



Risk Assessment on Danube Area Roads

- Final Conference / September 23, 2021

Striving for Safer Infrastructure for all Road Users in the Danube Area

Project co-funded by European Union funds (ERDF, IPA, ENI).

RADAR PROJECT'S FINAL CONFERENCE IS AN ACCOMPANYING EVENT OF SLOVENIAN PRESIDENCY OF THE COUNCIL OF THE EU.





Moderator

Olivera ROZI,
LP Project Director,
European Institute for
Road Assessment (EIRA)



Video message



Jernej Vrtovec
Ministry of Infrastructure, Slovenia



Welcome note



Franc ZEPIC

EUSDR – PA1b: To improve mobility and multimodality

Ferry SMITH

European Institute of Road Assessment – EuroRAP, Chairman EuroRAP

Stephen Jonathan HALLIGAN

Danube Transnational Programme





Franc ZEPIC

EUSDR–PA1b: To improve mobility and
multimodality



Transport in the Danube Macro-Region



The Danube macro-region

EUSDR: Communication and Action Plan

- 8 December 2010: adopted by the EC
- 24 June 2011: endorsed by the European Council!
- **6 April 2020: Revised Action plan**

4 thematic pillars, backbone is „Connecting the Danube region“

EUSDR - 11 Priority areas (24 coordinators - PACs)

PA 1: To improve Mobility and Multimodality

✓PA 1a: inland waterways - Austria and Romania

✓PA 1b : rail, road and air links - Slovenia and Serbia



- **14 States:** Austria, Bulgaria, Croatia, Czech Republic, Germany (Baden Wuerttemberg, Bavaria), Hungary, Romania, Slovakia, Slovenia, Bosnia and Herzegovina, Moldova, Montenegro, Serbia, Ukraine (Odessa, Ivano Frankivska, Chernovitsi, Zakarpatya)
- **Population: 115 million (EU27: 448 million)**
- **Area: 1,092.591 km2 (EU27: 4,233,262)**

PA1b Revised Actions



PA1b: “Rail-Road-Air Links” – REVISED ACTION PLAN 2020

COMMISSION Staff Working Document ACTION PLAN replacing Staff Working Document SEC(2010) 1489 final European Union Strategy for Danube Region (Brussels, 6.4.2020 SWD(2020) 59 final) Page: 9

ACTION 1: To bring to **completion the TEN-T (rail and road) core network crossing the Danube Region**, overcoming the difficulties and the bottlenecks, and taking into account environmental, economic and political challenges, particularly in the cross-border sections

ACTION 2: To support the **implementation of the Rail Freight Corridors (RFC)** forming part of the European rail network for competitive freight (Reg. 913/2010) with extension to candidate and neighbouring countries

ACTION 3: To enhance **cooperation between air traffic stakeholders** in order to **improve regional connectivity** and prepare a plan to implement shorter plane routes

ACTION 4: To ensure **sustainable metropolitan transport systems and mobility**

ACTION 5: To improve the **regional/ local cross-border infrastructure** and the **access to rural areas** by facilitating secondary and tertiary transport infrastructure

ACTION 6: To develop further **nodal planning for multimodality**

ACTION 7: To develop further **Intelligent Traffic Systems** by using environmental-friendly technologies, especially in urban regions

ACTION 8: To raise awareness for **road safety** and encourage exchange of best practices



Unbalanced Transport Networks & Services

ROADS:

- Total lengths **880.000 km**,
- Motorways **12.592 km**
- Main or national roads **105.593 km**
- No common categorisation!

The European road network:

- consists of 5.5 million km



PA1b Objectives in a Nutshell



Merging the EU and non-EU transport systems while following as much as possible approaches of:

- Co-modality and full modal integration, while paying special attention to cross-border infrastructure and services and secondary and tertiary transport networks linking with TEN-T;

Bridging the transport gap between the EU and Non-EU countries, as well as between upper Danube and lower Danube countries, such as:

- quality of transport infrastructure, quality of services (e.g. logistics), road safety, sustainable transport development, etc.



Bridging the Road Safety Gap



The Road Safety Vision is build around:

- **DRIVER** who believes he/she is doing the best when it comes to safe driving;
- **VEHICLE** manufacturer's vision that no one should be killed or seriously injured in one of their new cars;
- **ROADS** are to be build so that they are „driver friendly“ and forgiving.

Our aim is that no one should be killed or seriously injured on our roads.

While we can be proud of what we have achieved so far, we can not be satisfied yet.



Bridging the Road Safety Gap – Numbers



World:

- Deaths from road traffic crashes have increased to 1.35 million a year.
- Nearly 3.700 people dying on the world's roads every day.
- while some 50 million are injured.

The EU:

- ✓ An estimated 18 800 people were killed in a road crash last year (2020),
- ✓ Annual fall of 17% from 2019 (22.700).

The Danube region:

- ❑ An estimated 3.300 - 4.000 people die on Danube region roads annually!



Challenges for the Danube Region



- Different driving culture
- Quality of road infrastructure differs a lot
- Vehicle safety (age of the fleet)

How to narrow the road safety gap between the Danube countries?

- Better cooperation,
- Better coordination,
- Joint promotion of activities,
- Exchange of best practices,
- Joint efforts for financing:

E.g. New programming period 2021-2027: Joint projects, supported also by EUSDR PA1b Steering Group



Thank you very much!

Please visit:
<https://transport.danube-region.eu>



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Disclaimer: The views expressed in this presentation belong solely to the author!

Keynote speakers



Petros PETROU

Commission's Directorate-General for Mobility and Transport

Rob McINERNEY

The International Road Assessment Programme (iRAP)

Liljana CELA

Transport Community Secretariat

Malaya ZUMEL

European Investment Bank



Agenda



Part 1: Road Safety Infrastructure. Panel discussion.

Moderated by:
Jure KOSTANJSEK
Automobile and Motorcycle Association of Slovenia (AMZS)

10:10

How to perform network wide road safety assessments – reactive and proactive approach

George YANNIS
National Technical University of Athens

Infrastructure safety in Danube area – RADAR project

Marko SEVROVIC
European Institute of Road Assessment – EuroRAP (EIRA-EuroRAP)

Empowering Road Safety stakeholders in Danube region for improved results

Olivera ROZI
European Institute of Road Assessment – EuroRAP (EIRA-EuroRAP)

10:40-10:50

Coffee break

RADAR project highlights

Moderated by:
Nina PETRIC

10:50

Q&A session

Olivera ROZI
European Institute of Road Assessment – EuroRAP (EIRA-EuroRAP)

Sanja LES
University of Zagreb, Faculty of Transport and Traffic Sciences

Marko SEVROVIC
European Institute of Road Assessment – EuroRAP (EIRA-EuroRAP)



Agenda



Part 2: The RADAR project

| | | |
|-------|--|--|
| 11:10 | How to improve road infrastructure for safety of Vulnerable Road Users? | <p>Jure KOSTANJSEK Automobile and Motorcycle Association of Slovenia</p> <p><i>Interview question:</i> Uros BRUMEC Ministry of Infrastructure, Slovenian Infrastructure Agency</p> |
| 11:20 | Smart Speed Management Infrastructure | <p>Gabor PAUER KTI Institute for Transport Sciences Nonprofit Ltd</p> <p><i>Interview question:</i> Slavisa BABIC Croatian Roads Ltd</p> |
| 11:30 | Road Infrastructure Safety near Schools in Danube region | <p>Stelios EFSTATHIADIS Transportation Solutions</p> <p><i>Interview question:</i> Uros BRUMEC Ministry of Infrastructure, Slovenian Infrastructure Agency</p> |

| | | |
|-------------|---|---|
| 11:40 | COVID-19 and transport safety | <p>Klaus MACHATA Austrian Road Safety Board</p> <p><i>Interview question:</i> Marko SEVROVIC European Institute for Road Assessment – EuroRAP (EIRA-EuroRAP)</p> |
| 11:50 | RISM Directive | <p>Bojan JOVANOVIC University of Zagreb, Faculty of Transport and Traffic Sciences</p> <p><i>Interview question:</i> Peter LIPAR University of Ljubljana, Faculty of Civil and Geodetic Engineering</p> |
| 12:00 | Danube Region Infrastructure Improvement Strategy and Action Plans in individual countries | <p>Marko SEVROVIC European Institute for Road Assessment – EuroRAP (EIRA-EuroRAP)</p> |
| 12:30 | Questions | |
| 12:40-13:40 | Lunch break | |
| 13:40 | National uptake: round table discussions | <p>Olivera ROZI European Institute for Road Assessment – EuroRAP (EIRA-EuroRAP)</p> |



Agenda

Closing part

14:00

**What have we learnt
from and in RADAR?**

Olivera ROZI

European Institute for Road Assessment –
EuroRAP (EIRA-EuroRAP)

14:15

**Road safety does not
end with RADAR**

Marko SEVROVIC

European Institute for Road Assessment –
EuroRAP (EIRA-EuroRAP)

14:30

**Conclusion
and goodbyes**

Welcome note



Franc ZEPIC

EUSDR – PA1b: To improve mobility and multimodality

Ferry SMITH

European Institute of Road Assessment – EuroRAP, Chairman EuroRAP

Stephen Jonathan HALLIGAN

Danube Transnational Programme





Petros PETROU

Commission's Directorate-General
for Mobility and Transport



Road Infrastructure
Safety in Europe





ROAD INFRASTRUCTURE SAFETY MANAGEMENT



Petros Petrou
Unit C.2 - Road Safety
DG MOVE

Brussels, 23 September 2021



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Mobility and
Transport

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EUROPE



ROAD INFRASTRUCTURE SAFETY MANAGEMENT

Milestones:

