European Transport Safety Council

Brescia, 3 Aprile 2017

Politiche per la sicurezza srtradale

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STRUCTURE

- Where are we now: figures especially for South Eastern EU Countries (SEE)
- Need for better data
- Integrating mobility and urban planning
- Reccomendations

The European Union has funded several RTD projects about road safety

- DUMAS : Developing Urban Management And Safety
- eSUM pdf : European Safer Urban Motorcycling
- I&I Days :Information and Initiative Days
- OSSA : Open framework for Simulation of transport Strategies and Assessment
- REVEAL : Remote Measurement of Vehicle Emissions at Low Cost
- ROSACE : Road Safety in cities: change road safety education in europe
- SAU : Urban Accident Analysis Systems (Sistemas de Análisis de Accidentalidad Urbana)
- TRAINER : System for driver Training and Assessment using Interactive Evaluation tools and Reliable Methodologies
- WATCH-OVER : Vehicle-to-Vulnerable roAd user cooperaTive communication and sensing teCHnologiesto imprOVE transpoRt safety
- SAFETY NET
- DACOTA : Road Safety Data, Collection, Transfer and Analysis
- RANKERS : Road of European road safety measures

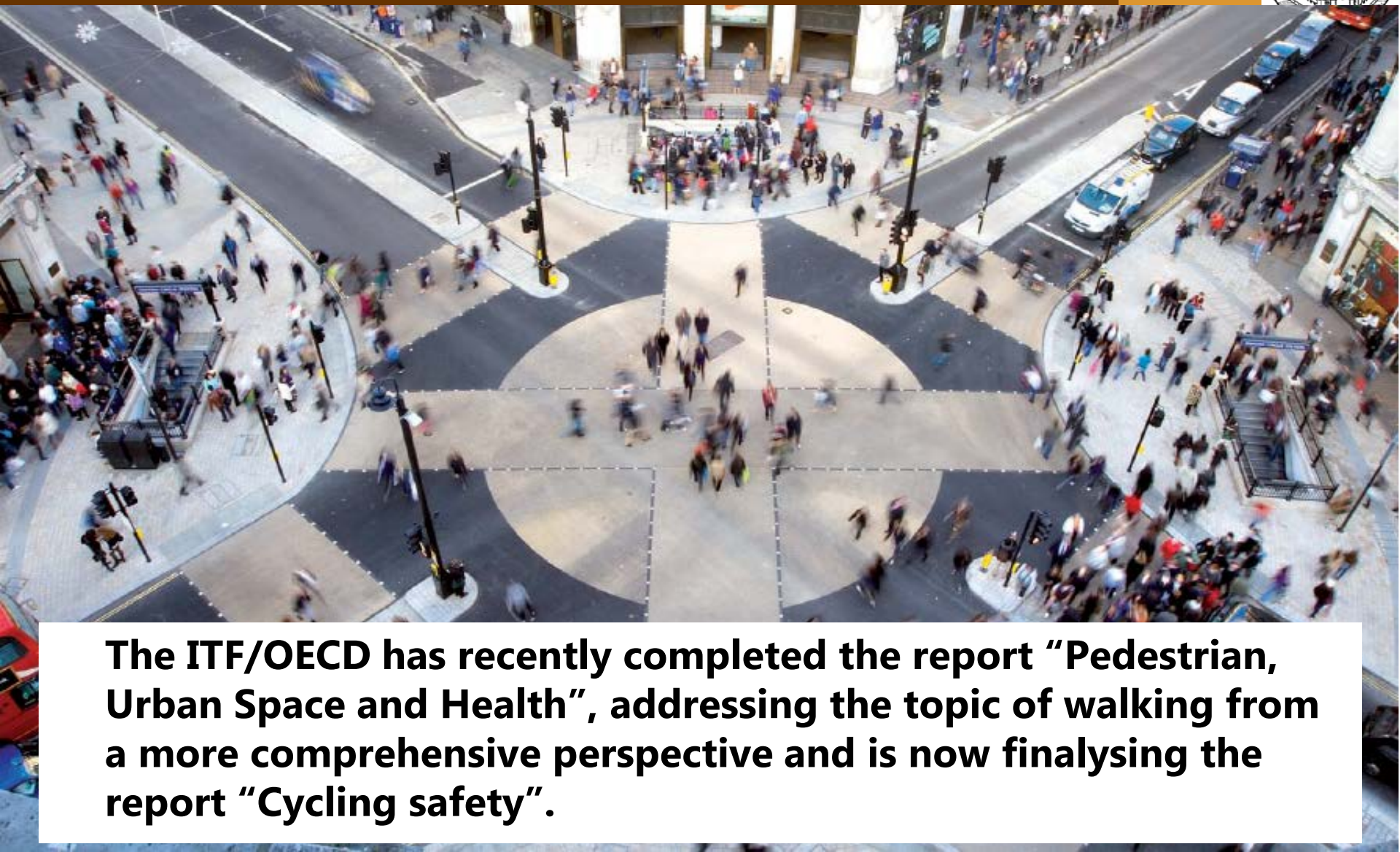
The European Union has funded several RTD projects on pedestrian safety:

- ADONIS: Analysis and Development Of New Insight into Subsitution of short car trips by cycling and walking
- WALCYING: Walking-cycling
- Cost Action 358 "Pedestrian Quality Needs – PQN project"
- PROMPT: PROMote Pedestrian Traffic in cities
- INTRO: Intelligent Roads
- LIVE: Tools to injury prevention
- PENDANT : Pan-European Co-ordinated Accident and Injury Database
- PROMISING: Promotion of mobility and safety of vulnerable road users
- SAMERU: Safer Mobility for Elderly Road Users
- SARAC II: Quality criteria for the safety assessment of cars based on real-world crashes - phase 2
- TRACE : Traffic Accident Causation in Europe

The European Union has funded several RTD projects on Cyclist safety:

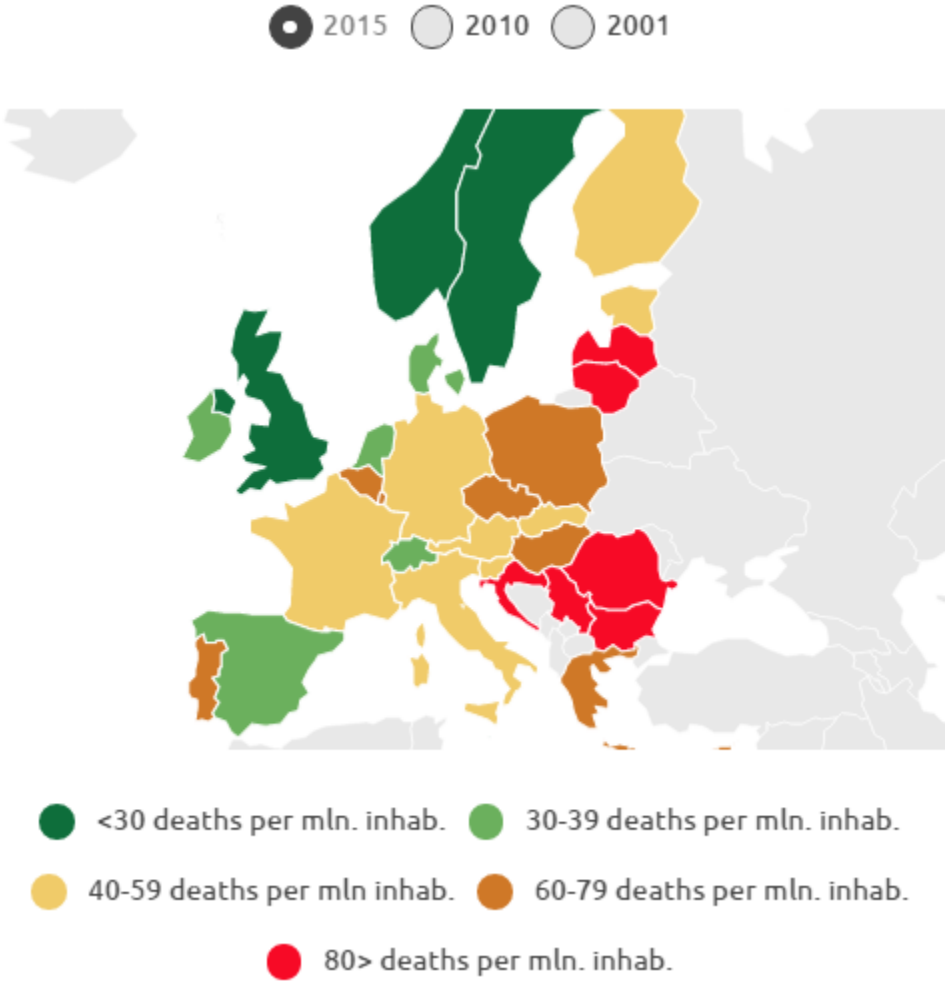
- ADONIS: Analysis and Development Of New Insight into Subsitution of short car trips by cycling and walking
- WALCYING: Walking-cycling
- BIKE PAL: Cyclists' Best Friend
- PROMISING: Promotion of mobility and safety of vulnerable road users
- ROSYPE: Road Safety for Young People in Europe
- SAFECYCLE : ICT applications for safe cycling in Europe
- SAMERU: Safer Mobility for Elderly Road Users
- SMART RRS: Innovative Concepts for smart road restraint systems to provide greater safety for vulnerable road users

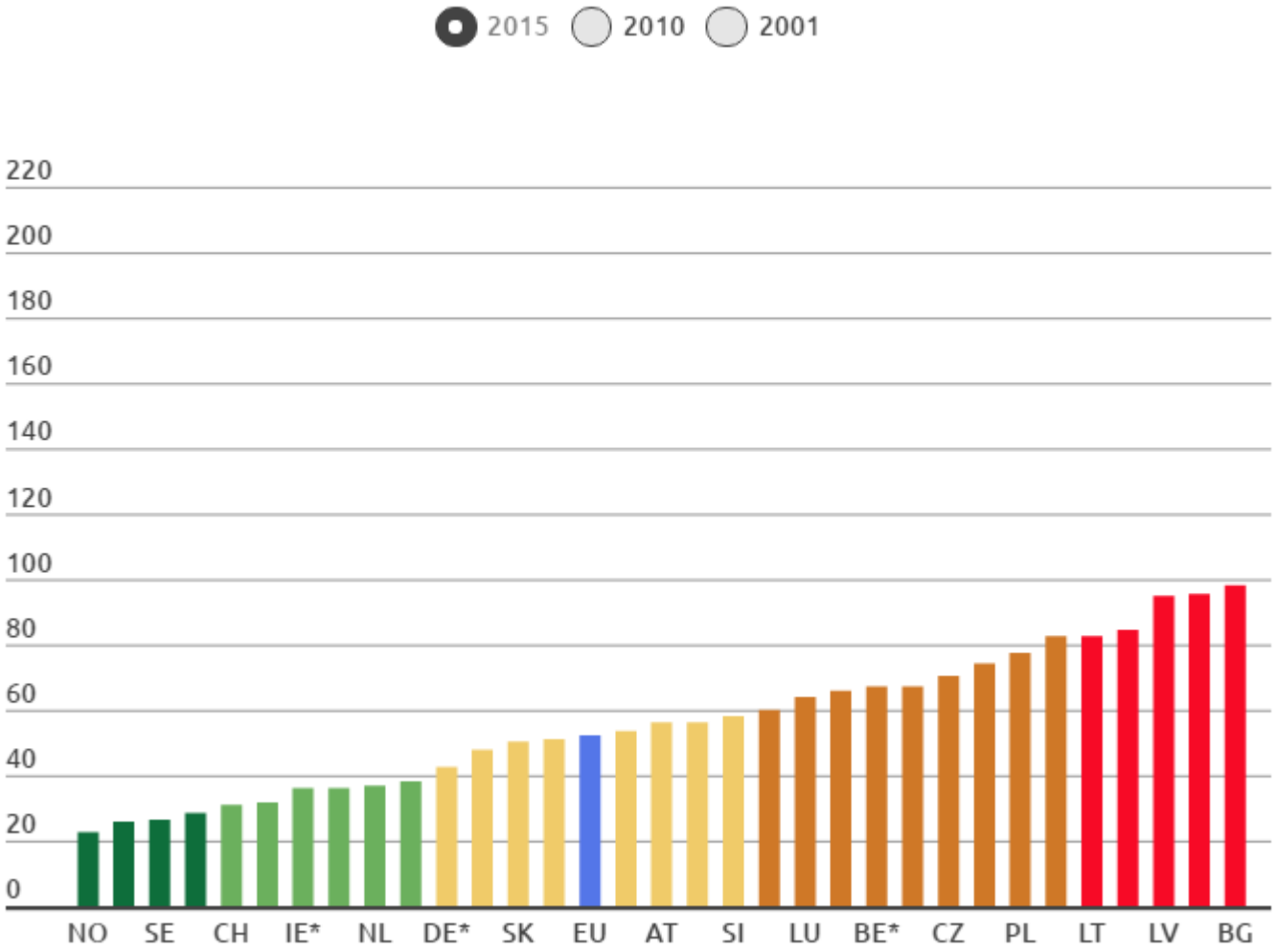
State of the art



The ITF/OECD has recently completed the report "Pedestrian, Urban Space and Health", addressing the topic of walking from a more comprehensive perspective and is now finalising the report "Cycling safety".

