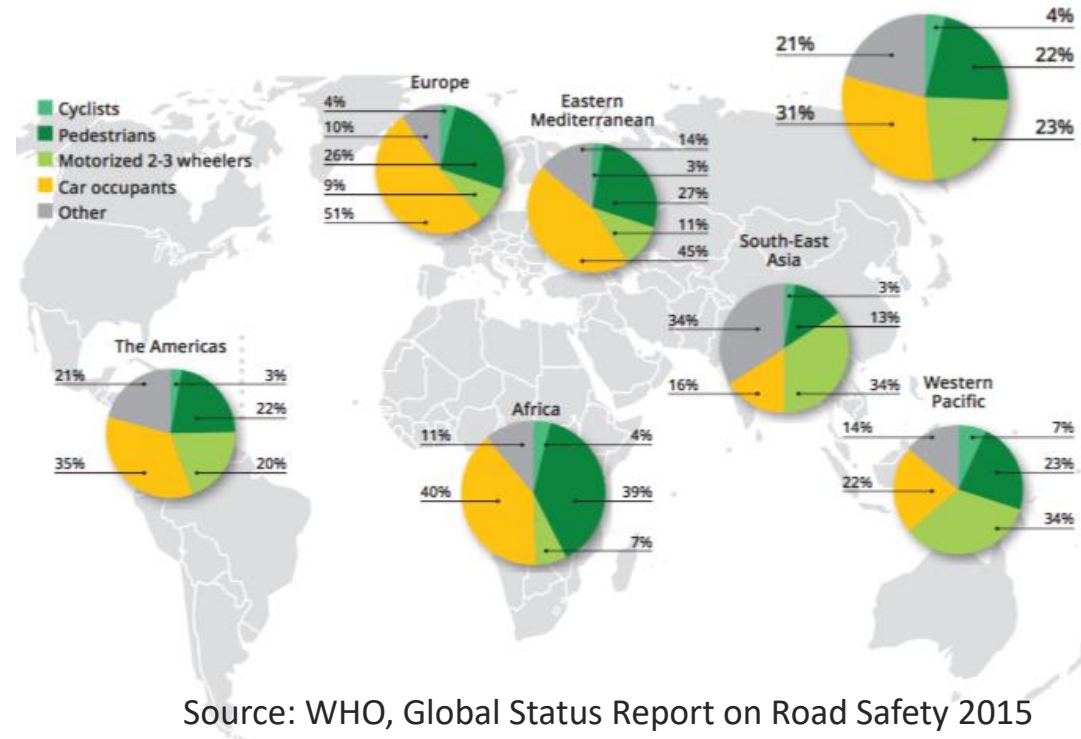
1.24 Million Annual Deaths
 20-50 million injured



50% vulnerable road users:

- Pedestrians;
- Cyclists;
- Motorcyclists.

Source: WHO, Global Status Report on Road Safety 2013



Source: WHO, Global Status Report on Road Safety 2015



Driver training should focus on the protection of vulnerable road users

Fatalities in EU-28:

	Total	Cars	Mopeds	Motorcycles	Pedestrians
2000	55243	29567	2373	5232	10854
2010	31130	14918	1088	4516	6264
2018	25350	11267	651	3849	5305

Fatalities per million inhabitants in EU-28:

	Total	Cars	Mopeds	Motorcycles	Pedestrians
2011	60,9	28,6	2,0	9,1	12,8
2018	49,3	22,0	1,3	7,5	10,4

- The number of fatalities had decrease in EU-28; ✓
- The number of fatalities per million inhabitant had decrease in EU-28; ✓
- However, ...

Sources: CARE 2018, EUROSTAT 2020



Percentage of fatalities in overall fatalities in EU-28:

	Cars	Mopeds	Motorcycles	Pedestrians
2000	53,5%	4,3%	9,5%	19,6%
2010	47,9%	3,5%	14,5%	20,1%
2018	44,4%	2,6%	15,2%	20,9%

Vehicles per million inhabitants (variation 2011-2018):

	Cars	Mopeds	Motorcycles
EU-28	8,05%	-17,61%	1,93%
Greece+Spain+Italy+Portugal	6,09%	-16,09%	10,46%

Sources: CARE 2018, EUROSTAT 2020, ACEM 2020

- The percentage of fatalities of motorcycle accidents had been increasing; 
- The number of motorcycles had increase in EU-28; 
- The increase of motorcycles in Southern Europe has been higher than the increase of cars.