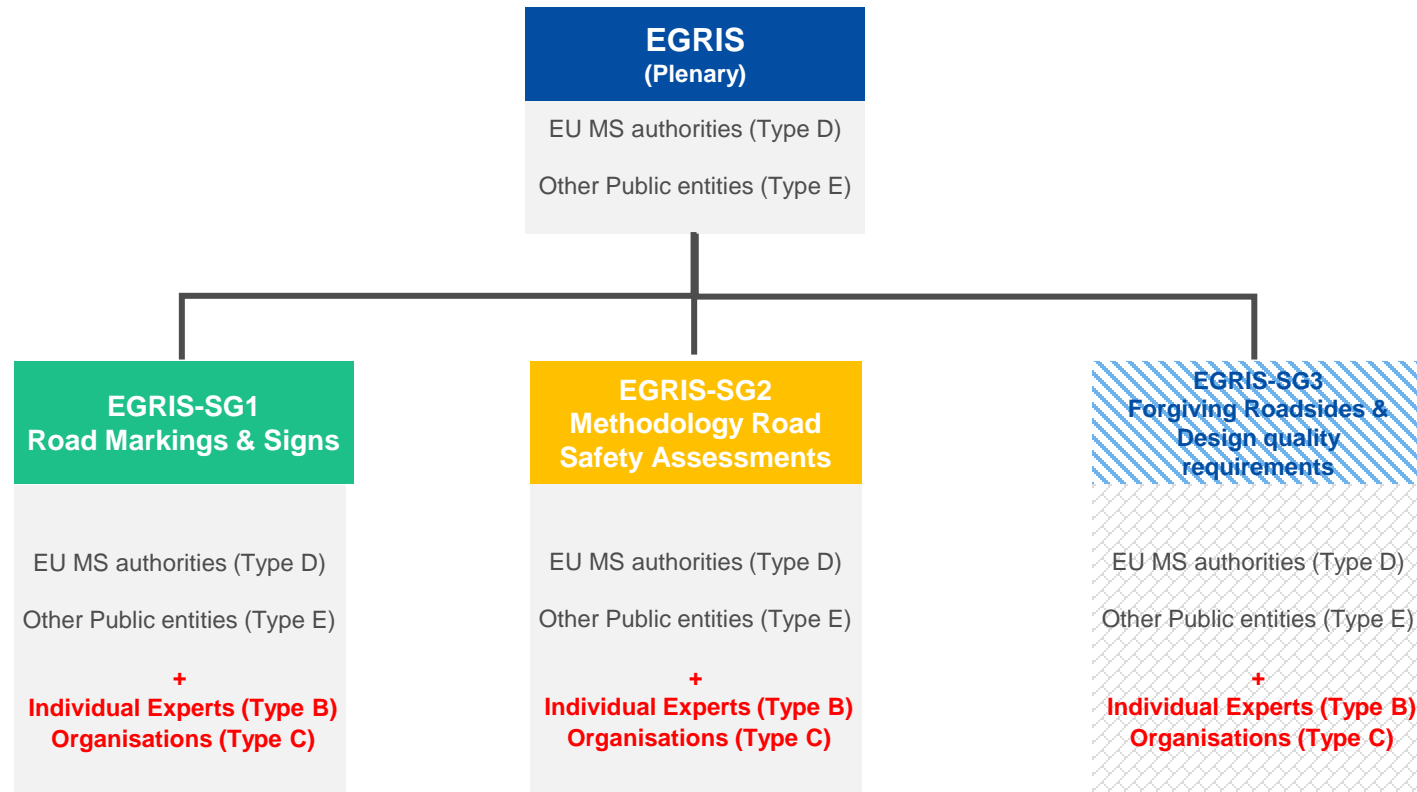
- Road Markings & Signs: Assess opportunity to establish common specifications
- Guidance on Methodology on road network-wide road safety assessments & safety ratings
- Guidance on Design of « forgiving roadsides » & « self-explaining/enforcing roads »
- Guidance on Road design quality requirements for vulnerable road users



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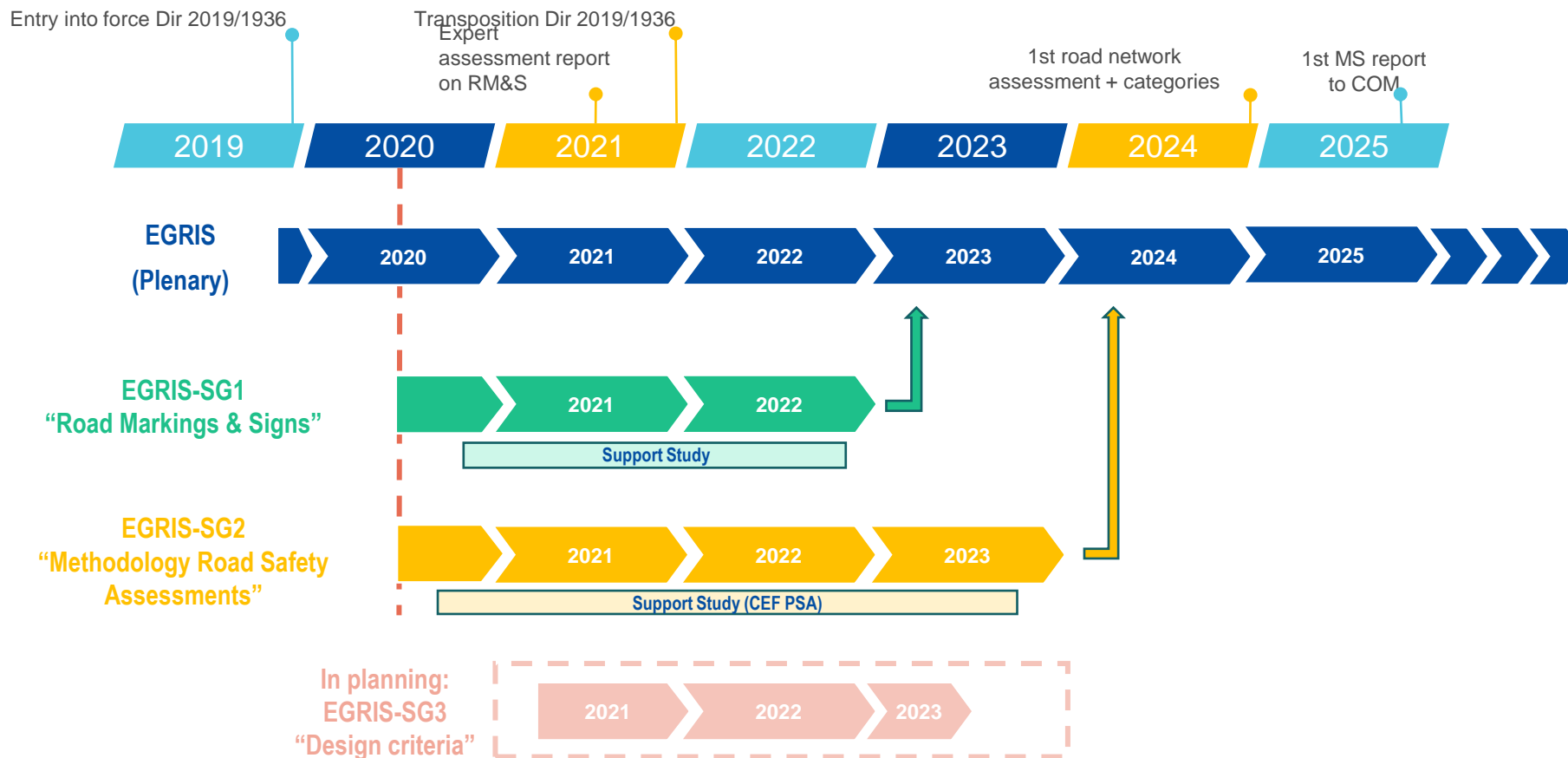
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EGRIS – General working structure



Type B & Type C members are selected via specific Call for applications!

Time planning – RISM Directive





ROAD INFRASTRUCTURE SAFETY MANAGEMENT

Article 6c : Road markings and road signs

A group of experts established by the Commission shall assess the opportunity to establish common specifications including different elements aiming at ensuring the operational use of road markings and road signs in order to foster the effective readability and detectability of road markings and road signs for human drivers and automated driver assistance systems.

The assessment shall take into consideration in particular the following elements:

- (a) the interaction between various driver assistance technologies and infrastructure;
- (b) the effect of the weather and atmospheric phenomena as well as traffic on road markings and road signs present on the Union territory;

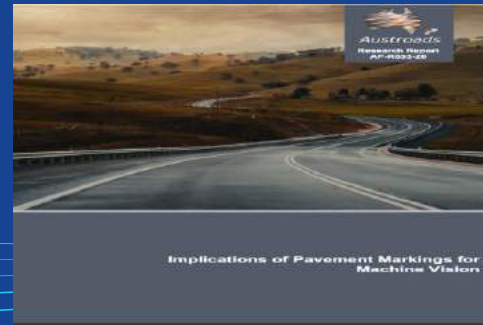


ROAD INFRASTRUCTURE SAFETY MANAGEMENT

Article 6c : Road markings and road signs (continued)

c) the type and frequency of maintenance efforts necessary for various technologies, including an estimate of costs.

Taking into account the assessment Commission may adopt implementing acts to establish common specifications.





ROAD INFRASTRUCTURE SAFETY MANAGEMENT

Road Markings & Road Signs

State of play:

- Possible areas of intervention identified, ranked and discussed during the previous Plenary meeting on 30 June 2021 (next 2 slides)
- The Plenary agreed that more work is needed in order to analyze in detail the possible areas of intervention and to agree on the areas to be retained, in order to proceed with a cost and benefit analysis
- A questionnaire asking Member States' input on the possible areas of intervention was sent in July with a deadline of 17 September (15 replies received)
- A detailed analysis of the Member States' feedback will be presented and discussed during the next Plenary meeting planned for 14 October



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EUROPE

| Options for possible intervention | Impact | | Literature evidence and current practice among MS | | Effort | | | Potential positive impact in diverse weather and traffic conditions | Score Score |
|---|---------------|------|---|------|-----------------------|-----------------------|---|---|----------------|
| | Human drivers | ADAS | Human drivers | ADAS | Rough cost estimation | Implementation period | Technical complexity of implementation and evaluation | | |
| Road markings | | | | | | | | | |
| Use of durable materials | H | H | M | M | M | Medium | L | H | 20 |
| Daytime visibility | L | H | M | H | L | Medium | L | M | 19 |
| Night-time visibility in dry conditions | M | M | H | M | M | Medium | L | H | 19 |
| Night-time visibility in wet conditions | H | H | H | M | M | Medium | M | H | 20 |
| Width of markings | M | M | H | H | M | Medium | L | M | 19 |
| Contrast on concrete pavements | M | H | L | H | H | Medium | H | M | 15 |
| Proper removal of old markings | L | H | L | M | M | Long | M | L | 13 |
| Night-time visibility in rainy conditions | H | H | H | M | H | Medium | H | H | 18 |
| Uniformity (design) | L | M | L | M | H | Long | M | L | 11 |
| Continuity line at exit ramp or intersections | M | M | L | H | L | Medium | L | M | 18 |
| Dashed longitudinal markings | L | M | L | M | H | Long | M | L | 11 |

| Options for possible intervention | Impact | | Literature evidence and current practice among MS | | Effort | | | Potential positive impact in diverse weather and traffic conditions | Score |
|---|---------------|------|---|------|-----------------------|-----------------------|---|---|-------|
| | Human drivers | ADAS | Human drivers | ADAS | Rough cost estimation | Implementation period | Technical complexity of implementation and evaluation | | |
| Road sign | | | | | | | | | |
| Dimensions of warning, prohibitory and mandatory road signs | M | M | M | M | M | Long | L | M | 16 |
| Retroreflective materials | M | H | M | M | M | Long | L | H | 18 |
| Digital maps related to speed management. | L | H | L | M | M | Medium | M | H | 16 |
| Other | | | | | | | | | |
| Keeping road markings and road signs in sufficient condition (out of scope) | H | H | M | M | M | Long | M | M | 17 |