Road safety in Europe: some figures (2016)

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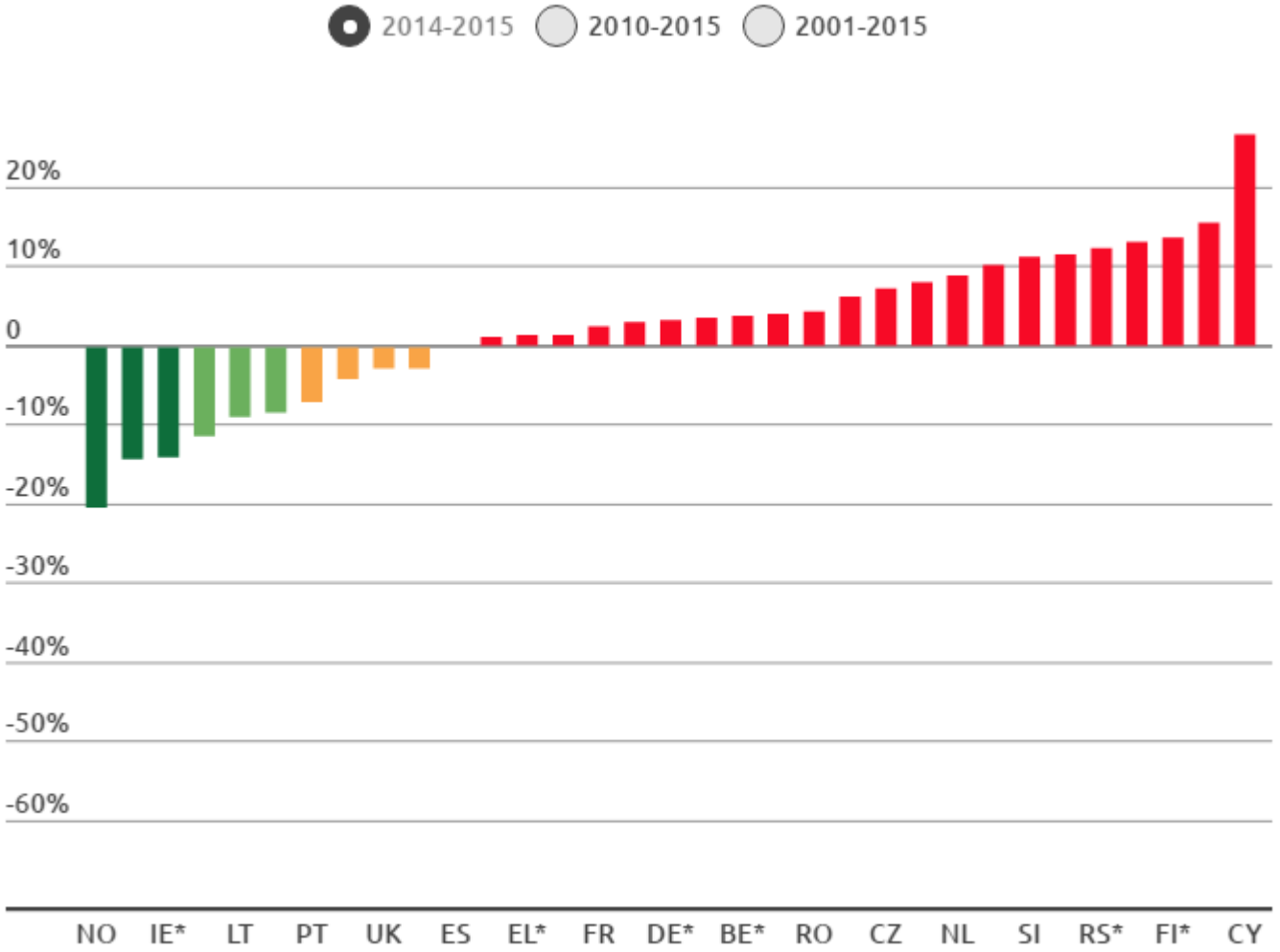
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52 road deaths per million inhabitants in the EU in 2015

compared to 63 in 2010 and 112 in 2001

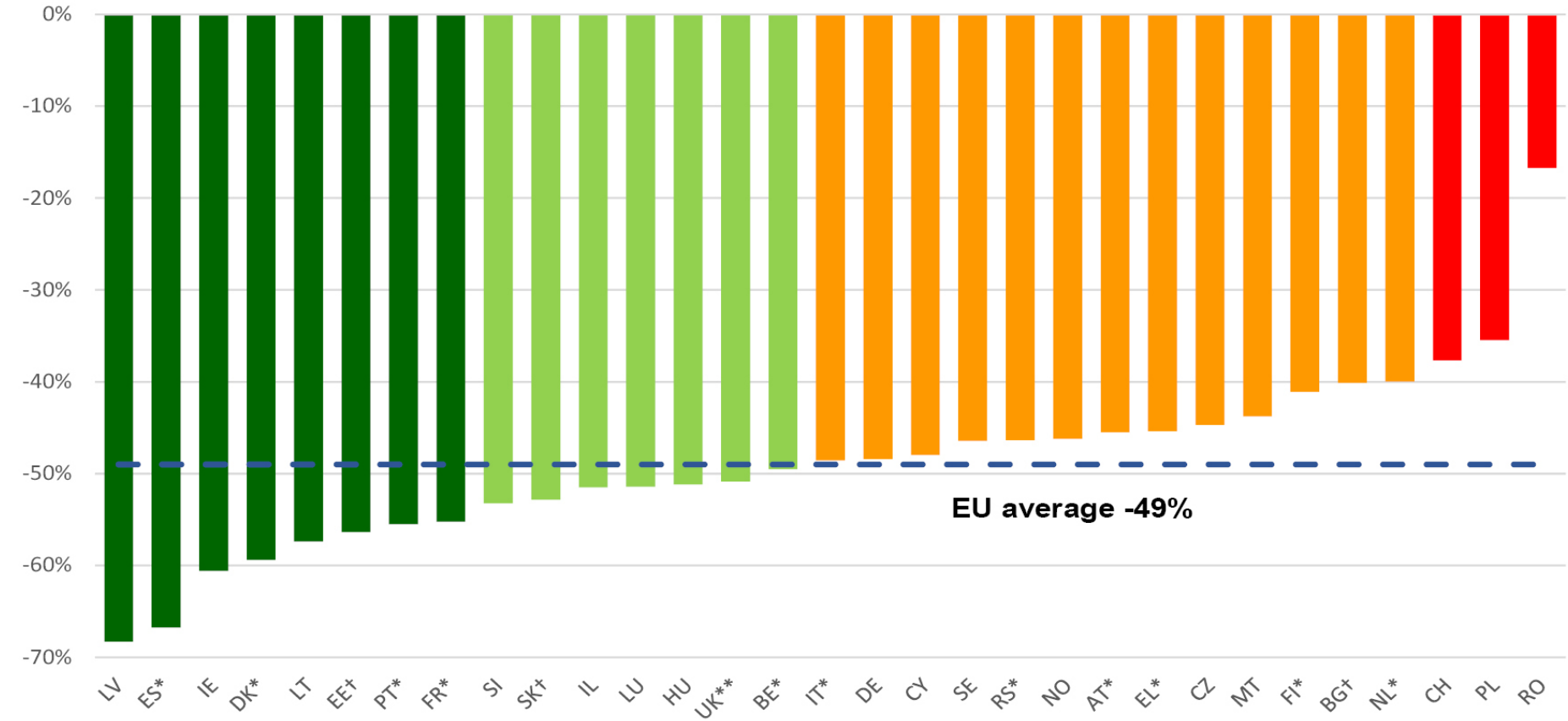
A gap between countries

road mortality still differs by a factor of three between the groups of countries with the highest and the lowest risk

Norway - Road Safety PIN award winner 2016

with the lowest road mortality rate in Europe - 23 road deaths per mln. inhabitants. Find out more.

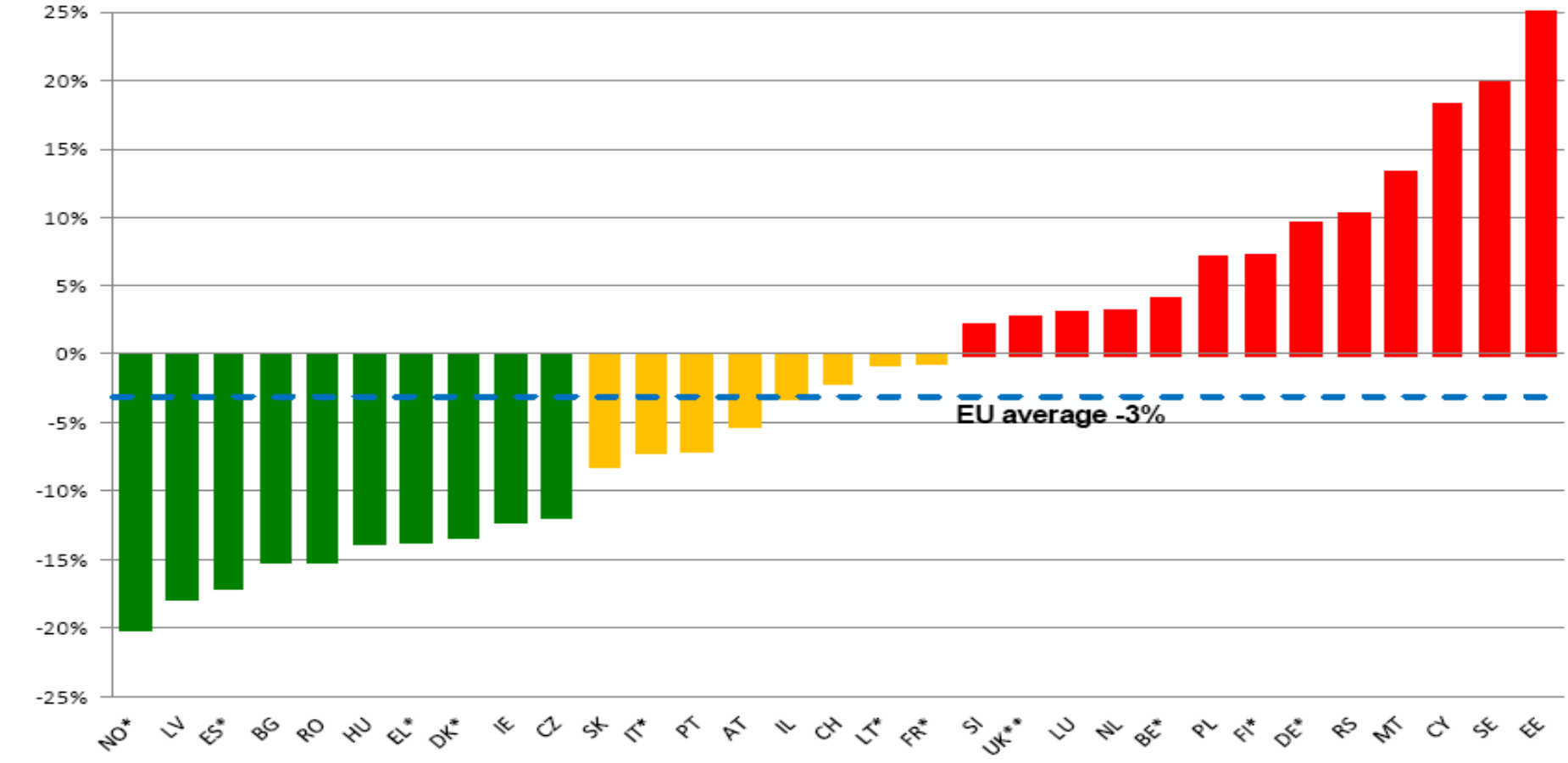
What has been achieved so far …



Percentage change in road deaths between 2001 and 2012

** Provisional estimates for 2011 from now on*

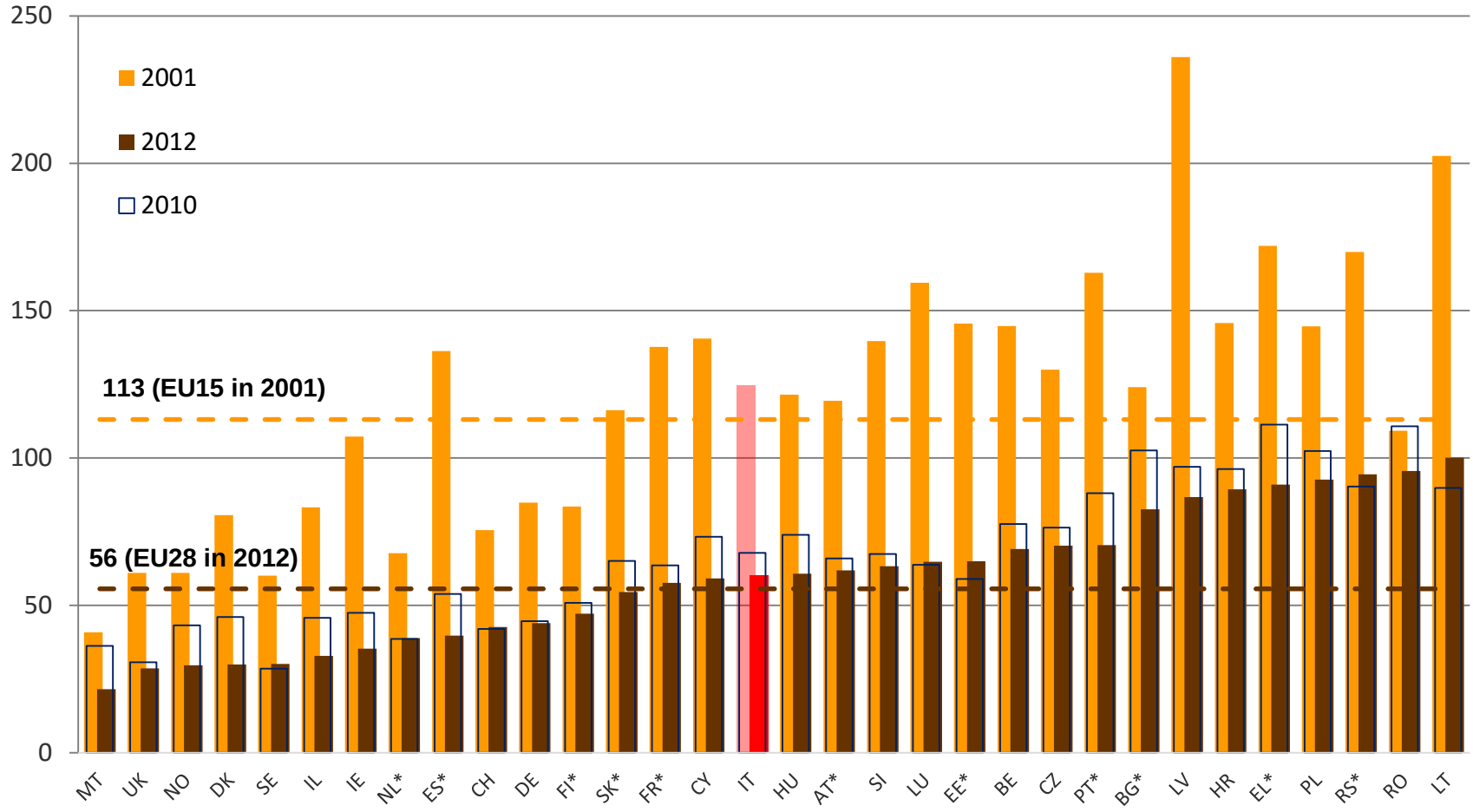
What has been achieved so far (Source ETSC)