VULNERABLE ROAD USERS

Driver Awareness Training

Vulnerable road users represents about 50% of the fatalities and serious injuries in Europe and worldwide.

Driver Awareness Training is crucial to reduce vulnerable road users' fatalities.

Achieving Vision Zero Road Safety requires priority on vulnerable road users.

AUTOMATION OF VEHICLES



Tremendous progresses in the last years concerning active safety of cars.

AUTOMATION OF VEHICLES

Active safety technology in Europe	Cars	Heavy trucks and Buses	Motorcycles
Intelligent Speed Assist (ISA)	✓	✓	
Rear Cross Traffic Alert (RCTA)	✓	✓	
Forward Collision Warning (FCW)	✓	✓	✓
Lane Departure Warning (LDW)	✓	✓	
Blind Spot Detection (BSD)	✓	✓	✓
Traffic-Sign Assist (TSA)	✓	✓	
Alcohol interlock installation facilitation	✓	✓	
Lane Keeping Assist (LKA)	✓	✓	
Adaptive cruise control (ACC),	✓	✓	✓
Autonomous Emergency Braking (AEB)	✓	✓	
Event Data Recorders (EDR)	✓	✓	
Reversing detection systems	✓	✓	
Emergency stop signal	✓	✓	
Tyre pressure monitoring system	✓	✓	
Vulnerable road user detection and warning on front and side of vehicle	✓	✓	
Driver drowsiness and distraction warning	✓	✓	

- EU Regulation 2019/2144 will impose a wide range of safety equipment's from 2022.
- This regulation only applies to cars, vans and trucks. Not for motorcycles.
- These systems have conceptual limitations. They don't work at any speed.

 Available and mandatory

 Available and soon mandatory

 Available and not mandatory

AUTOMATION OF VEHICLES



SAE J3016™ LEVELS OF DRIVING AUTOMATION™

Learn more here: sae.org/standards/content/j3016_202104

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	SAE LEVEL 0™	SAE LEVEL 1™	SAE LEVEL 2™	SAE LEVEL 3™	SAE LEVEL 4™	SAE LEVEL 5™
What does the human in the driver's seat have to do?	You are driving whenever these driver support features are engaged – even if your feet are off the pedals and you are not steering			You are not driving when these automated driving features are engaged – even if you are seated in “the driver’s seat”		
	You must constantly supervise these support features; you must steer, brake or accelerate as needed to maintain safety			When the feature requests, you must drive	These automated driving features will not require you to take over driving	

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	These are driver support features			These are automated driving features		
What do these features do?	These features are limited to providing warnings and momentary assistance	These features provide steering OR brake/acceleration support to the driver	These features provide steering AND brake/acceleration support to the driver	These features can drive the vehicle under limited conditions and will not operate unless all required conditions are met	This feature can drive the vehicle under all conditions	
Example Features	<ul style="list-style-type: none"> • automatic emergency braking • blind spot warning • lane departure warning 	<ul style="list-style-type: none"> • lane centering OR • adaptive cruise control 	<ul style="list-style-type: none"> • lane centering AND • adaptive cruise control at the same time 	<ul style="list-style-type: none"> • traffic jam chauffeur 	<ul style="list-style-type: none"> • local driverless taxi • pedals/steering wheel may or may not be installed 	<ul style="list-style-type: none"> • same as level 4, but feature can drive everywhere in all conditions

- Honda Legend approved in Japan, commercialized in 2021;
- Level 4 and 5 are being tested on the roads;
- Active safety equipment have limitation and drivers should know that;
- Motorcycles are still on level 0 of automation. Training of motorcyclists is especially important nowadays.

Fatal Tesla Crash in Texas Believed to Be Driverless



Source: Wall Street Journal, 2021/4/18

Safety technologies in a 2021 luxury model



Source: Mercedes 2021

- ✓ Safety equipment are designed to work in specific conditions and for low speeds.
- ✓ Driver must always be attentive to the driving task.
- ✓ Driver training must emphasis this aspect.

- Vulnerable road users represent about 50% of the fatalities worldwide. Driving training must focus on the protection of these users.
- The variety and quality of safety equipment's in cars are rapidly increasing. The goal is full automation. However, these equipment's have limitations. Driver will still play a key role in the next decades;
- Active safety equipment helps drivers. Do not replace drivers. This message should be emphasised in driving training.
- The share of motorcyclist's fatalities in overall road fatalities in Europe is increasing. Increasing Safety through Awareness and Driver Training is crucial. The driving training of motorcyclist will have an important role in the next years.