ROAD INFRASTRUCTURE SAFETY MANAGEMENT

Article 5: Network-wide road safety assessment

- Member States shall ensure that the first network-wide road safety assessment is carried out by 2024 at the latest
- Network-wide road safety assessments shall evaluate accident and impact severity risk, based on:
 - (a) primarily, a visual examination, either on site or by electronic means, of the design characteristics of the road (in-built safety); and
 - (b) an analysis of sections of the road network which have been in operation for more than three years and upon which a large number of serious accidents in proportion to the traffic flow have occurred
- On the basis of the results of the assessment Member States shall classify all sections of the road network in no fewer than three categories according to their level of safety





ROAD INFRASTRUCTURE SAFETY MANAGEMENT

Network-wide road safety assessment

State of play:

- On-going assessment methodology for the in-built safety of the roads (pro-active approach)
- Finalized assessment methodology of the roads on the basis of accident occurrence
- On-going assessment on how both above methodologies can be integrated
- The progress of the study for the network-wide road safety assessment will be presented and discussed at the next meeting of EGRIS meeting on 13 October 2021

Examples of road safety risks and possible countermeasures



Thank you



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Rob McINERNEY

The International Road Assessment Programme (iRAP)



Investing in Road Safety:
the future of MDB and IFI engagement





Liljana CELA

Transport Community Secretariat



Road safety in the European Union
candidate countries





Malaya ZUMEL

European Investment Bank



Road Safety as UN Sustainable
Development Demand





European
Investment
Bank

The EU bank



Investing in Road Safety: The Future of MDB and IFI Engagement

MALAYA ZUMEL



MDB/IFI Challenges

Distinct differences and frameworks:

- Different historical backgrounds and starting points
- Different mandates, regions, clients and operating modalities

Common challenges:

- Diminishing funding for roads
- Competing priorities and challenges
- Lack of general awareness and political understanding
- Mainstreaming Road Safety within organizations and operations
- The disruptive unknowns...and unknown opportunities



The Pillars of the High-Level MDB Joint Statement on Road Safety:

Integrated Approach

Accountability

Ambition



The EIB experience: Transport historically the largest sector



Projects in 78 countries

EUR 133 bln. in over 1000 projects since 2009

Approximately EUR 10-12 bln. per annum, of which up to 6 bln. for roads

Strong contributor to Climate Action (over 50%)



Transport Lending Policy 2022

Sustainable Mobility



Safe



Accessible



Green



Efficient

Road Safety: What role is the EIB playing?

The EIB is not responsible for accidents on roads it finances...

BUT:

- We influence the safety standard of roads we finance
- We prioritize and support projects with good safety impacts

BY:

- ✓ Prioritizing safety as a key part of sustainable transport
- ✓ Promoting investments in safer roads as good investments
- ✓ Supporting our partner countries and clients in:
 - Complying with the new EU Road Safety Directive,
 - Achievement of UN SDGs and EU policy goals
 - Striving to 'do no harm', including through advocacy, TA and capacity building support
- ✓ Knowing our baselines and impacts



The EIB's main field of impact

| | Legislation | Enforcement | Education | Technology | International regulatory support |
|---|---|--|--|---------------------------|--|
| Management (governments, authorities, agencies, system owners) | | | | | |
| Safer road users | | | | Supportive technology | |
| Safer vehicles | | | | | |
| Safer roads | Standards for design, procedures for RSIA & RSA, safety ratings | RSIA & RSA, safety ratings, safeguards | Training of specialists, awareness raising | Safe System approach, ITS | EU Directives, UN resolutions, SDGs, Vienna Convention |
| Effective post-crash response | | | | Supportive technology | |

Based on the matrix in the UNECE Global Framework Plan of Action for Road Safety, 2018

Road Safety Objectives

1. Scale-up capacity, TA and investments in road safety
2. Increase safety impacts of financed projects
3. Effectively integrate road safety considerations into all relevant operations
4. Establish a framework for project eligibility, prioritization and impact monitoring
5. Strengthen internal capacity and knowledge to become a leader in road safety

The road ahead: Road Safety within the EIB

Contributing to the New Decade of Action: If we miss the chance to get our projects done right, now, unsafe roads will be out there for the next 20+ years

New TLP

- No financing of unsafe roads
- Streamlining road safety throughout project cycle

An EIB strategy for road safety: prioritizing safety

- Eligibilities
- Safeguards
- Procedures and guidelines
- Innovative financing instruments, TA and Advisory
- KPIs
- Promotion and cooperation

=> Flagship EIB projects with links to broader concepts of sustainability

Way forward:

- Promote integration of road safety in transport policies and strategies
- Support institutional capacity building in areas covered by Road Safety Directive, incl. accident data collection and analysis
- Use JASPERS advisory and EIB appraisal to add safety improvements on roads adjacent to investment
- Help beneficiaries demonstrate road safety impact on public finances of the health and insurance systems



EIB Challenges and Responses



Challenge: Promoting Road Safety, including in areas not covered by regulations



Response: Create links to policies and partnerships?

- EU Directives and Policy Frameworks
- UNGA Resolutions
- EU/EC, EDFI, MDB and bilateral partnerships



EIB Challenges and Responses



Challenge: Tracking and reporting on outcomes and impacts



Response?

- Increased formal cooperation on KPIs and data
- Standardisation and harmonization of requests/documentation
- Tracking and reporting: funding, project outcomes and impact



EIB Road Safety Projects in Danube Region and Neighborhood

| Country | Project | Stage | Investment (foreseen) |
|----------|--|-------------------|--|
| Bulgaria | Preparation of Network-wide Road Safety Assessment TA (Safer Transport Platform) | Completed | For future maintenance and investment programmes |
| Greece | Road Rehabilitation and Safety Programme | Starting | 470 million EUR |
| Romania | Road Safety in Romania TA (Safer Transport Platform) | Completed | For Road Safety Priority Investments |
| Romania | Road Safety Priority Investments | Appraisal ongoing | 100 million EUR |
| Slovakia | Road Traffic and Safety Advisory TA (Safer Transport Platform) | Starting | For potential future investments |
| Ukraine | Urban Road Safety Project | Implementation | 175 million EUR |
| Ukraine | Urban Road Safety TA (NIF) | Implementation | 4.1m EUR |
| Ukraine | Urban Road Safety Project II | Preparation | 100 million EUR |



European
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The EU bank



More information at:
www.eib.org
info@eib.org

Thank you

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Road Safety Infrastructure

Part 1: Panel discussion

Moderated by:

Jure KOSTANJSEK

Automobile and Motorcycle Association of Slovenia (AMZS)





George YANNIS

National Technical University of Athens



How to perform network wide road
safety assessments –
reactive and proactive approach





Risk Assessment on Danube Area Roads

• Final Conference / September 23, 2021

Striving for Safer Infrastructure for all Road Users in the Danube Area



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How to perform network-wide road safety assessments: reactive and proactive approaches

George Yannis, Professor NTUA

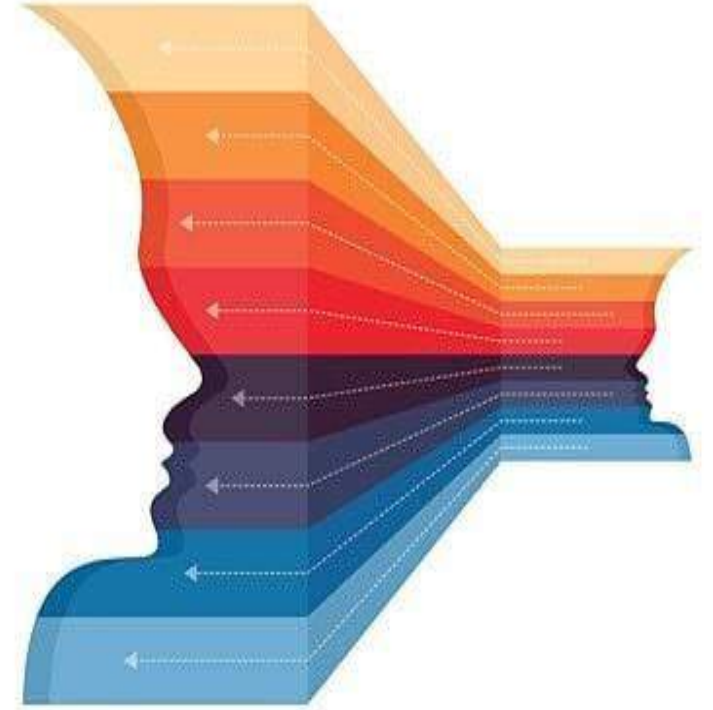


Department of Transportation Planning and Engineering,
National Technical University of Athens



Presentation Outline

1. Methods to assess road safety (5)
 - I. Reactive
 - II. Proactive
2. Network-wide road safety assessment: concept and challenges (1)
3. Combination of reactive and proactive safety assessment for the network-level (2)



Methods to Assess Road Safety

- **Crash occurrence:** Identification of high-risk sections across a network based on the analysis of crash records – *reactive approach*
- **“In-built” safety assessment:** Consideration of roadway design characteristics to assess road safety – *proactive approach*
- **Network-wide safety assessment:** Consideration of the in-built safety of an entire road network – *large scale proactive approach*



Methods to Assess Road Safety

Crash occurrence

- **Macroscopic** (variables recorded by the police) or **microscopic** (variables collected by hospitals, insurance companies, etc.) crash data is analyzed to identify high-risk locations.
- Depending on other data sources (e.g., traffic volume, crash severity levels) various **safety performance metrics** may be chosen, such as: crash density, crash rates, crash costs, potential for crash reduction, etc.
- crash data needs to be of good quality, reliable, and accurate, otherwise the analysis may be **falsie** or **inconclusive**.