Percentage change in road deaths between 2010 and 2011

UE 27 Country	Absolute Value			Percentage Value		
	2001	2010	2011	2001/2010	2001/2011	2010/2011
Austria	958	552	523	-42.4	-45.4	-5.3
Belgium*	1,486	840	875	-43.5	-41.1	4.2
Bulgaria	1,011	776	658	-23.2	-34.9	-15.2
Cyprus	98	60	71	-38.8	-27.6	18.3
Denmark*	431	255	221	-40.8	-48.7	-13.3
Estonia	199	79	101	-60.3	-49.2	27.8
Finland*	433	272	292	-37.2	-32.6	7.4
France	8,162	3,992	3,970	-51.1	-51.4	-0.6
Germany*	6,977	3,651	4,002	-47.7	-42.6	9.6
Greece*	1,880	1,258	,1087	-33.1	-42.2	-13.6
Irland	411	212	186	-48.4	-54.7	-12.3
Italy	7,096	4,090	3,860	-42.4	-45.6	-5.6
Latvia	558	218	179	-60.9	-67.9	-17.9
Lithuania*	706	299	297	-57.6	-57.9	-0.7
Luxembourg	70	32	33	-54.3	-52.9	3.1
Malta	16	15	17	-6.3	6.3	13.3
Netherlands	1,083	640	661	-40.9	-39	3.3
Poland*	5,534	3,907	4,189	-29.4	-24.3	7.2
Portugal	1,670	845	785	-49.4	-53	-7.1
UK*	3,598	1,905	1,958	-47.1	-45.6	2.8
Czech	1,334	802	707	-39.9	-47	-11.8
Romania	2,454	2,377	2,018	-3	-17.7	-15.1
Slovakia	625	353	324	-43.5	-48.2	-8.2
Slovenia	278	138	141	-50.4	-49.3	2.2
Spain	5,517	2,478	2,056	-55.1	-62.7	-17
Sweden	531	266	319	-49.9	-39.9	19.9
Hungary	1,239	740	638	-40.3	-48.5	-13.8
UE27	54,355	31,052	30,168	-42.9	-44.5	-2.8

Absolute values and percentage changes in road deaths



Road death rates per million inhabitants in 2012 (compared to 2001 and 2010)

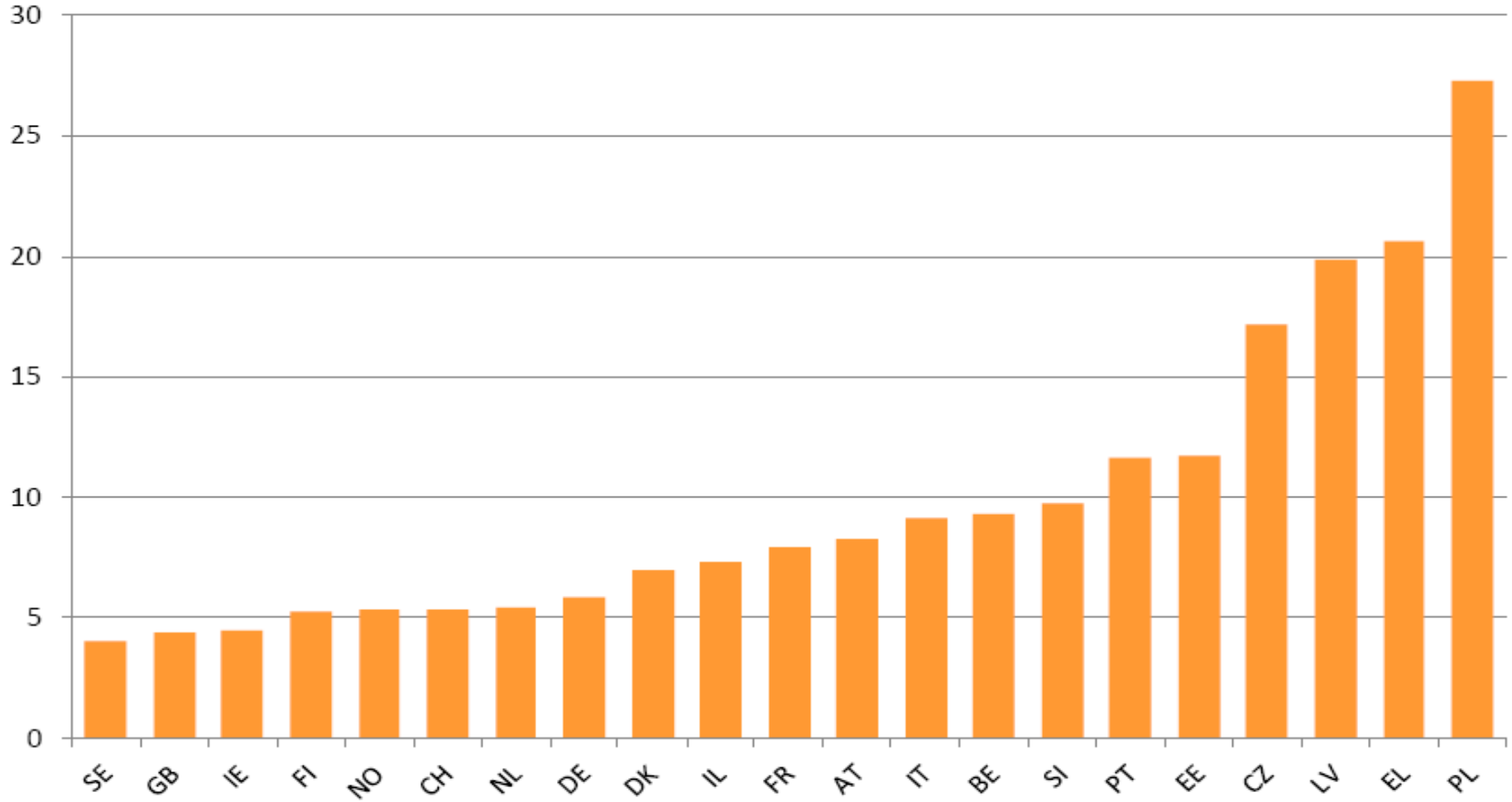
SEE country	2011
Bosnia-Herzegovina*	156
Montenegro*	150
Moldova*	139
Ukraine*	135
Albania*	127
Croatia*	104
Serbia	102
Greece	**101**
Romania	94
Bulgaria	89
FYROM*	79
Slovenia	71
Hungary	64
Italy	64
Austria	62
Slovakia	60
EU	61

Year	Accidents	People involved		Fatalities per million inhabitants	Accidents per 1.000 of vehicles	Fatalities per 100 accidents	Fatalities per 100 people involved
		Fatalities	Injuries				
2001	263,100	7,096	373,286	124.5	6.3	2.7	1.9
2002	265,402	6,980	378,492	122.1	6.2	2.6	1.8
2003	252,271	6,563	356,475	113.9	5.7	2.6	1.8
2004	243,490	6,122	343,179	105.2	5.5	2.5	1.8
2005	240,011	5,818	334,858	99.3	5.3	2.4	1.7
2006	238,124	5,669	332,955	96.2	5.1	2.4	1.7
2007	230,871	5,131	325,850	86.1	4.9	2.2	1.6
2008	218,963	4,725	310,745	79.0	4.6	2.2	1.5
2009	215,405	4,237	307,258	70.4	4.5	2.0	1.4
2010	211,404	4,090	302,735	67.6	4.3	1.9	1.3
2011	205,638	3,860	292,019	63.6	4.2	1.9	1.3

Road fatalities per million population in SEE countries, 2011 (*2010)

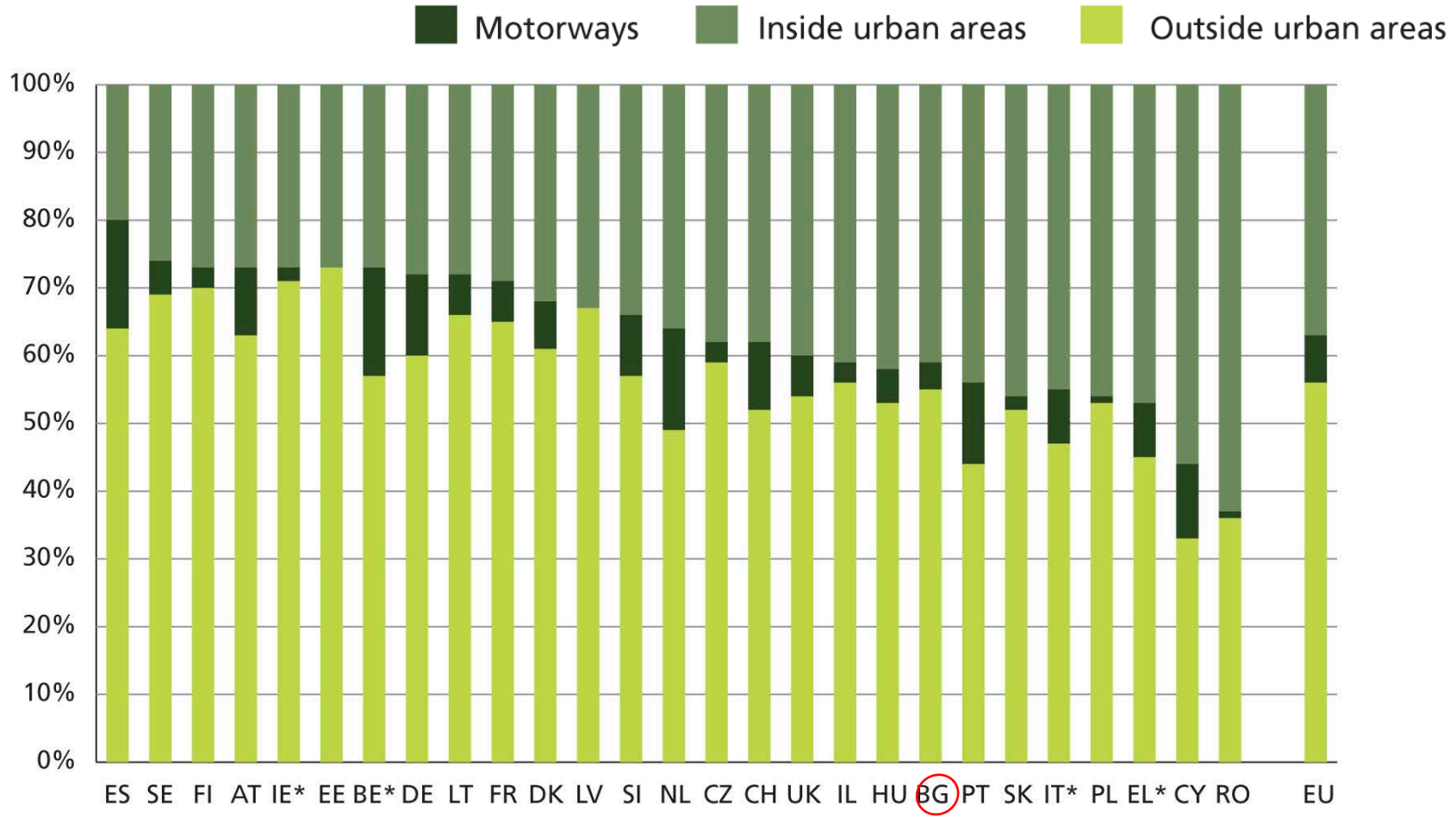
Source: Greek National Report, ROSEE project

Why a stronger effort is needed (Source ETSC)



Road deaths per billion vehicle kilometres (average for the latest three years for which both the road deaths and estimated number of vehicle-km are available)

56% of road deaths is on secondary road network



ETSC (2011), 5th PIN Report

South East Europe and ROSEE project

Main Problem to be addressed in SEE

South-East Europe regions are among the worst road safety performers in Europe, suffering higher road crash injury and mortality rates than the EU average. Countries such as Greece, Bulgaria, Poland and Romania have a road deaths rate per population by far above the EU average of 56 deaths per million inhabitants in 2012 (source: CARE database and national data).

While road deaths have been reduced by 49% on average in the EU28 in the period 2001-2012, some SEE countries members of the European Union are doing worse: especially Romania (-17%).

Road networks are crucial for the economic, political and social development of the South East European Space. Road transport networks create a lifeline - including access to economic resources, health care and educational opportunities.

Transport and motorization levels are increasing throughout the South East European space. The motorisation rate has increased by 8% in the European Union in the period 2001-2009 and in many SEE Countries this growth is particularly marked. That is the case of Slovenia (17%), Hungary and Slovakia (23%), Bulgaria (29%), Romania (37%) (Source: Eurostat).

The new motorisation rates open different perspective to road safety policies in those Countries.

ROSEE

ROad safety in South East European regions

SOUTH EAST EUROPE
Transnational Cooperation Programme

Programme co-funded by the EUROPEAN UNION

HOME | PROJECT | PARTNERS | PILOT AREAS | EVENTS | DOWNLOADS

Promote road safety and improve road network accessibility in South East Europe.

In the South East Europe area, injuries and road crashes are answerable for social and economic losses. South-East Europe regions are among the worst road safety performers in Europe: countries such as Greece, Bulgaria, Romania and, to a less extent Slovakia and Hungary, have a road deaths rate per population by far above the EU average of 62 deaths per million population in 2010 (source: CARE database and national data). In the South-East Europe (SEE) countries that are currently not members of the European Union crash and fatality rates are even higher: in Bosnia-Herzegovina, Serbia and Croatia rates are above 100 deaths per million populations in 2009 (Source: OECD-ITF). This situation is holding down the development of the SEE region and requires urgent improvements. In order to reach the 2020 EU road safety target.

» About the project

ROSEE is a project that involves 6 countries: Italy, Romania, Hungary, Greece, Slovenia, Bulgaria. The project aims to improve road safety performances on primary and secondary networks in the South East Europe area and is financed by "South East Programme – Transnational Cooperation Programme".

» Pilot Areas

» Italy
» Romania
» Hungary
» Greece
» Slovenia
» Bulgary

» South East Europe

The South East Europe programme is a unique instrument which, in the framework of the Regional Policy's Territorial Cooperation Objective, aims to improve integration and competitiveness in an area which is as complex as it is diverse. ***Jointly for our common future*** is the slogan chosen by the 16 participating countries in the programme.
http://www.southeast-europe.net/en/

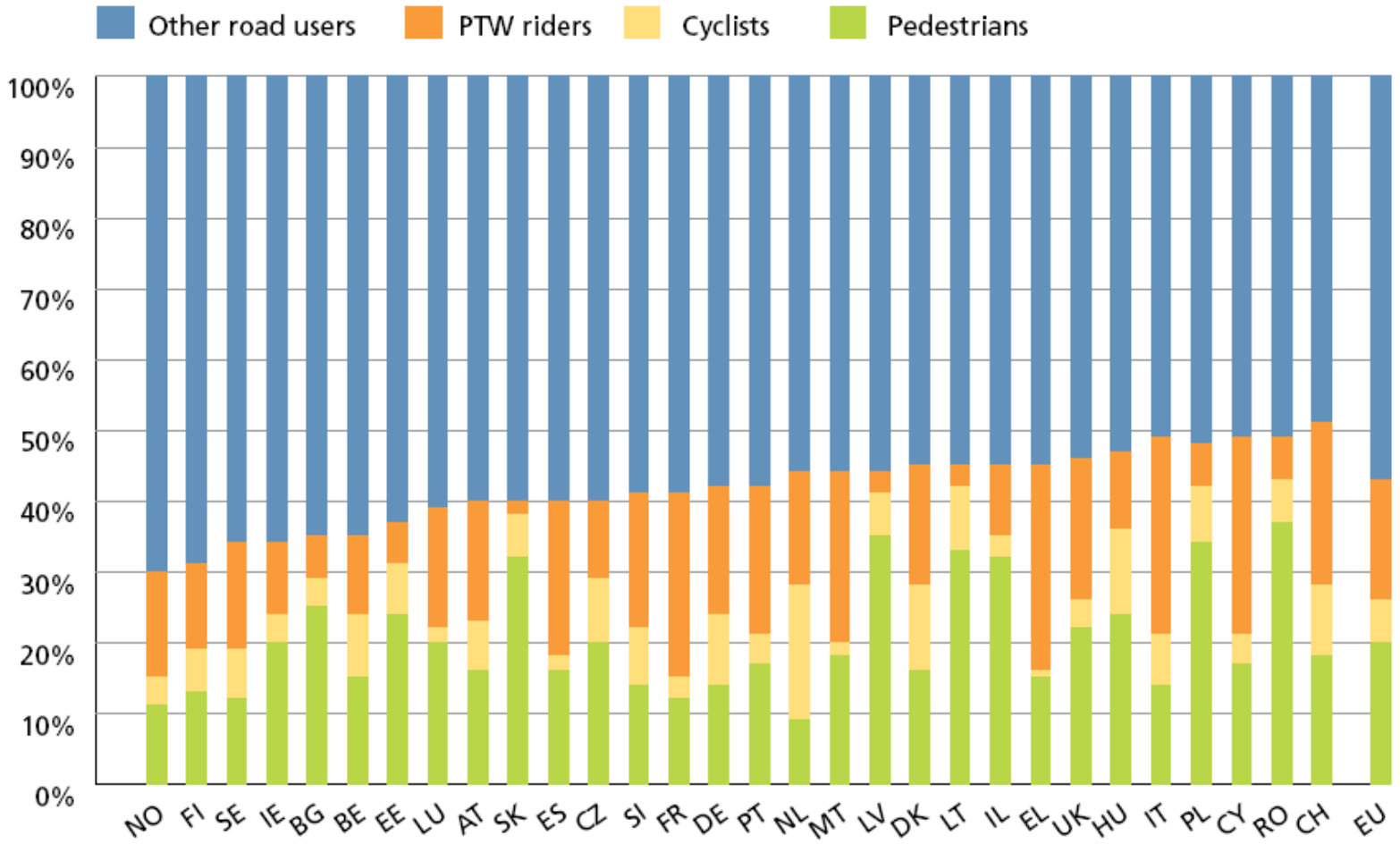
» Communication

VISIT web-site:
*www.**rosee-proj***



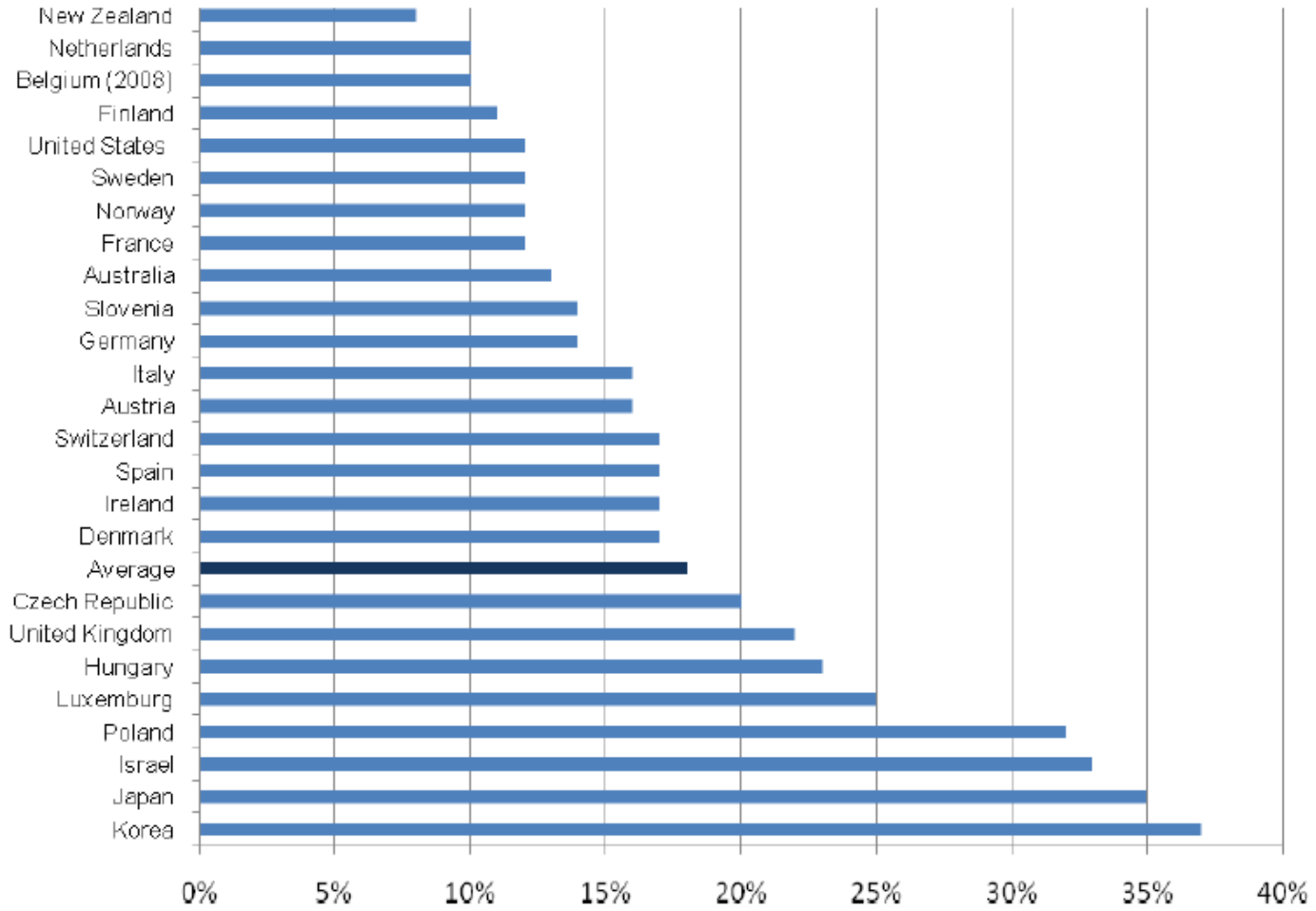

Why a stronger effort is needed …especially for pedestrians and cycle and PTW users?

Why a stronger effort is needed (Source ETSC)



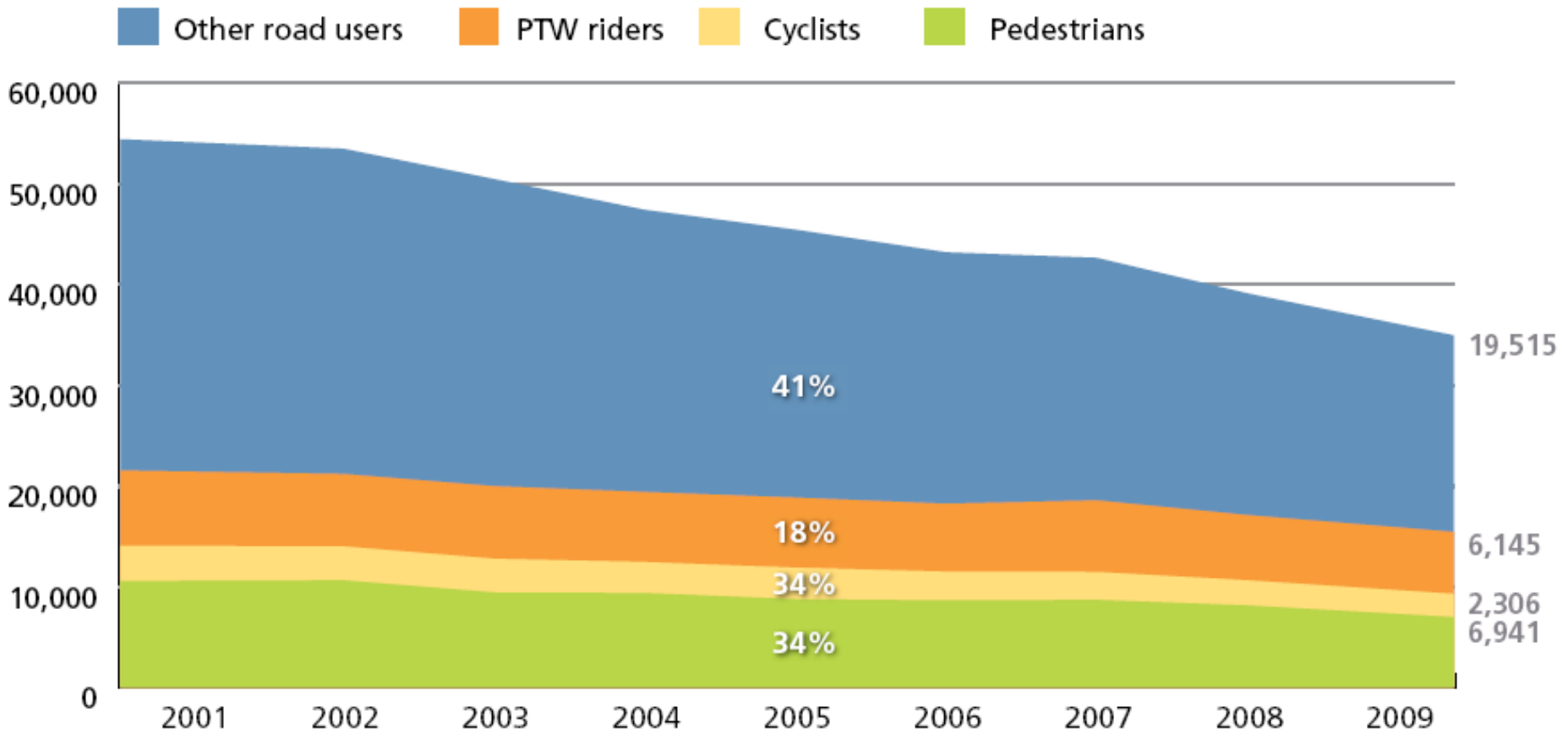
Pedestrians, cycle and PTW users' deaths as a percentage of all road deaths ranked by the share of deaths that were unprotected of all kinds taken together (2007-2009 average)

Why a stronger effort is needed (Source IRTAD)



Pedestrian fatalities as a percentage of all road fatalities (2009 , 26 OECD countries)

Why a stronger effort is needed (Source ETSC)



Reduction in road deaths 2001- 2009 for pedestrians, cyclists, PTW and other road users in EU-27

Why a stronger effort is needed (Source ETSC)