Shortcomings of the reactive approach

- crashes **may not be the best proxy** to assess road infrastructure safety; local human factors, behaviour, enforcement, vehicle fleet characteristics, etc., play a role in the overall safety of the road.
- Not applicable when the **number of crashes is small** or when the **crash data is erroneous/incomplete** (e.g., mistaken crash location or injury severity level)
- Not applicable for **new roads**.
- Major **road network improvements** generally not examined.



Methods to Assess Road Safety

In-built safety assessment

Various proactive methodologies have been developed internationally:

- Road Safety Audits (RSA) or Road Inspections (RSI)
- **Models** that predict the expected average crash frequency at the examined locations, as a function of **traffic volume** and road **infrastructure characteristics** (e.g., number of lanes):
 - AASHTO Highway Safety Manual Safety Performance Functions and Crash Modification Factors
 - PRACT models
 - Stand-alone multivariate crash prediction models
- **iRAP** Star Rating Protocol (used worldwide)
- Methodologies that related a set of **parameters** to a **risk rating system** (e.g., National Swedish methodology)



Need for Network-wide Safety Assessment

- While **detailed proactive** approaches (RSIs, crash prediction models) are the most effective ways to identify hazardous locations and improve road safety, they are **time-** and **resource-consuming**, this is why they are applied to small sections or parts of a network.
- **Network-wide safety assessment** evaluate the **broader road network** and can identify in a less costly way, (large) sections of the network that are in urgent need of improvement.
- This way, road safety-related resources are **allocated more effectively**.



Developing a Network-wide Safety Assessment methodology – Challenges

- Identification of appropriate road characteristics, i.e., a set of **parameters**, that affect network-level safety, for example:
 - barrier presence and safe roadside are important
 - the presence of an uncovered barrier end does not affect network-level safety, although it's important for the specific site
- Identification of a **scientifically sound relationship** between the set of parameters and safety outcomes
- **Achieve a balance** between accuracy and level of detail, without being overly data-intensive and costly to use.



Need for Network-level Safety Assessment: Pro- or Re-active?

A general rule is that proactive approaches help saving lives as actions are taken in advance of crashes.

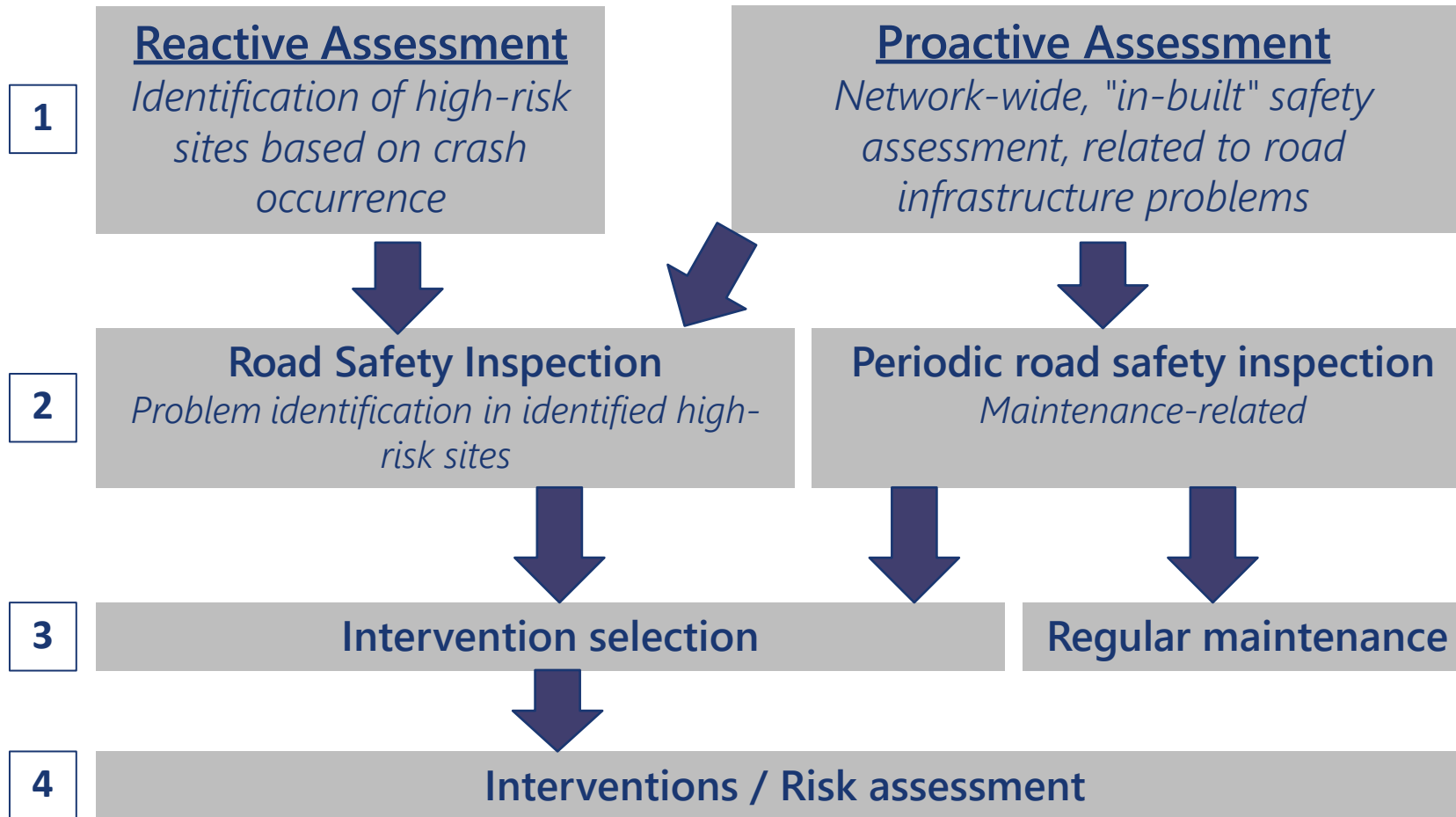
➤ **Proactive approaches** that consider the geometric, operational, and traffic characteristics are **applicable** for:

- New roads
- Roads where no sufficient and/or reliable/accurate crash data are available

➤ **Combination** of proactive and reactive approaches: Expansion of the network-level safety assessment framework to focus on locations with high crash concentration.



Combined reactive and proactive assessment framework



- In case of conflicting results, which approach should be prioritized?
- Authorities tend to rely on crashes to justify road safety fund allocation (more socially and politically acceptable).
- Proactive approach should be preferred when reactive analysis results are not statistically significant or are unreliable.



Marko SEVROVIC

European Institute of Road Assessment –
EuroRAP (EIRA-EuroRAP)

Infrastructure safety in Danube area –
RADAR project



Road fatalities per million population for the Danube area

FATALITIES / MIO. POPULATION 45,9 96,7



3,200 people died in Danube area roads in 2019.



Roads knit people, communities, and markets together. They are the lifeblood of cities and regions – but they are also the deadliest. Death rates in many countries in the Danube area are higher than the EU average.



Start date
01-06-2018
End date
31-05-2021

Extended until
end of November
2021

ABOUT RADAR PROJECT

9 Project Partners

11 Associated Strategic Partners

12 Countries across the Danube area and UK



→ joining forces

...to improve the road infrastructure safety in the region by raising capacity and enhancing transnational cooperation in the sector for all road users.

■ Danube Transnational Programme area



RADAR main objectives

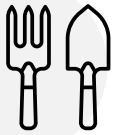


Raising capacity and enhancing transnational cooperation

Providing training courses and study visits

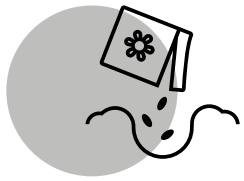
Identifying risk on road networks and offering recommendations to systematically reduce that risk





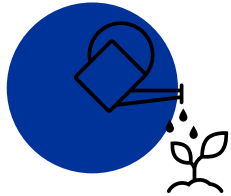
Road Safety procedures Training Concept

- Survey on needs
- Status Report
- Training Syllabus
- All training materials and software translated to 7 principal languages of the partner countries



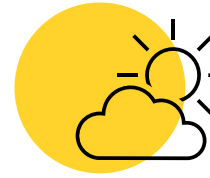
Training Courses

- 8 countries: 3-day live training sessions
- 4 webinars



Exchange of good practices

- 4 thematic Study Visits
 - Slovenia/Croatia – VRU
 - UK – Safer Roads Investments Plans
 - HU – Speed Management
 - AT – Safety near Schools



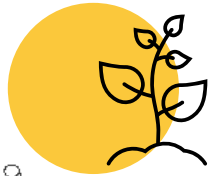
Road Safety Expert Group

- SAFER ROADS INVESTMENTS PLANS
- VULNERABLE ROAD USERS
- ITS AND SPEED MANAGEMENT
- ROAD SAFETY NEAR SCHOOLS



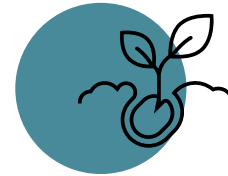
2 additional thematic areas reports and recommendation

- TRANSPORT SAFETY AND COVID-19
- RISM DIRECTIVE 2019/1396/EU IN DANUBE AREA



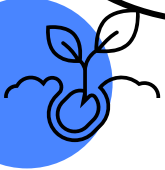
4 thematic areas reports and recommendations

Combined in a new road safety campaign: Better by RADAR (infographics)