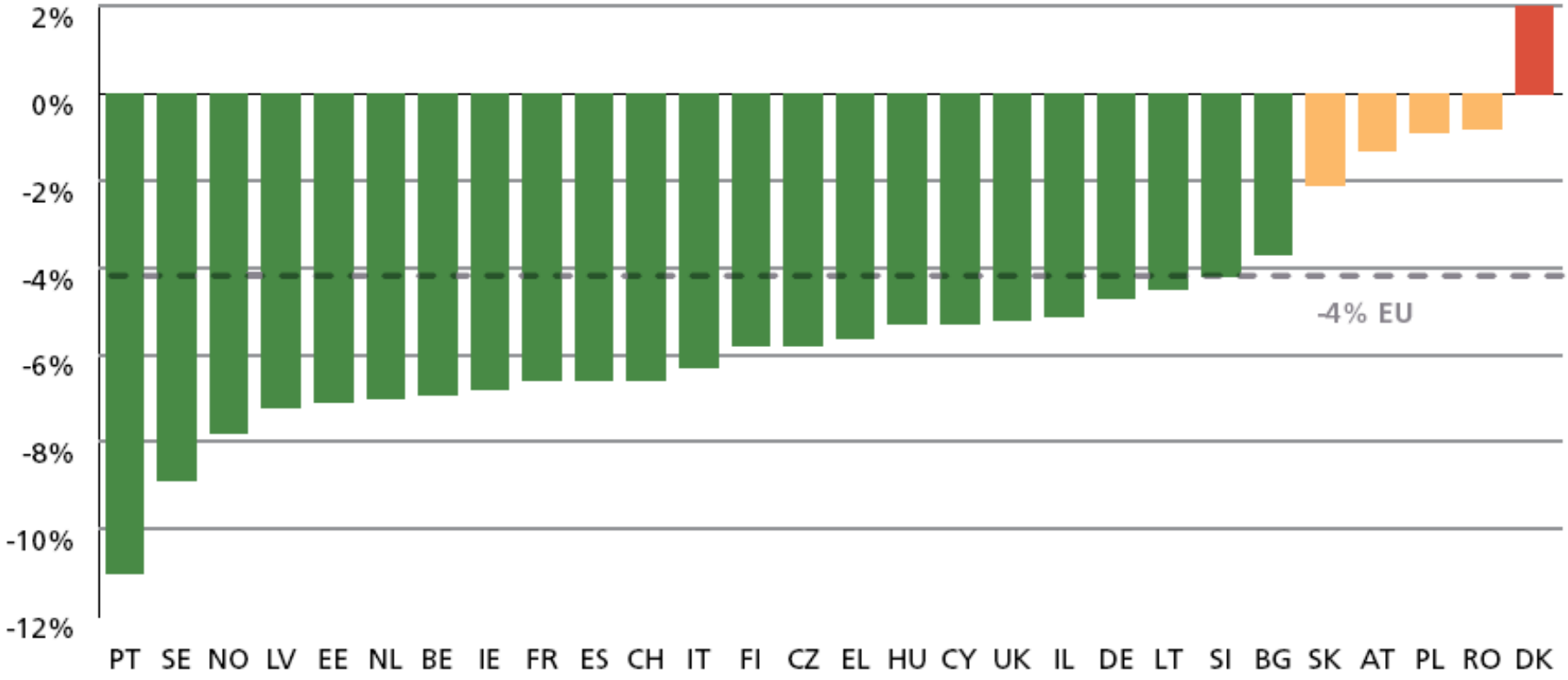


Fig. 10: Average annual percentage change in **pedestrian deaths** over the period 2001-2009.

Why a stronger effort is needed (Source ETSC)

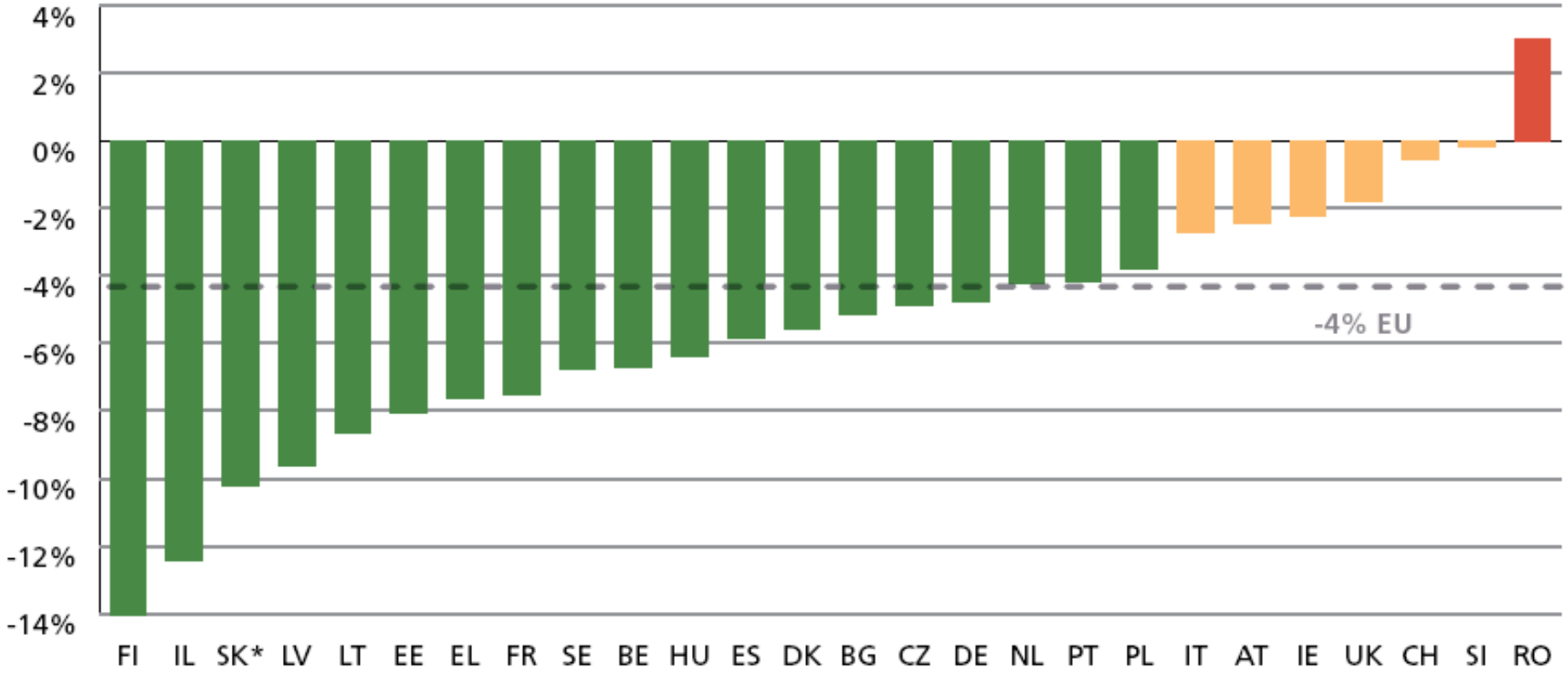
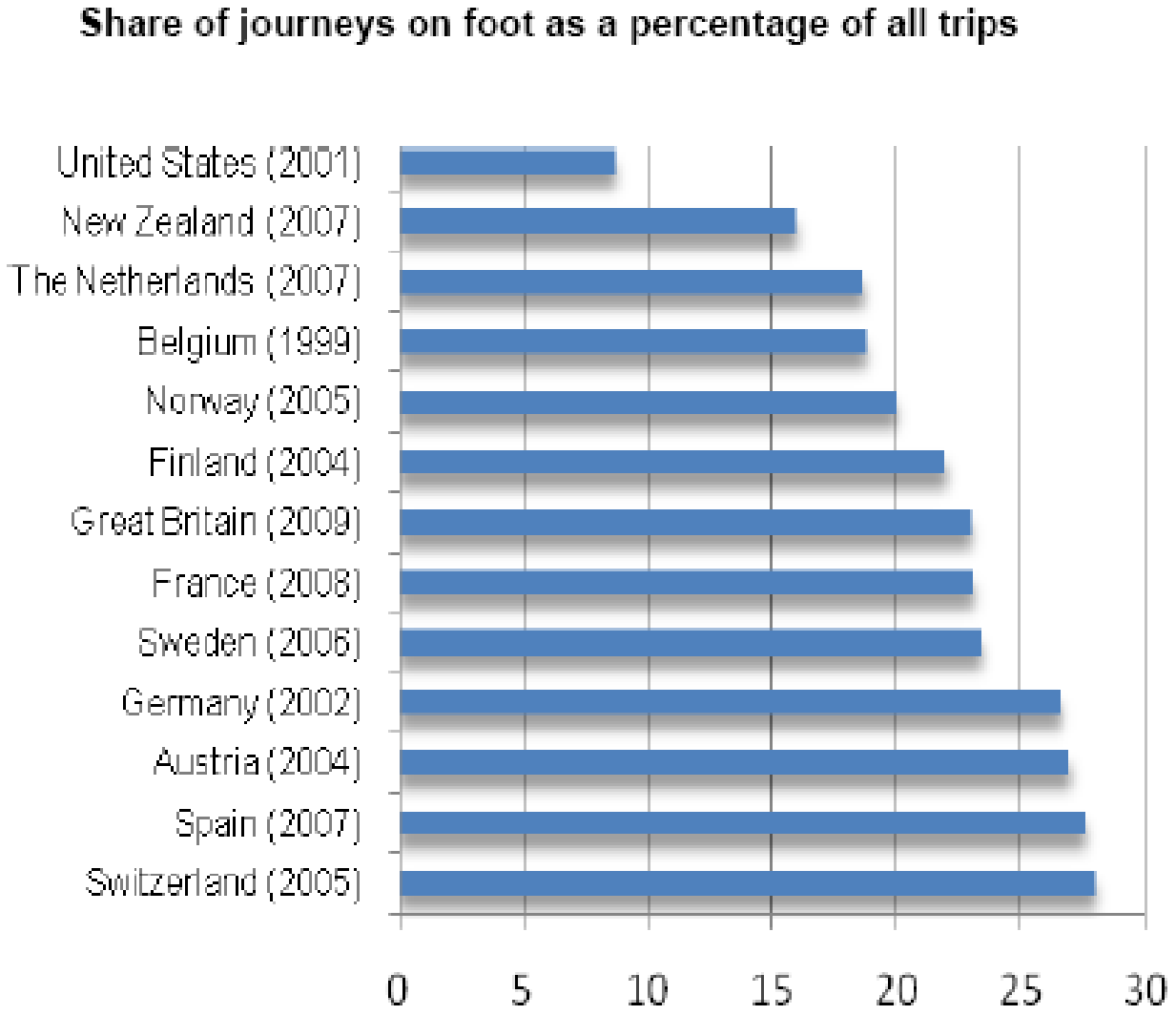


Fig. 11: Average annual percentage change in **cyclist deaths** over the period 2001-2009.

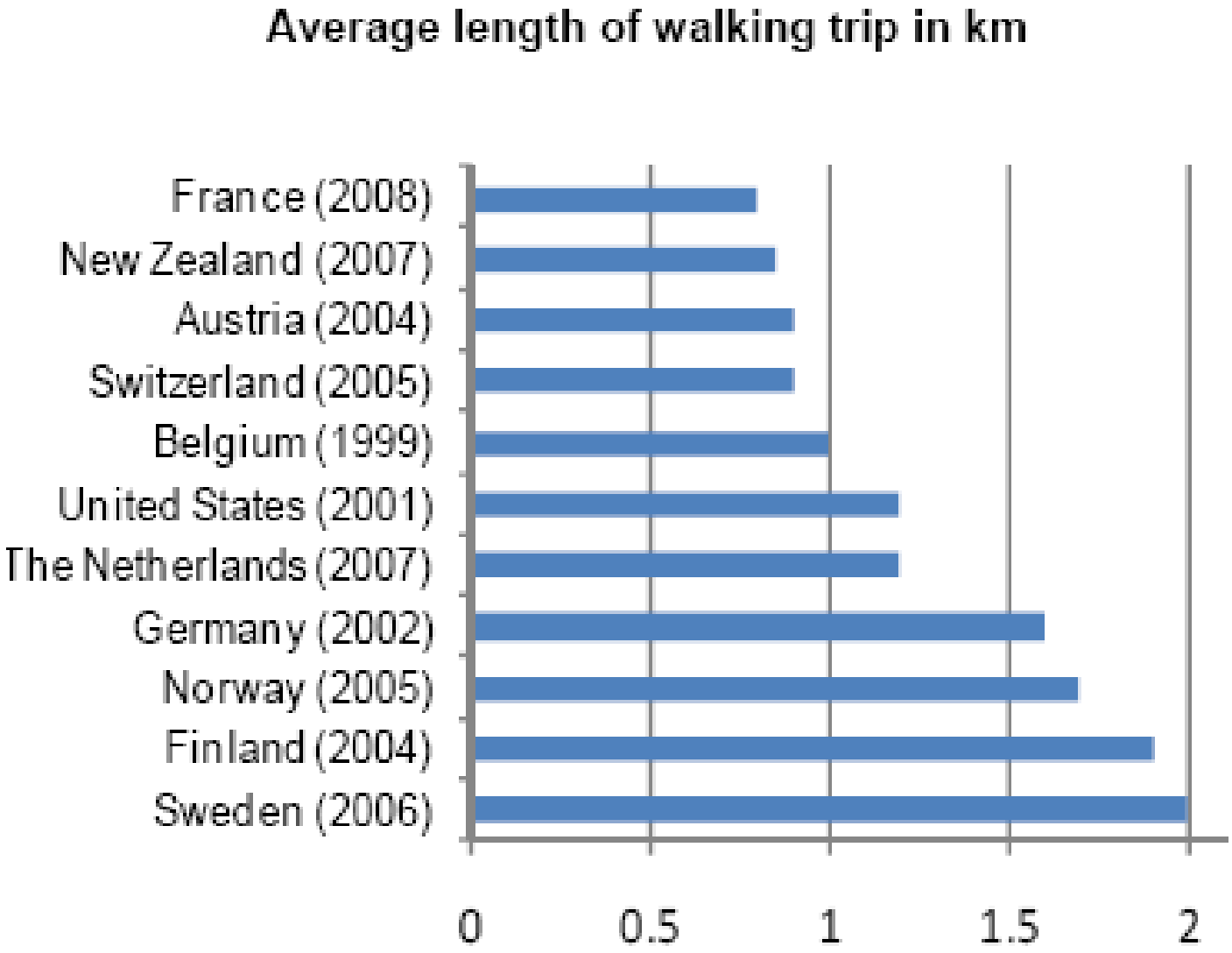
** SK 2002-2009.*

CY, LU and MT are excluded from this ranking because the numbers of cyclist deaths in those countries are so small as to be subject to substantial random fluctuation.

Exposure: pedestrian trips (Various national travel surveys)



Pedestrian trips (Various national travel surveys)



The underreporting is too important (Source: ANIA foundation)

Italian ANIA Foundation for Road Safety reports **900,000** deaths + injured (serious and slight) in 2011 against the **290,000** of official statistics.

According to their data, the figure is slightly less than 2007 …

We know that underreporting is particularly high when considering pedestrian and cycle users' accidents!