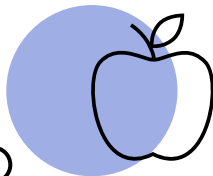


4 Pilot Actions in 7 countries

Implementation ready concept plans



2 additional Pilot Actions in 2 countries

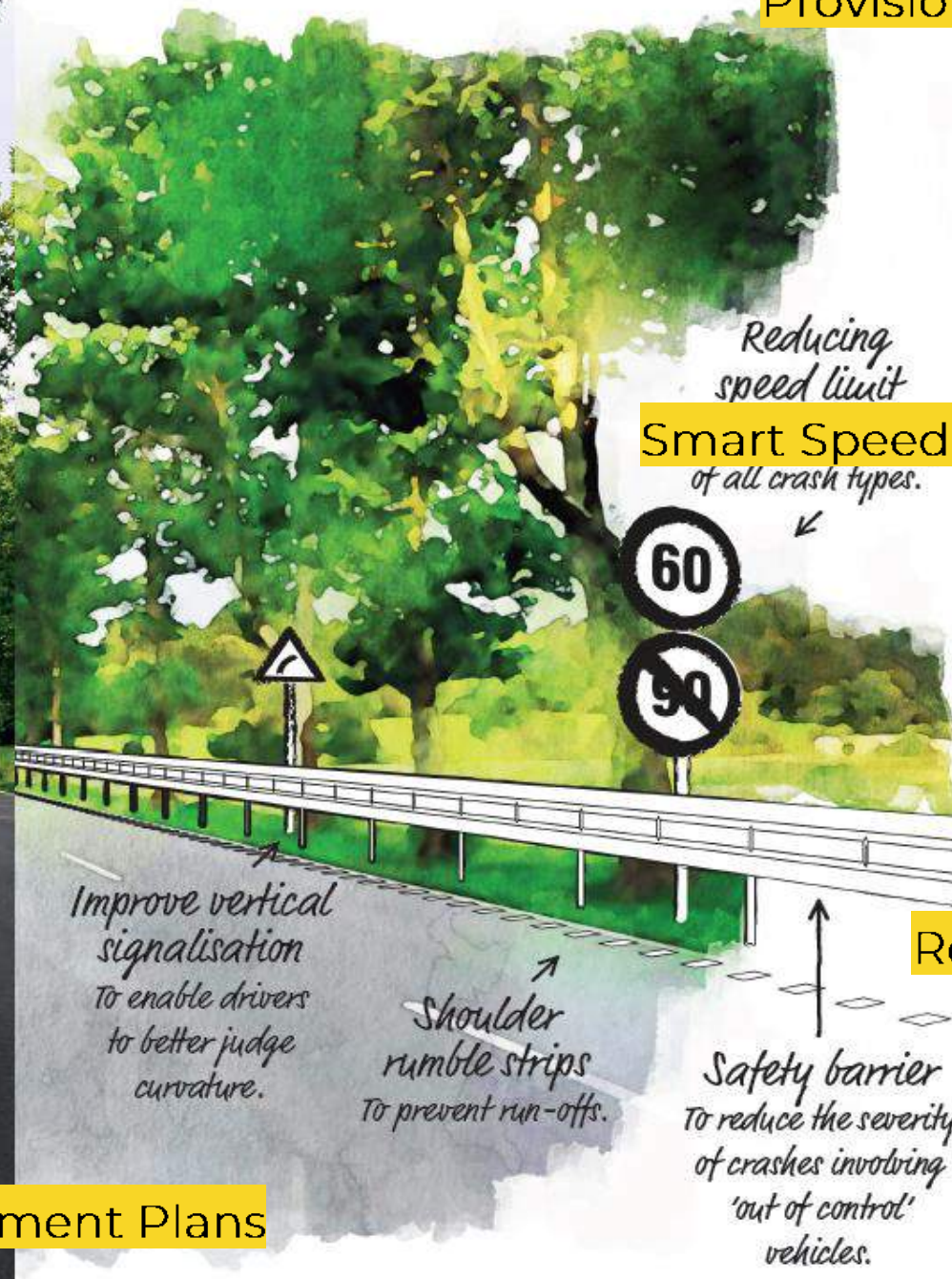
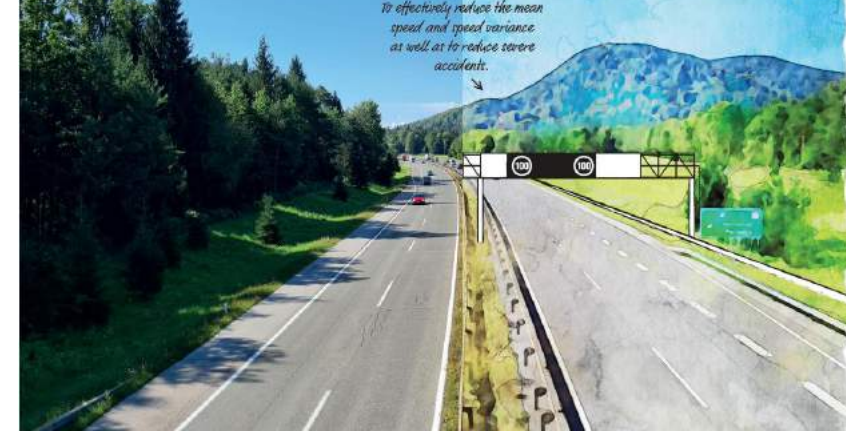


Danube Infrastructure Road Safety Improvement Strategy and Action Plans

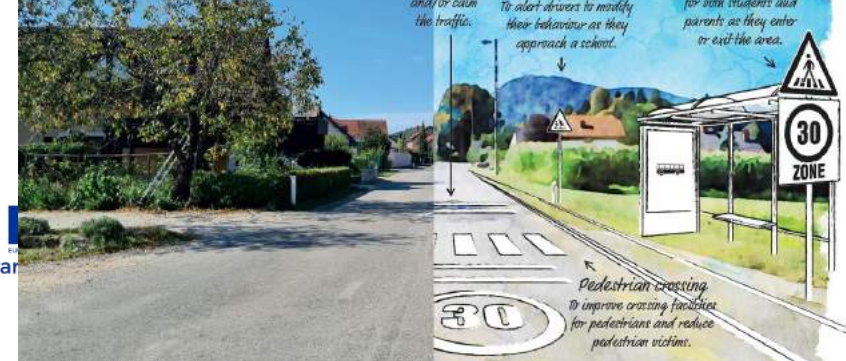
Provisions for Vulnerable Road Users



Smart Speed Management Infrastructure



Road Safety Near Schools



Safer Roads Investment Plans



THANK YOU FOR YOUR ATTENTION!

Dr. Marko Ševrović, Assistant professor

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Olivera ROZI

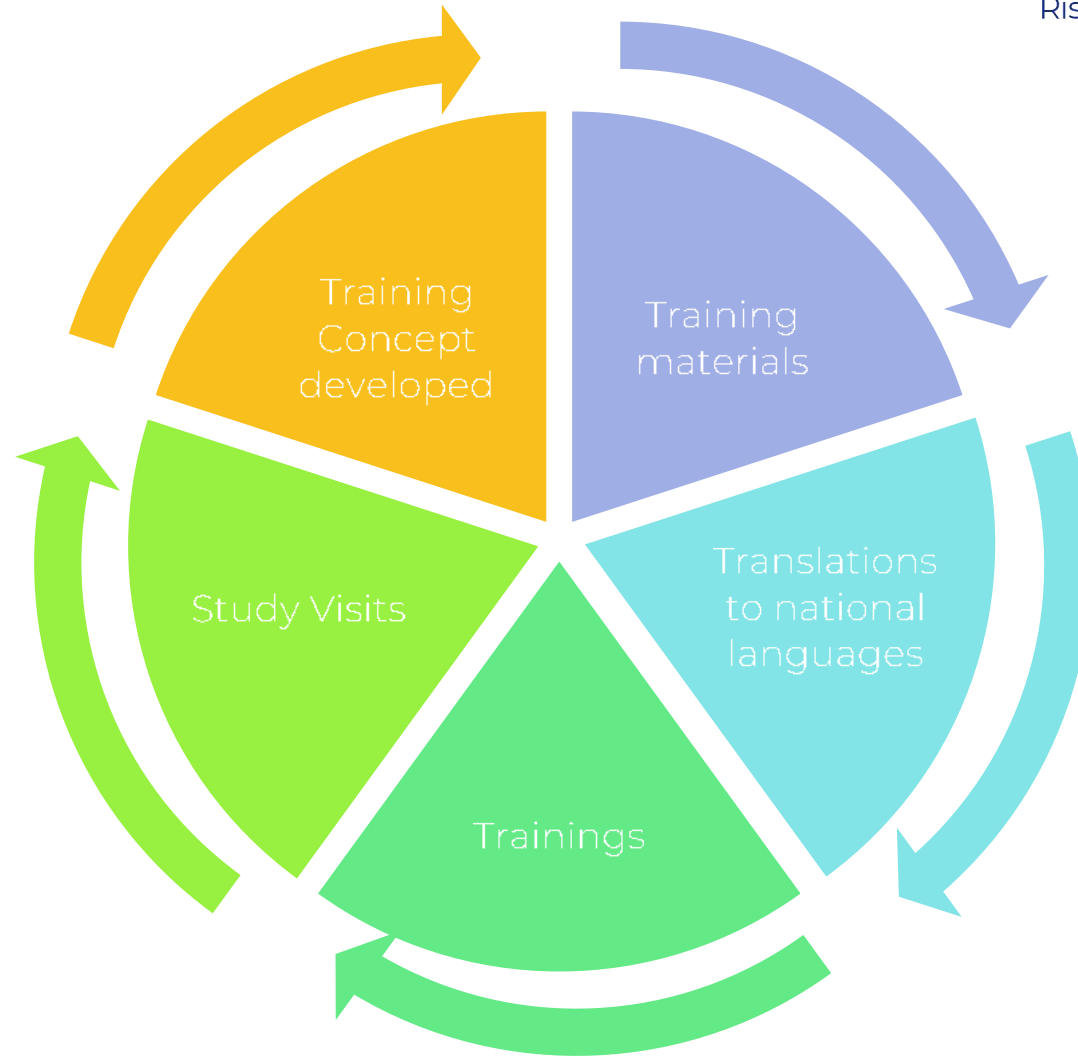
European Institute of Road Assessment –
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Empowering Road Safety stakeholders
in Danube region for improved results



Stakeholders' capacities



Project's objectives



- Improving capacity of PPs and ASPs to identify and reduce risk on road
- Enhancing transnational cooperation in addressing risk on Danube roads
- Demonstrating road safety layout concept solutions



Stakeholders Engagement

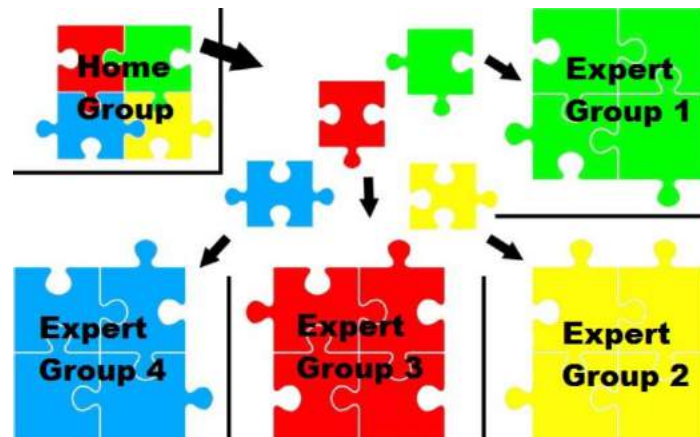


- Enhancing Transnational Cooperation – Why it is important?
 - Cooperation amongst stakeholders scattered and not structured
 - Focus to safety usually lost in other priorities
 - Transfer of knowledge between countries
 - Forum for different stakeholders' discussions – top/down and bottom/up



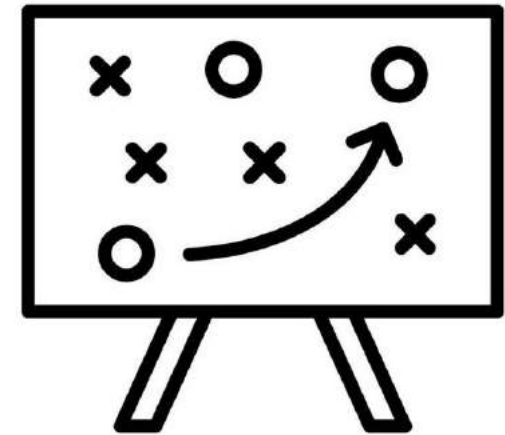
Stakeholders Engagement

- RADAR response: Road Safety Expert Group (RSEG)



Road Safety Expert Group (RSEG) Establishment

Danube Infrastructure Road Safety Improvement Strategy (DIRSIS) and country-specific Action Plans



Achievements of engagement



- 8 physical 3-day training sessions and 5 online webinars – close to 300 road safety stakeholders trained
- 4 Study Visits for Project Partners and Associated Strategic Partners
- 6 Experts Groups established and meetings on each Thematic Area
- 6 Experts Groups reports
- **One overarching STRATEGY**
- **8 National Action Plans**



Stakeholders in numbers



- 628 Road Safety engineers
- 210 different National Public Authorities
- 25 International Organisations
- 256 Interest Groups and NGOs around the world
- Half million people have heard about our activities





**RADAR teammates and
all stakeholders involved !**

- Final Conference / September 23, 2021

Striving for Safer Infrastructure for all Road Users in the Danube Area

Project co-funded by European Union funds (ERDF, IPA, ENI).

RADAR PROJECT'S FINAL CONFERENCE IS AN ACCOMPANYING EVENT OF SLOVENIAN PRESIDENCY OF THE COUNCIL OF THE EU.





RADAR project highlights

Q&A session

Moderated by:

Olivera ROZI

European Institute of Road Assessment – EuroRAP (EIRA-EuroRAP)



- Final Conference / September 23, 2021

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The RADAR project

Part 2

Moderated by:

Olivera ROZI

European Institute of Road Assessment – EuroRAP (EIRA-EuroRAP)





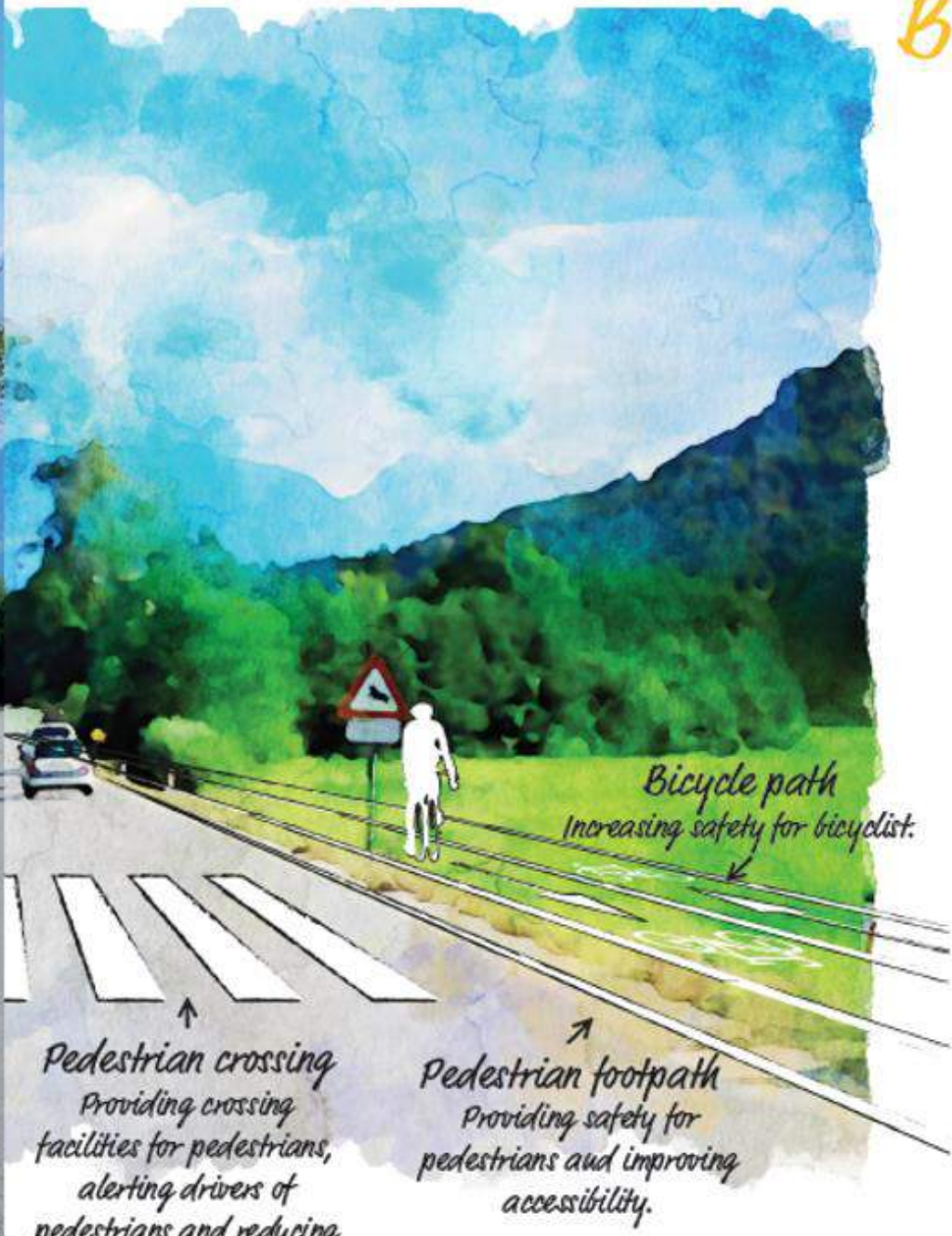
How to improve road infrastructure for safety of Vulnerable Road Users?

Jure KOSTANJSEK

Automobile and Motorcycle Association of Slovenia (AMZS)

Interview: Uroš BRUMEC, Ministry of Infrastructure, Slovenian Infrastructure Agency





Better Provisions for Vulnerable Road Users (VRUs)

Of all journeys in EU countries, up to 40 % are travelled by cycle or on foot.

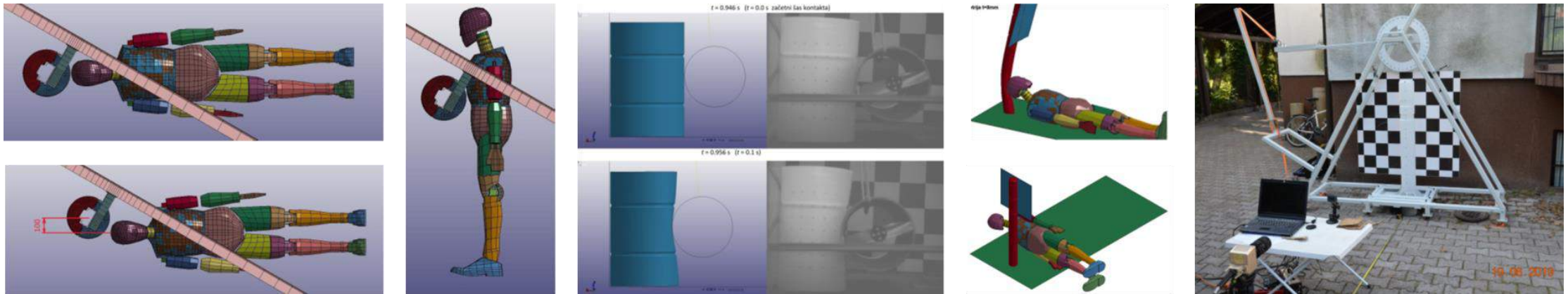
Focuses on locations where successful countermeasures for VRUs have been implemented and locations where the best opportunities exist to implement future countermeasures.

VRUs road fatalities in EU countries
Years 2010 to 2018

| | Total EU | Urban areas |
|--|------------|-------------|
| | 71% | 30% |
| | 72.5% | 88% |
| | 27.5% | 12% |
| | 29% | 70% |

Motorcyclists Safety

- Slovenian Infrastructure Agency (SIA) has systematically approached improving motorcyclist's safety, with:
 - installation of additional protections for motorcyclists (DMPS - Discontinuous Motorcyclist Protection System and MPS - Motorcyclist Protection System)
 - installation of passive safe bollards for guidance thru curves.