The problem of seriously injured

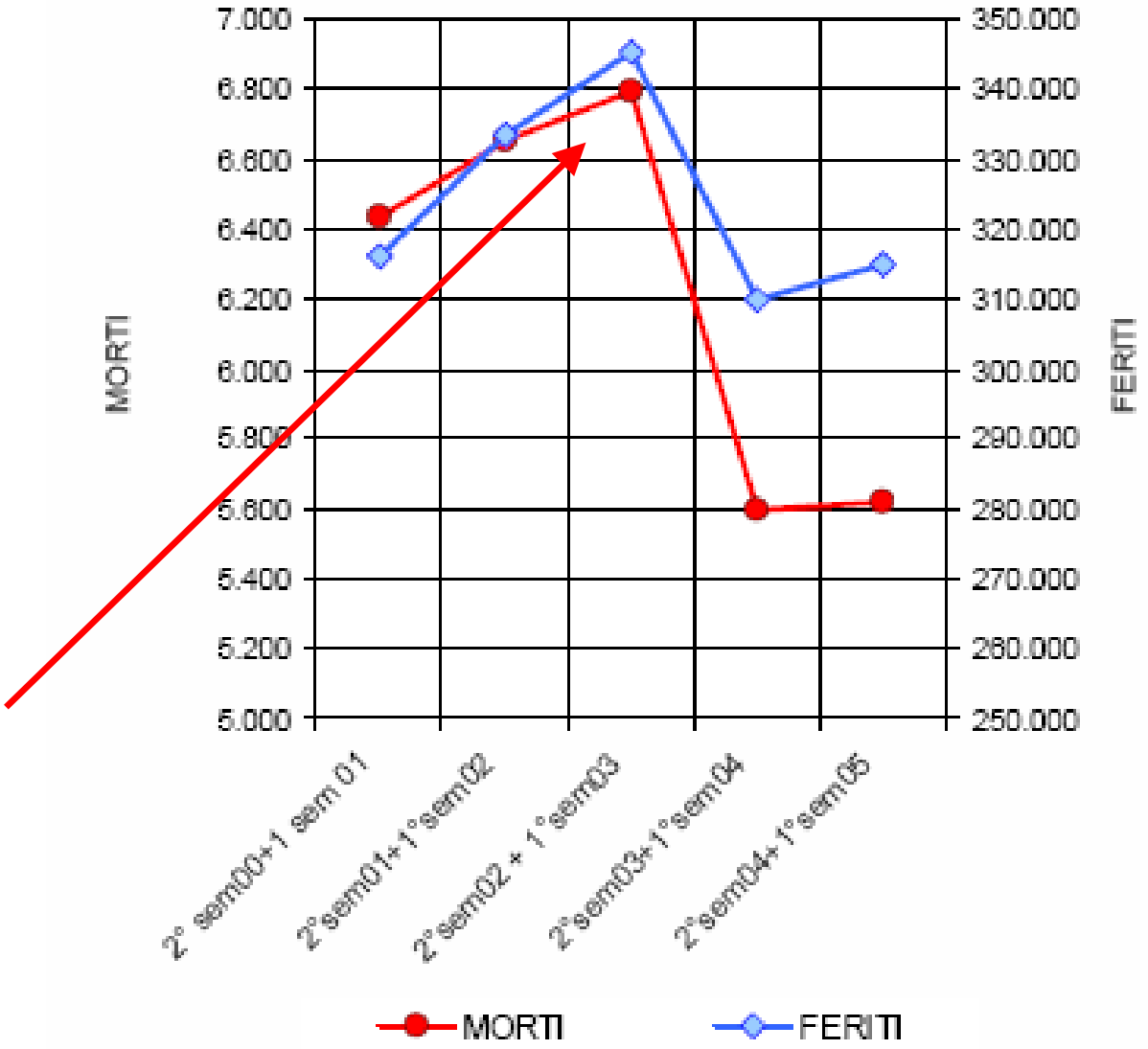
- While the reduction of road deaths between 2001 and 2010 in UE-27 has been 43% …
- … the reduction of seriously injured in the same period has been 36%
- The *High-level group on road safety consultation on the development of the injuries strategy* has agreed (Italy included) to adopt the Maximum Abbreviated Injury Scale (MAIS*) => 3 to define a seriously injured

*The MAIS is the maximum AIS severity score of a casualty with several injuries, where The AIS is published by the Association for the Advancement of Automotive Medicine and is an internationally agreed tool to describe the severity of injury for each of nine regions of the body: 1 Minor, 2 Moderate, 3 Serious, 4 Severe, 5 Critical, 6 Unsurvivable. The regions are 1 Head, 2 Face, 3 Neck, 4 Thorax, 5 Abdomen, 6 Spine, 7 Upper Extremity, 8 Lower Extremity, 9 External and other.

The effect of measures is sometimes very sh

(Source: M. Coppo- RST)

Fatality rates after the introduction of the penalty point system in Italy (2003)



The USM approach (Source DUMAS Project)

Among others, the “strategy setting” and ‘sharing interests’ turned out to be successful safety policies, in those European Countries where applied. It is an approach that looks at urban environment from the point of view of global safety and comfort, pointing them as the core strategy for any action

The USM approach (Source DUMAS Project)

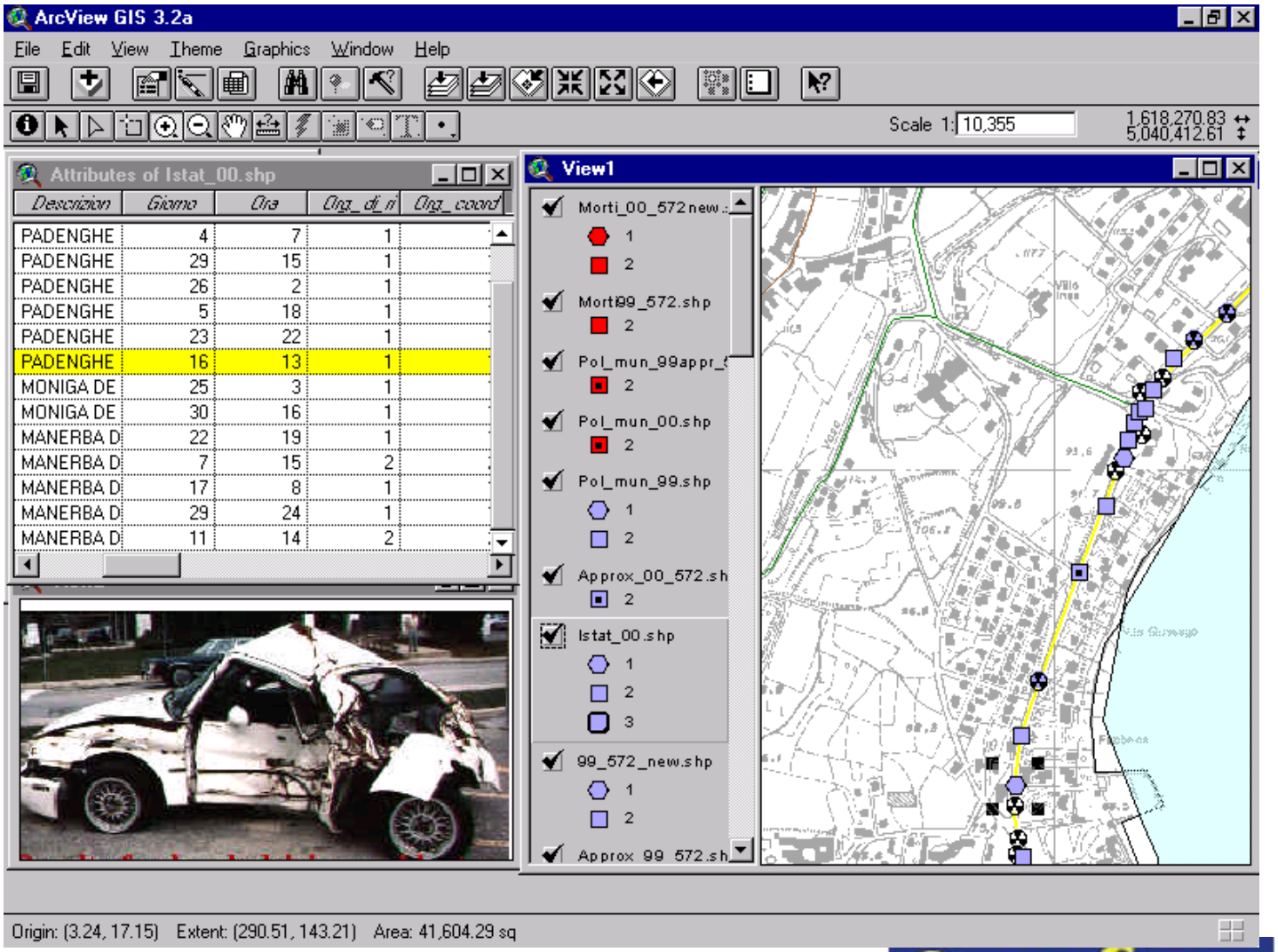
The USM approach

- A road hierarchy or classification is the essential basis for the planning process of speed management schemes
- **In-depth analysis of non-clustered accidents when assessing sustainability of plans**
- **Integrating the managing offices of the cities (urban planning, public works, environment, maintenance, …)**
- Monitoring procedures and information transfer
- Co-ordination with other strategies, such as the case of noise reduction or pollution control

The detailed accident analysis

Accidents

mapping

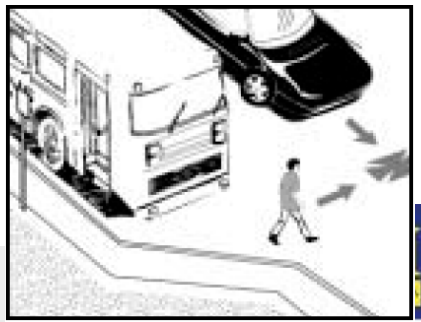


The proto-typical Accident Scenarios

Analysis of Police accident reports occurred in an area, in order to classify their temporal and casual development. Every group of accidents which have particular similarities constitutes a scenario, and for every scenario some solutions are proposed.

Driving situation	**Accidents situation**	**Emergency situation**	**Collision**
A senior citizen is going out from a bus stopped at a bus stop along an high volume street.	Initially covered by the bus, the pedestrian crosses in front of the bus.	Motorist fails to yield to pedestrian.	The pedestrian is hit by the vehicle.

An example of a typical accident scenario involving a senior citizen



The Operational (Road) Safety Review

"Operational Safety Review" (OSR) is a proactive assessment of the safety aspects of an existing road, which, in the case of a future road is called Road Safety Audit

Crosswalks (example)	
1	At the crosswalk are children visible?
2	Is motorized traffic visible by pedestrians?
3	Are there crosswalks next to bus stops?
…..	……

Existing roads - Check list 8 - Vulnerable Road Users (Italian Ministry of Infrastructure and Transportation, 2001)

The Integration between those two different techniques

- the "Accident scenario approach" (accidents database is necessary)
- the "Operational Safety Review" (proactive method)

The Integration between those two different techniques

Relevant question #1

Motorist fails to yield to pedestrian or pedestrian crosses during inadequate gap in traffic due to limited visibility distance at intersection

General Countermeasures

a. Move bus stop to far side of intersection or crosswalk.
b. Install curb extension.
c. Consider an alternative bus stop location.
d. Install pedestrian crossing islands or raised crosswalk.
e. Install or improve roadway lighting.
f. Install crosswalk markings to encourage pedestrians to cross in the crosswalk behind the bus.
g. Mark bus stop area with pedestrian warning signs.
h. Remove parking in areas that obstruct the vision of motorists and pedestrians.

The Integration between those two different techniques

Relevant question #2

Pedestrian has difficulty walking along roadway and crossing at midblock location with high vehicle speeds and/or high volumes.

General Countermeasures

a. Provide bus pull-off area.
b. Consider an alternative bus stop location.
c. Install midblock curb extensions.
d. Provide curb ramps and an accessible sidewalk.
e. Install sidewalk and/or sidewalk barriers to direct pedestrians to a nearby crossing location.
f. Provide pedestrian education/training.
g. Add bike lanes or painted shoulder.
h. Add recessed stop lines.
i. Increase police speed enforcement.
j. Install or improve roadway lighting.
k. Reduce number of roadway lanes.
l. Install traffic and pedestrian signals, if warranted.

The Integration between those two different techniques

Relevant question #3

Pedestrian has difficult time crossing,waiting, or walking in the vicinity of
school bus stop.

General Countermeasures

a. Select safer location for school bus stop.
b. Implement pedestrian/driver education programs.
c. Involve school, neighborhood groups, and PTA in promoting enforcement
and education.
d. Provide sidewalks.
e. Provide street furniture or other amenities at bus stop.
f. Install or improve roadway lighting.
g. Enforce regulations against passing stopped school bus.
h. Educate pedestrians to cross behind the bus.

The Integration between those two different techniques

Relevant question #1
Motorist fails to yield to pedestrian or pedestrian crosses during inadequate gap in traffic due to **limited sight distance at intersection**.

Relevant question #2
Pedestrian has difficulty walking along roadway and crossing at midblock location with **high vehicle speeds and/or high volumes.**

Relevant question #3
Pedestrian has difficult time crossing,waiting, or walking in the vicinity of school bus stop.

OSR Check-list

Crosswalks	
1	Is the visibility of the crosswalk by motorists satisfactory?
2	At the crosswalk are children visible?
3	Is motorized traffic visible by pedestrians?
4	Is the visibility by night satisfactory?
5	Is there vegetations which in some periods could represent an obstacle to visibility?
6	Are crosswalks and pedestrian areas well coordinated?
7	Is there the distance among crosswalks sufficient to deter crossing road at unsafe locations?
8	Is the crosswalk type adequate to road width (refuges)?
9	Is the speed road adequate to pedestrian flow crossing?
10	Are traffic calming measures necessary to slow down traffic?
11	Is there adequate space for pedestrians to wait on footway?
12	Can vulnerable road users cross within a single phase?
13	Is there special kerb height reduction for disabled at crosswalks?
14	Is there special tactile pavements for disabled at crosswalks?
15	Are there crosswalks next to bus stops?
Pedestrian paths	
16	Are there sidewalks where pedestrian flow is present?
17	Is sidewalks width adequate to pedestrian flow?
18	Are there obstacles on sidewalks?
19	Are there shops that obstacle pedestrian flow on sidewalks?
20	Are there drainage devices that obstacle pedestrian flow on sidewalks?
21	Are pedestrian paths continue?
22	Is pavements of crosswalks adequate?
23	Are restrictions to motorized traffic necessary?
24	Are traffic calming measures necessary to slow down traffic?