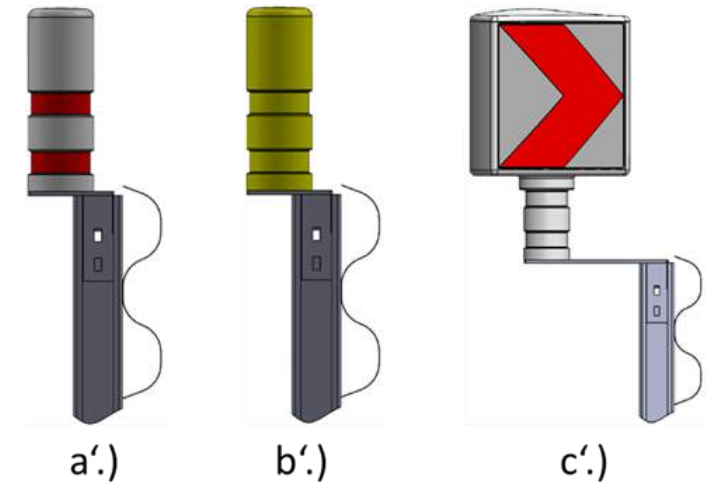
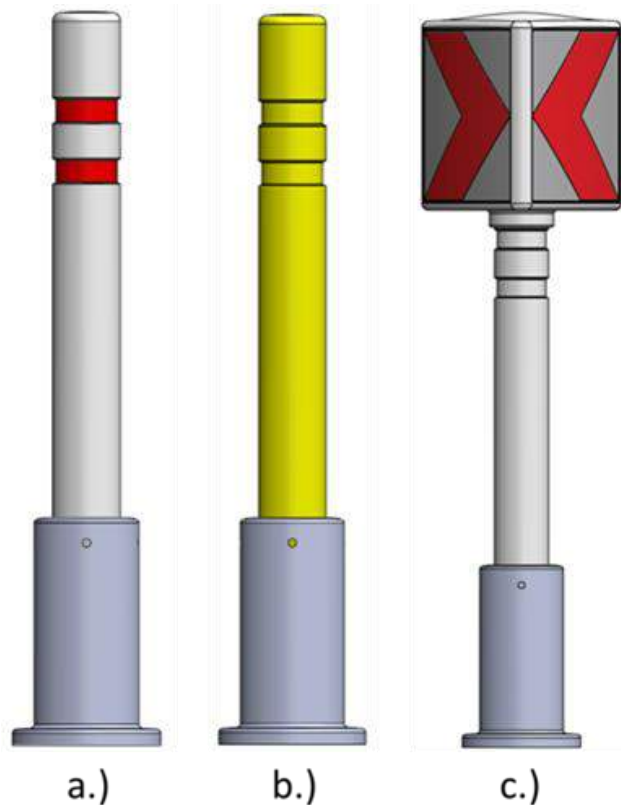


Standard used for developing of passive safe bollards and DMPS - Discontinuous Motorcyclist Protection System:
SIST EN 17342:2019 Road restraint systems - Motorcycle road restraint systems which reduce the impact severity of motorcyclist collisions with safety barriers,
SIST EN 12899-1 Fixed, vertical road traffic signs - Part 1: Fixed signs and
SIST EN 12899-3 Fixed, vertical road traffic signs - Part 3: Delineator posts and retroreflectors.

Motorcyclists Safety

- Passive safe bollards for guidance thru curves

Yellow bollards are used for marking poorly visible (less perceptible) side roads / junctions



Also with modification for setting up on safety barriers.

Motorcyclists Safety



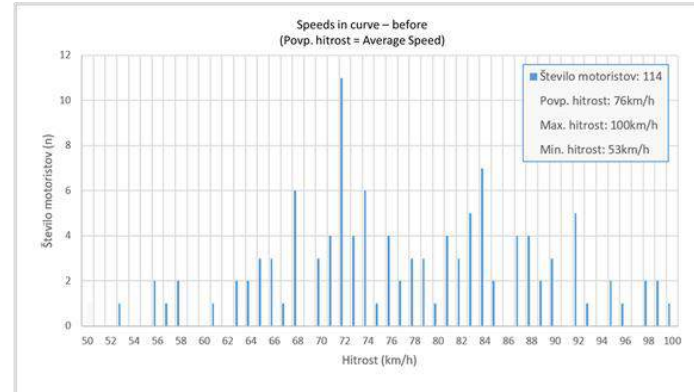
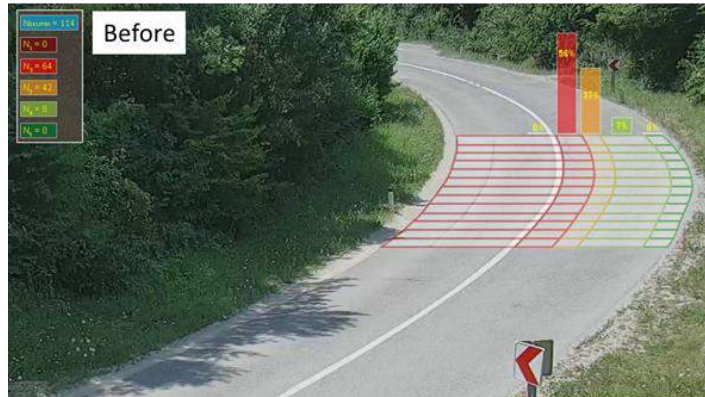
The results of the Human Factors Evaluation show that the innovative usage of bright delineators can reduce the accident probability.

The principles of installation (setting up) proves as a good and effective countermeasure and improves guidance thru curves and therefore road safety.

(H.F. evaluation)

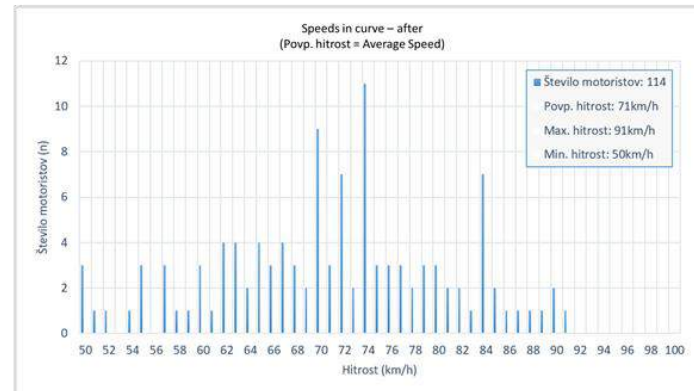
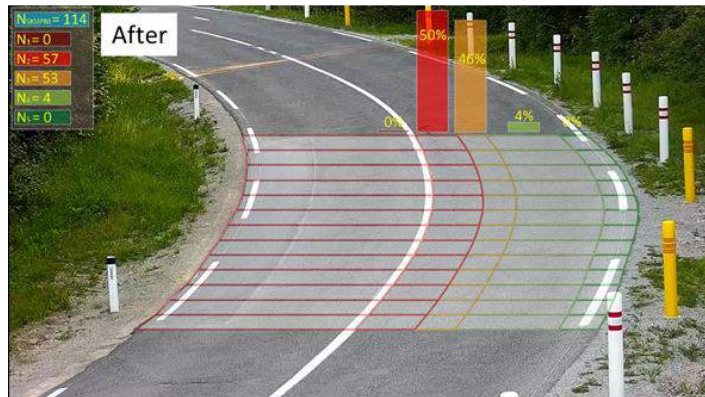


Motorcyclists Safety



Monitoring results also shows:

- motorcyclists are moving away from center line and
- reduces speeds.



Motorcyclists Safety

- Implementation of additional („special“) road markings to prevent motorcyclists from driving alongside / over the center line



Monitoring of the effectiveness of implemented measures (special markings) in 15 curves of the road section "Podpeč-Rakitna" had a positive effect on the traffic safety of motorcyclists.

The number of accidents decreased by more than two thirds in the comparable period before and after of the implemented measures (3 years period before and 3 years after implementation).

Thank you for your attention, and ride safely 😊





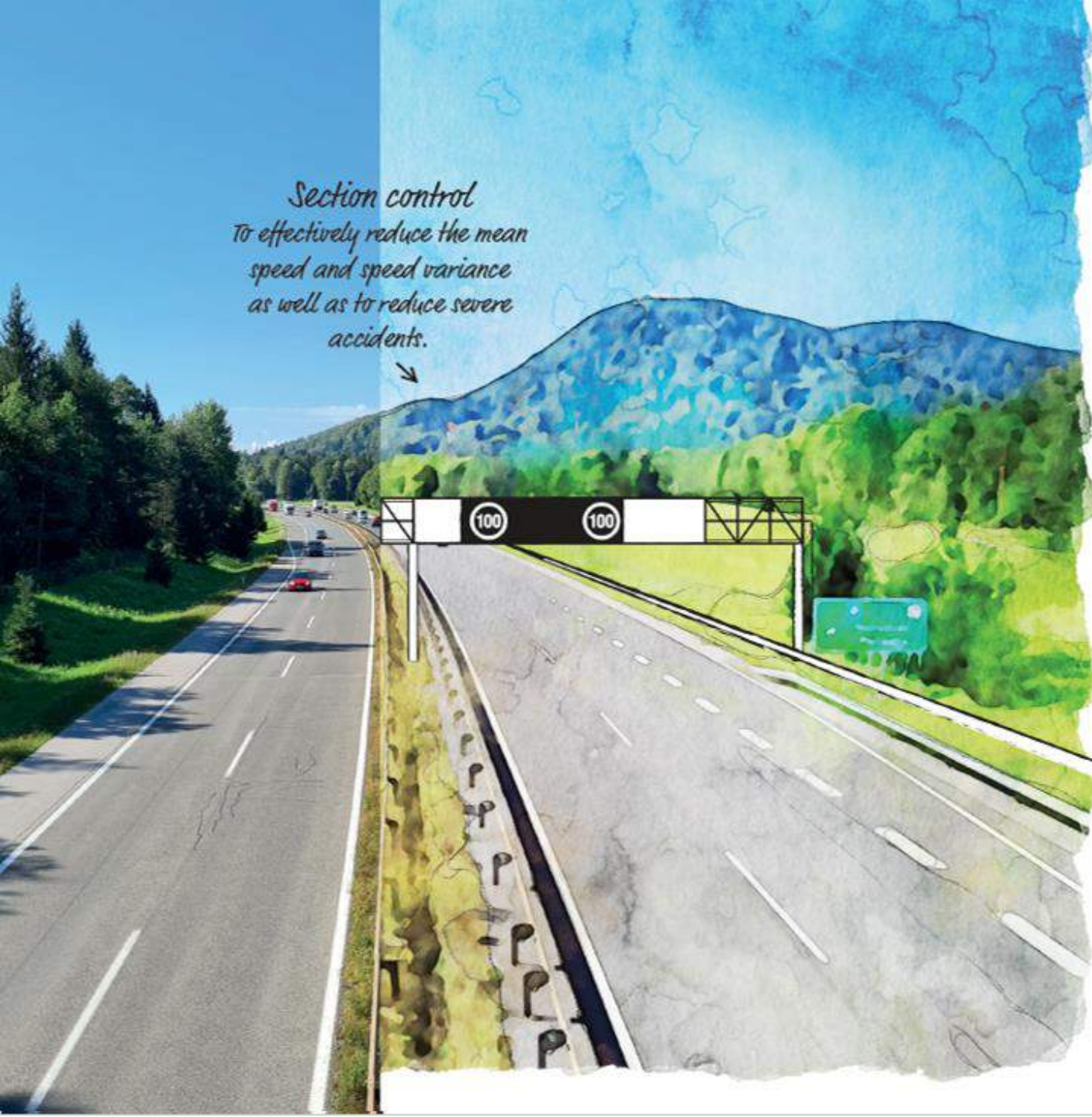
Smart Speed Management Infrastructure

Gabor PAUER

KTI Institute for Transport Sciences Nonprofit Ltd

Interview: Slavisa BABIC, Croatian Roads Ltd





*Section control
To effectively reduce the mean
speed and speed variance
as well as to reduce severe
accidents.*

Better Smart Speed Management Infrastructure

Speed management is a set of measures to limit the negative effects of excessive and inappropriate speeds in the transport system.