The Integration between those two different techniques

Relevant question #3
Pedestrian has difficult time crossing,waiting, or walking in the vicinity of school bus stop.

17	Is sidewalks width adequate to pedestrian flow?
18	Are there obstacles on sidewalks?
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General Countermeasures

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b. Implement pedestrian/driver education programs.
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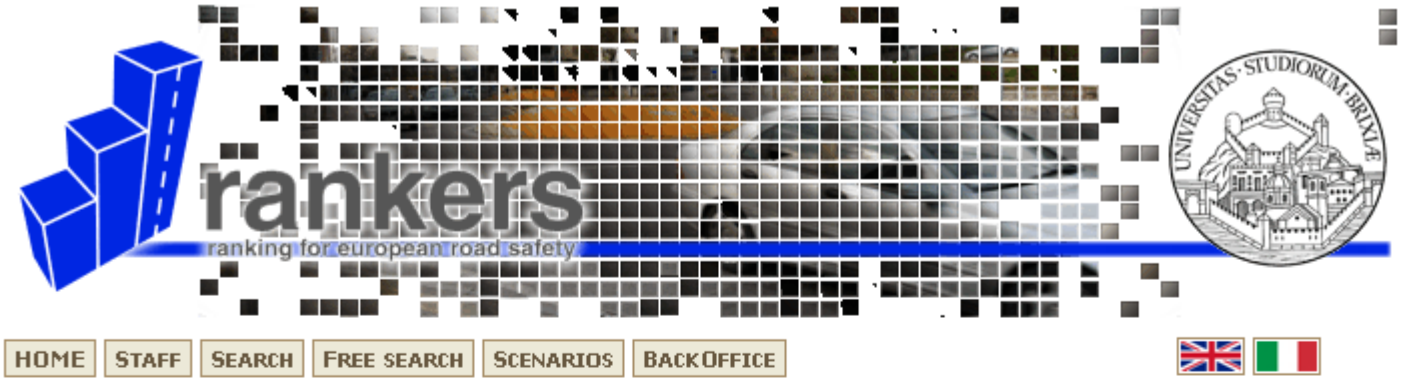
d. Provide sidewalks.
e. Provide street furniture or other amenities at bus stop.
f. Install or improve roadway lighting.
g. Enforce regulations against passing stopped school bus.
h. Educate pedestrians to cross behind the bus.

The e-book (Source: CeSCAm - RANKERS)

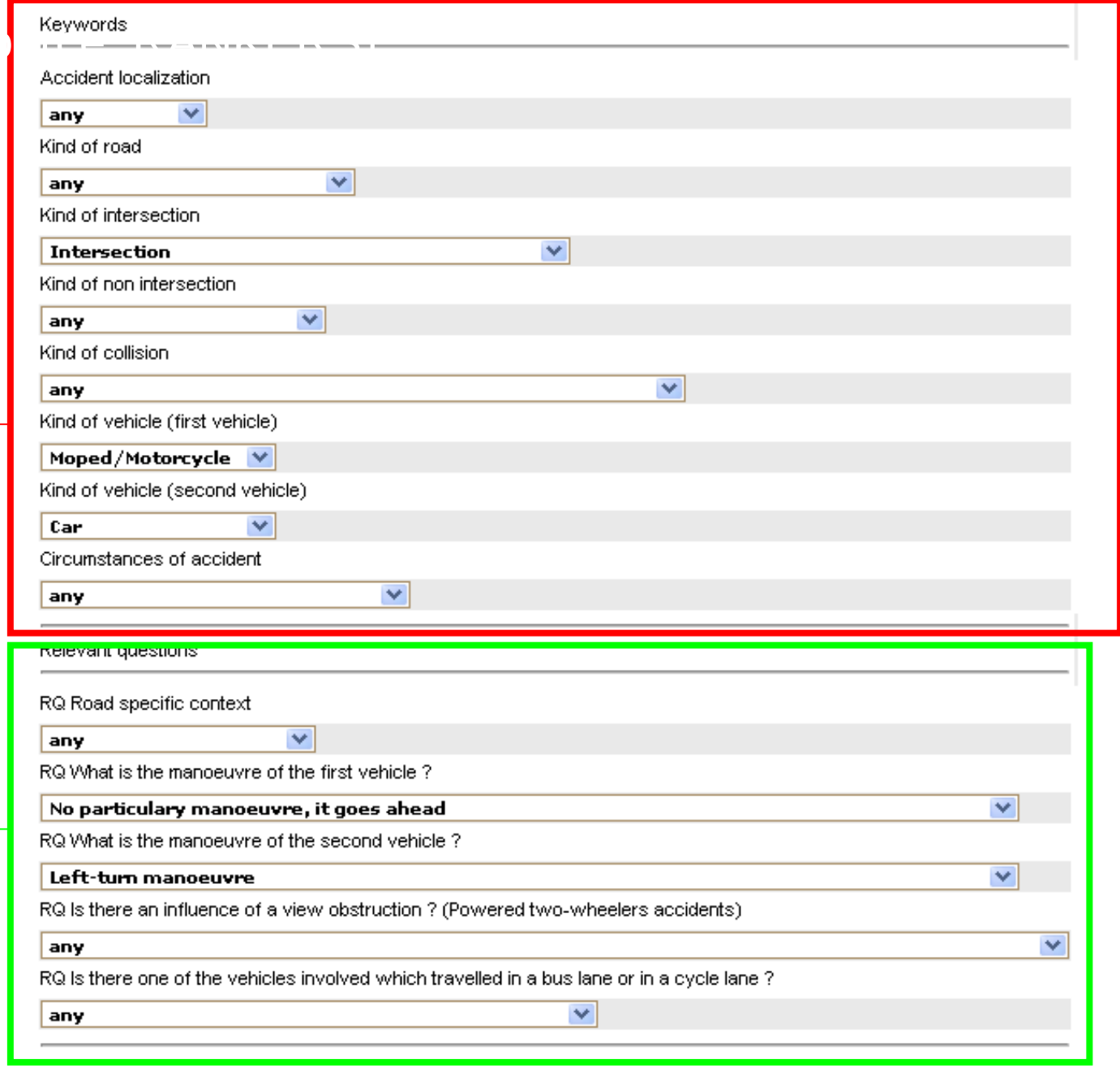
Pre-selection



The e-book (s

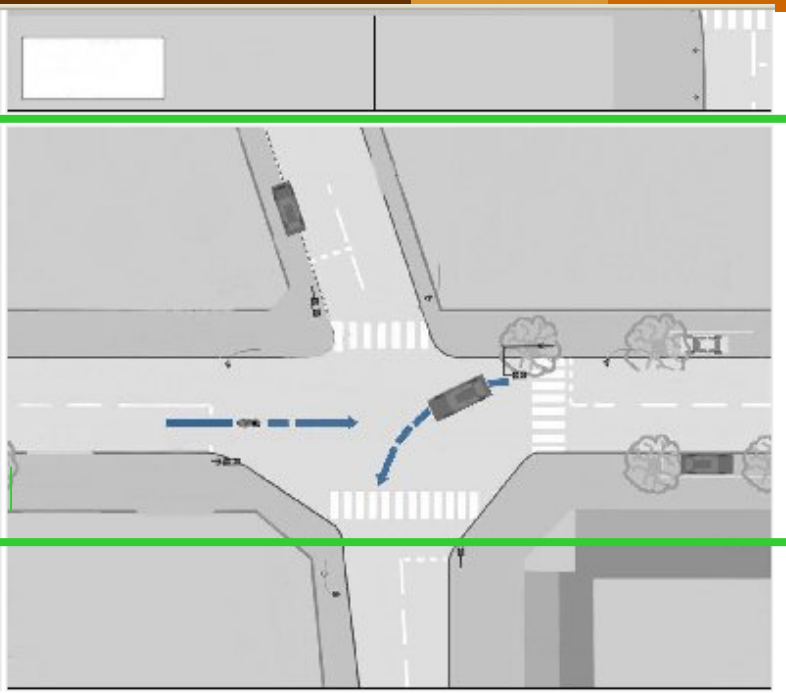
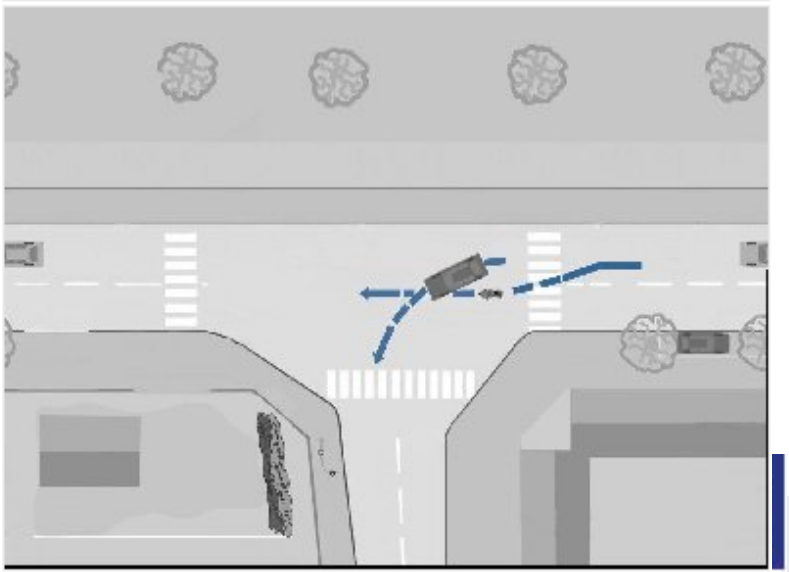
Accident statistical database fields

Relevant questions

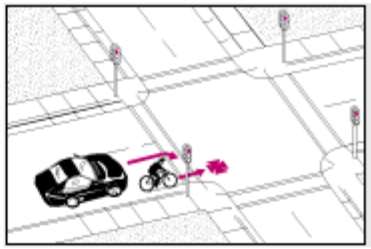
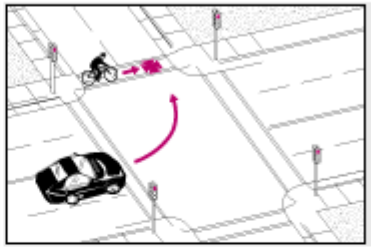
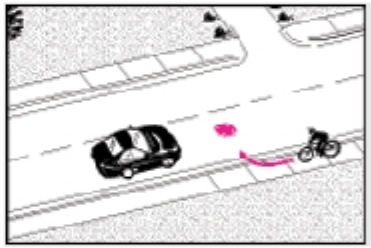
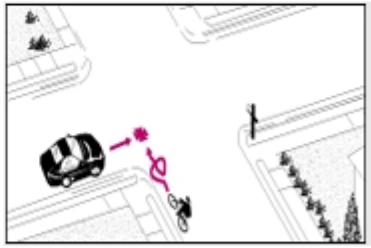
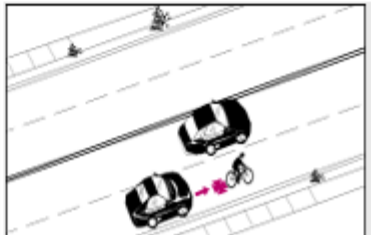


The e-book (source: RANKERS)

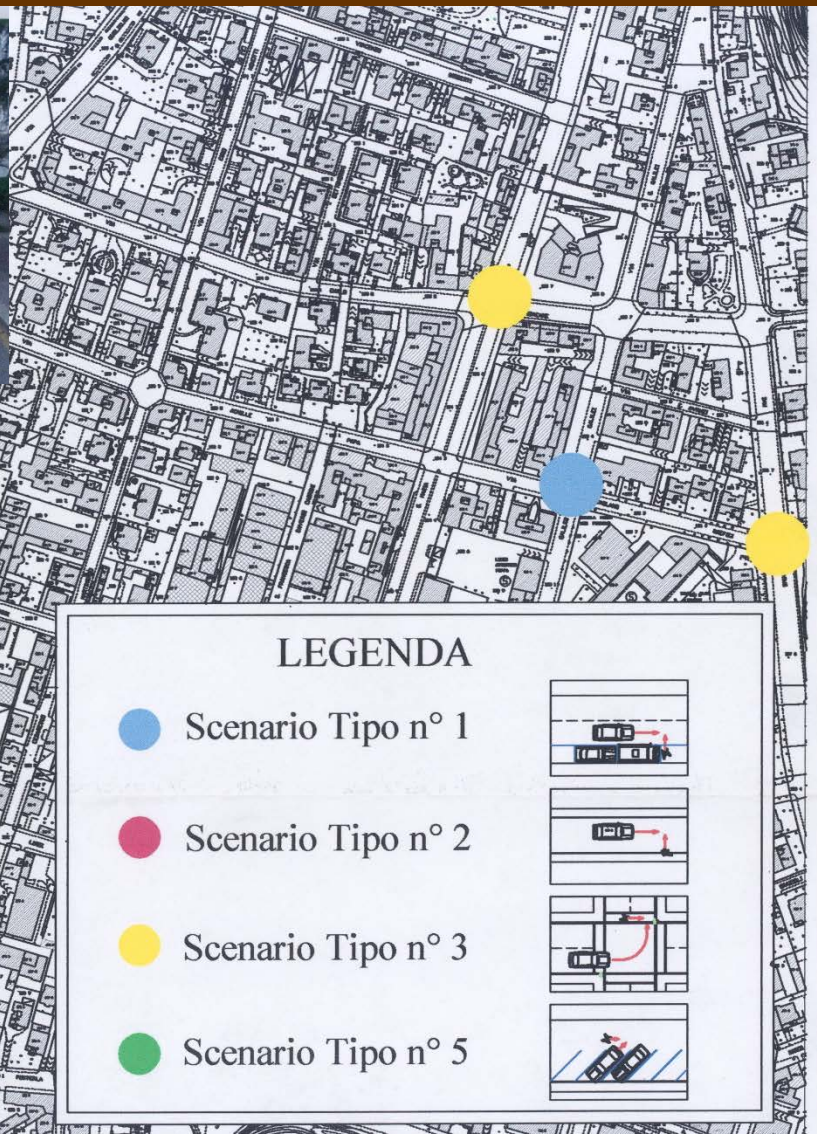
Accident scenario short definition

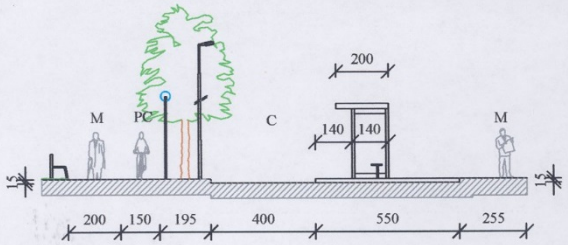
SC88 38.46	Driver turning left without seeing a powered two-wheeler travelling in the opposite lane. (According to Clabaux, 2006).	
SC81 38.46	Driver turning left into another street or into a private alley and collision with a powered two-wheeler overtaking him (According to Clabaux, 2006).	

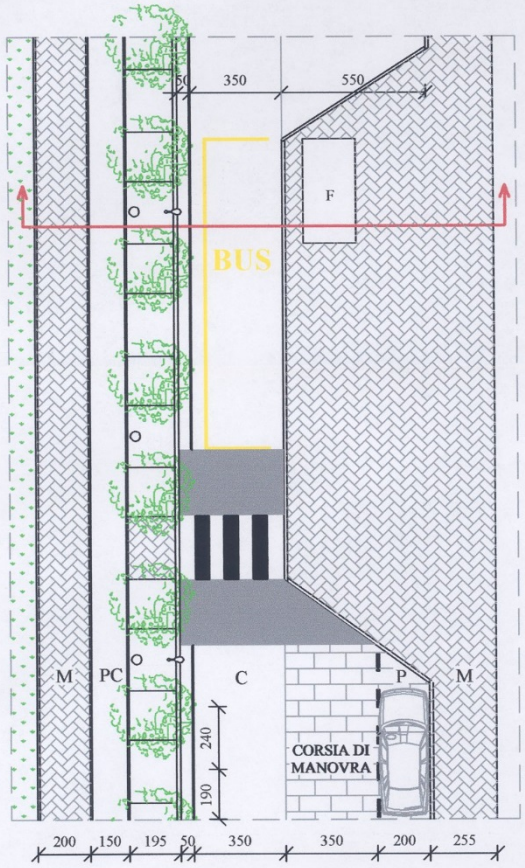
The e-book (source: RANKERS)

SC66	The motorist fails to yield to a bicyclist when making a right turn The motorist may misjudge the speed of the cyclist or belive (mistakenly) that the bicyclist should wait for them	
SC67	The motorist turning left hits a cyclist who is traveling straight ahead in the same direction as the motorist The bicyclist is riding the wrong way against traffic	
SC70	The cyclist rides off the sidewalk into the road without stopping and is hit by a motorist.	
SC72	The cyclist is swerving to avoid an obstacle (perhaps a pothole, some debris or a utility cover) and is hit by a passing motorist	
SC77	The motorist detects the bicyclist but misjudges the amount of space necessary to safely pass the bicyclist	

Accident scenario location and solution







THE NEED FOR AN INTEGRATED MOBILITY AND URBAN PLANNING

Loosing proximity

So people walk and cycle less because there are no destinations within a walkable or cyclable distance:

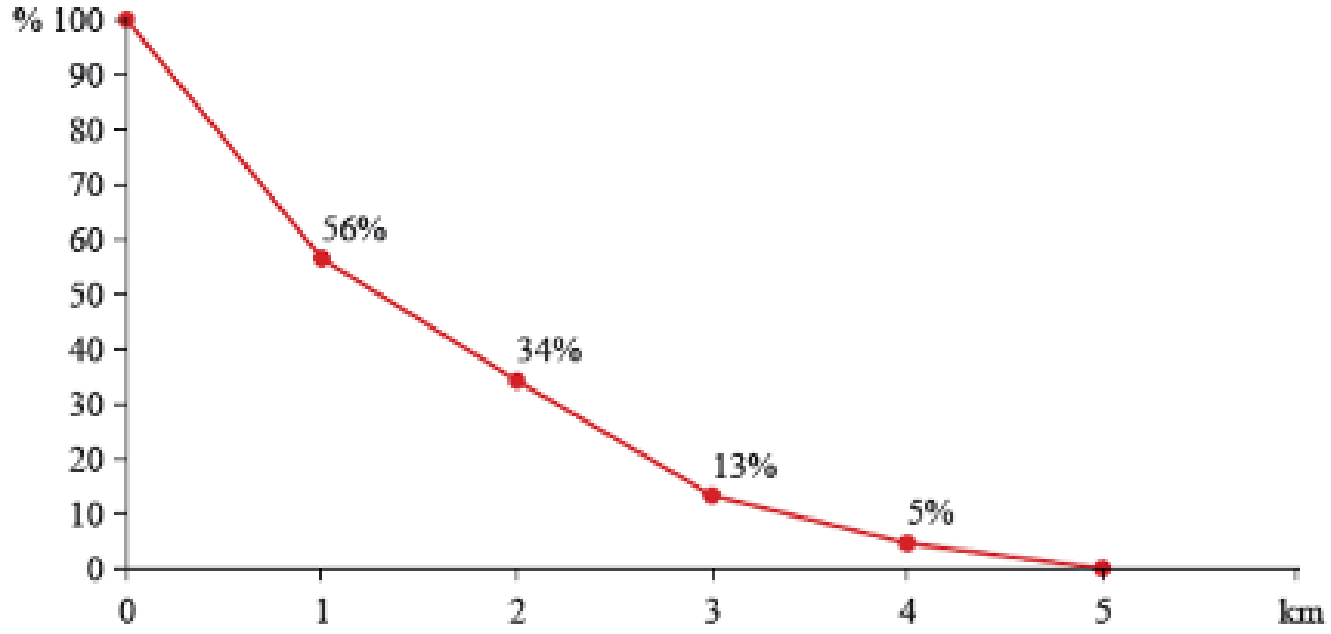
- shopping malls can be reached only by car (for distance and for safety reasons) and parking facilities are greater and free;
- services are concentrated for economic reasons (scale economy);
- public transport have then lost customers and reduced their efficiency

Loosing proximity

- work places are not fixed, so trips are multi-scope and they need a flexible means of transport;
- the relatively less expensive transformations in rural areas make sprawl more cost-efficient than urban renewal;
- low density is better appreciated by high income communities and sometimes defended for landscape preservation

Proximity and the effect of urban distances

It seems that the acceptable walkable distance is increasing with the size of the core city. When distances appear greater, facades are longer, streets wider, people accept a longer trajectory to get to the final destination**.** This is true for the travel time, foremost for the walkable distance, but it reflects on the distance walked as well.



Pedestrian trips by distance (%), Germany 1989 (Krag, 1993)

The effect of “urban environment” as determined in urban planning

Morphology of towns is going to be lost thus influencing the ability of people to “read” urban environment

Road layout is given to users is an ever more intelligible way: the diffusion of GPS on cars is substituting maps, but continuing the tradition of clearing the way to car drivers.

Pedestrians hardly know the dedicated facility network and they cannot really plan the trip: they will not know the sidewalk conditions, width, maintenance, continuity, visibility, lighting, comfort, etc..

The lack of information can highly influence the modal choice.

The need for an integrated mobility and urban planning

Separation of urban and mobility planning have been the general rule through most of planning attempts to include cars in cities, such as Athens' Charter

The key concept was the creation of independent zones for the four 'functions': living, working, recreation, and circulation.

The need for an integrated mobility and urban planning

Some of these concepts have been widely adopted by urban planners, but mainly that of separating urban functions, rather than the inflexible approach to road hierarchy.

The need for an integrated mobility and urban planning

When considering the development of urban areas, three main phenomena occur:

- the building of city extensions (urban sprawl), consuming new land but easier for implementing mobility networks and also pedestrian-friendly schemes;

The need for an integrated mobility and urban planning in a time of crisis

… but in a time of crisis those phenomena are mainly:

- the reconstruction of cities, through brown-field regeneration, taking into account the relationships between administrators and developers;
- the new implementation of transport networks in existing urban infrastructure.

A new (or renewed) land use development model is needed

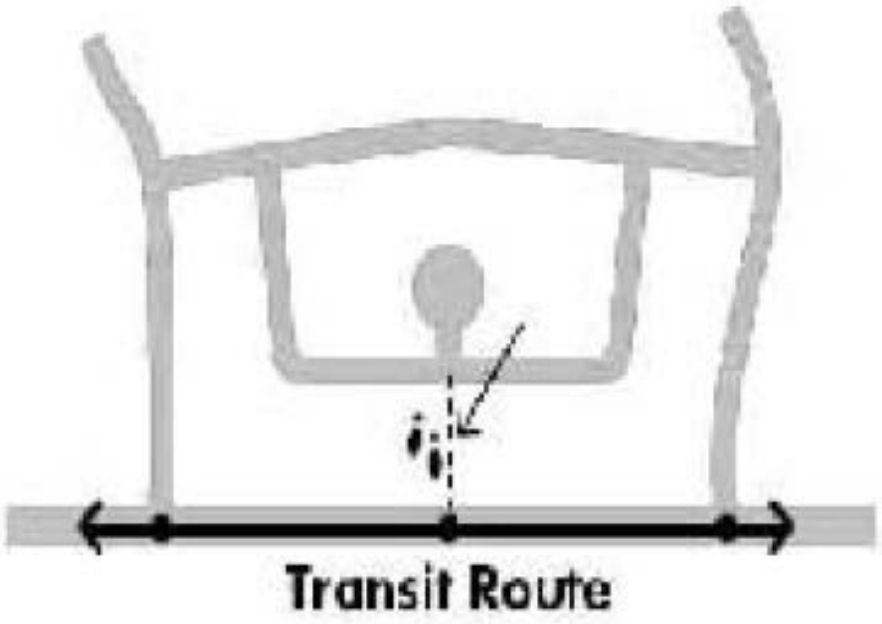
- "New Urbanism"
- "Smart Growth"
- "Car-free cities"
- **"Transit-oriented Developments"**

  are coming to illustrate new possibilities for integration of transport and land use planning

  … and **Urban Safety Management** as a global approach to road safety

Transit Oriented Development (TOD)

Transit Oriented Development (TOD)



Transit Oriented Development (TOD)

Transit Oriented Development (TOD)

Transit Oriented Development (TOD)

Advances in road safety (M Tira)

Transit Oriented Development (TOD)

Recommendations

Integrate mobility management and urban planning and take better account of the needs of pedestrians and cyclists from the earliest stages of urban development projects and transport investments, with the object of creating seamless, high-quality networks.

Recommendations

Establish clear administrative responsibilities among relevant government departments at all levels for co-ordinating walking and cycling programmes and initiatives. The purpose of such arrangements is to stimulate and support actions in government and private sector organisations in an integrated way. This might take the form of a national committee or an interministerial co-ordinator supported by a national observatory.

Recommendations

Improve knowledge about walking and cycling to adequately inform government policy development in relation to this fundamental aspect of mobility. This requires a standardized methodology for reporting, measuring and monitoring pedestrian and cyclists' mobility and injuries (from traffic crashes and falls).

Recommendations

Incorporate public transport services as an integrated part of the development of new urban areas and the regeneration of existing areas, through planning guidance and financial support for public services. This can support a long-term shift towards higher density, mixed-use, walking and transit-oriented urban form and a reduction in urban sprawl.

Recommendations

Encourage the responsible authorities to give higher priority and more space to non-motorised traffic and public transport in city centres. This includes a number of key actions: providing easy, safe, well-maintained and secure pedestrian access to public transport and to all city centre destinations; development of car-free areas; parking policies to discourage over-use of cars in city centres; and regulations to prevent parking on pavements and crossings, which undermines the quality of walking and, in severe cases, renders it impracticable or dangerous..

Recommendations

Develop national pedestrian and cycling planning guidance for local administrations. Plans should be required to give consideration to the impact of projects on pedestrians, and cyclists, as part of project appraisals and environmental impact assessments. Plans should also consider the development and setting of targets for future levels of walking and cycling , as well as addressing needs for financial support.

Recommendations

Encourage employers to implement a broad range of incentives for employees to include active transport in commuting trips. Government agencies should demonstrate leadership in this area.

Recommendations

Adopt a safe system approach for the design of the urban environment for pedestrians and cyclists so that it is organised in such a way that specific risk groups are not exposed to avoidable risks.

Recommendations

Implement traffic-calming policies and generalise 30 km/h zones in city centres, residential areas and other high pedestrian activity areas. This should be based on a functional classification of urban spaces, streets and road networks, supported by appropriate infrastructure design criteria to create low-risk and amenable urban environments for non-motorised road users.

Recommendations

Encourage the introduction of high-quality education programmes in schools and local community centres, to teach safe road user behaviour and promote the benefits of walking and cycling through a range of effective forms of communication. Adult retraining initiatives are also indicated. School mobility plans should be developed aiming to produce a safe and supportive environment in which children can walk or cycle to school.

Recommendations

Conduct a critical review of current traffic codes to strengthen the legal and financial protection of pedestrians and cyclists in case of a crash, and give higher priority to more vulnerable road users in order to provide safer, more equitable conditions among the different road users.

Recommendations

Develop a research strategy to better understand mobility trends in a changing society.

This should include evaluating the effectiveness of measures to reduce dependence on private car travel, achieve higher-density urban forms, protect the environment, improve health and achieve more efficient and sustainable use of energy.

Acknowledgments

The Author wish to thank:

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Thank you for your kind attention!

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