Share of vehicles faster than the speed limit in the EU (ETSC):

| | |
|----------------|------------------|
| on urban roads | up to 75% |
| on rural roads | up to 63% |
| on motorways | up to 59% |

-10%

A 10 % cut in average speed can result in a **30 % reduction in fatal road traffic injuries**.

2.100

2.100 lives could be saved each year in the EU if average speed dropped by 1km/h.



Road Infrastructure Safety near Schools in Danube region

—
Stelios EFSTATHIADIS
Transportation Solutions

Interview: Uroš BRUMEC, Ministry of Infrastructure, Slovenian Infrastructure Agency



Better Road Safety near Schools

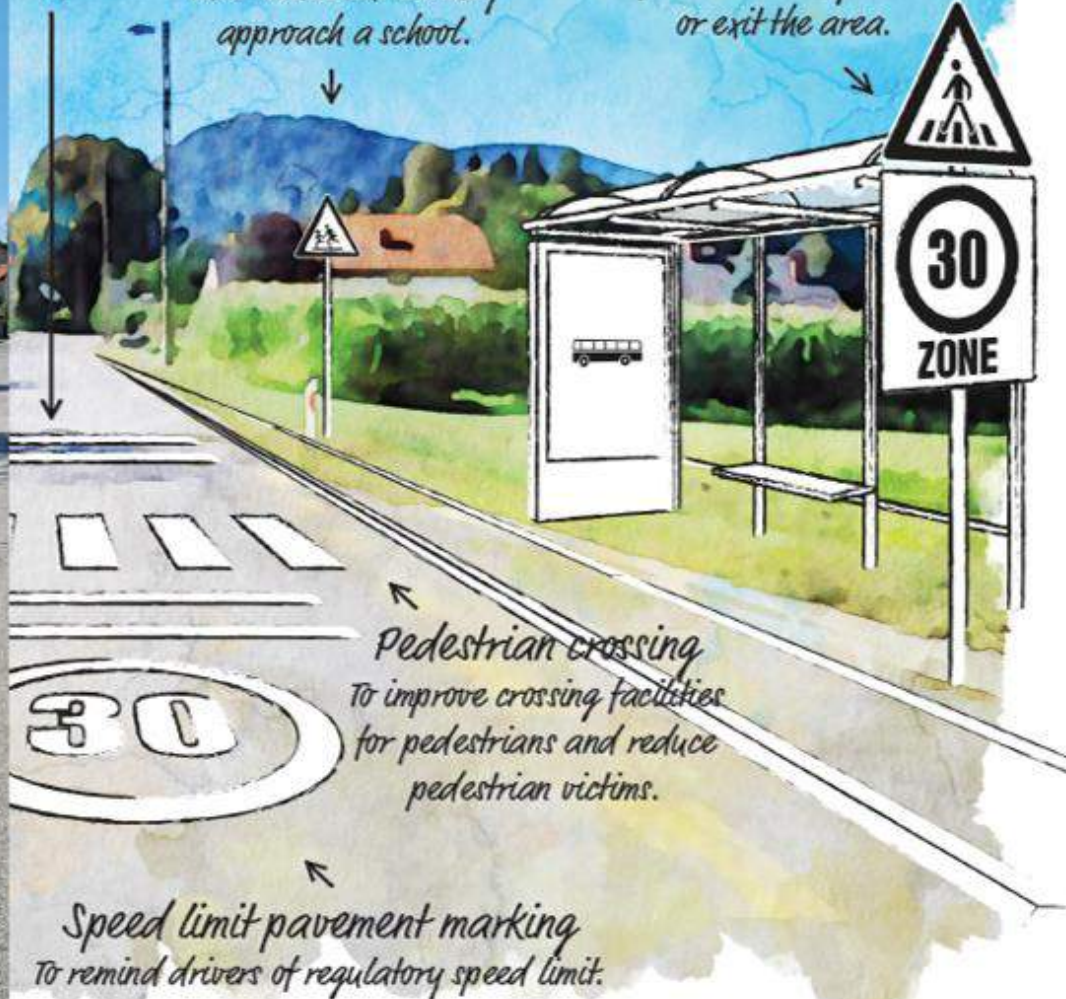
Tackling dangerous infrastructure elements around or in the neighbourhood of schools using the international Road Assessment Methodology.

The elements are related to behaviour of through traffic and its speeds, elements of route choice and behaviour from pupils, the role of parents and teachers.

Speed humps
To reduce speed and/or calm the traffic.

Warning signs
To alert drivers to modify their behaviour as they approach a school.

School zone speed limit
To improve road safety for both students and parents as they enter or exit the area.






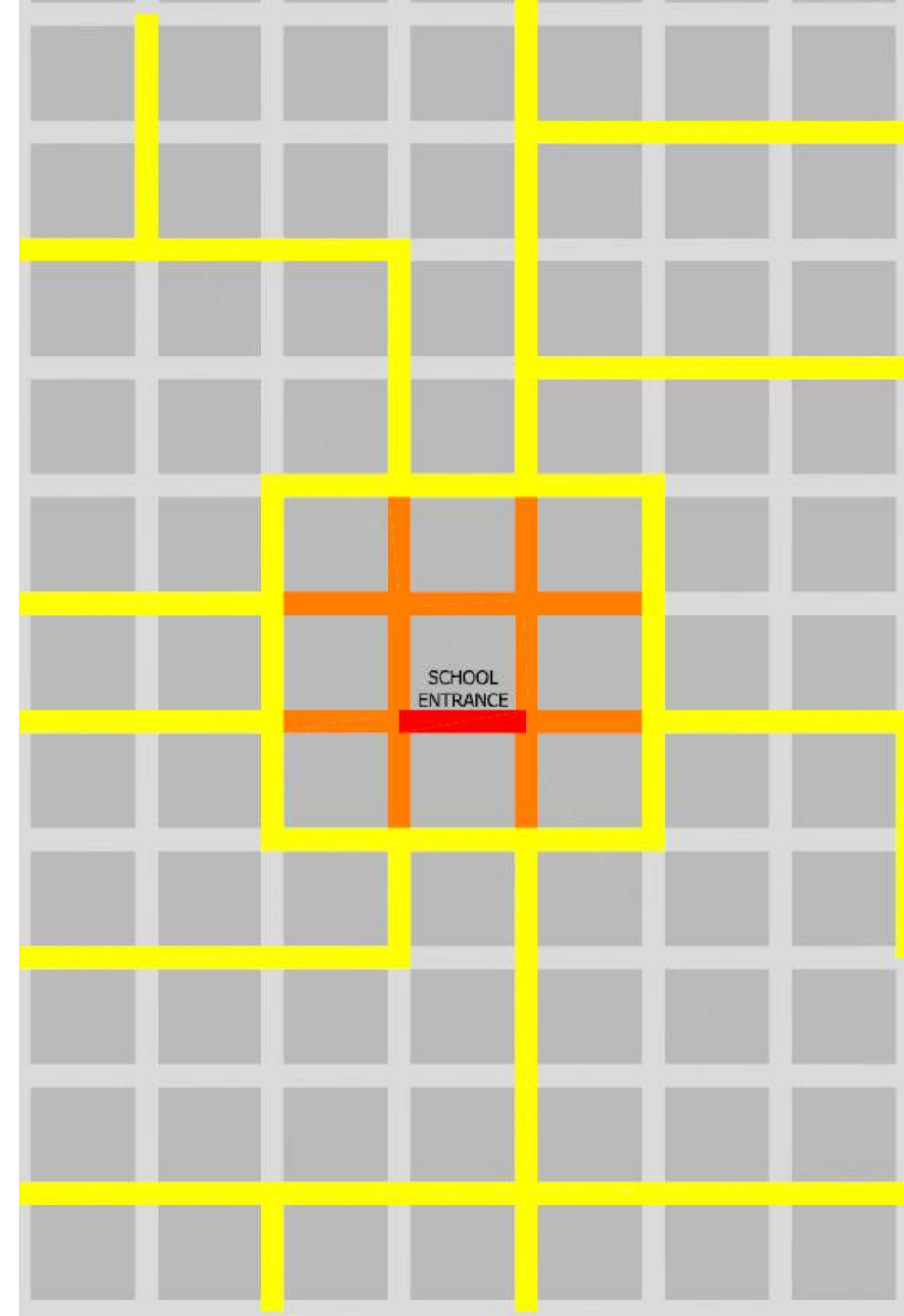
Infrastructure engineering strategies

- Speed Management (*school zone speed limits, dynamic road signs, speed limits pavement markings, roundabouts, speed humps median refuge islands curb extensions, rumble strips, Narrowing traffic lanes, chicanes, raised pedestrian crosswalks raised intersections, partial and full road closures to motorized vehicles*)
- Warning Signs
- Parking Management
- Road Crossing
- Bicycle Safety



Safety features application

- Point / Route / Area:
 - i. School entrance 
 - ii. Direct school area 
 - iii. Surrounding area / Approaching routes 
- Students' age:
 - a) Kindergarten (<6y)
 - b) Primary / Elementary school (7-12y)
 - c) Secondary / High school (13-17y)
- Roads' category in the vicinity:
 - Local / Arterial / Highway / National Road



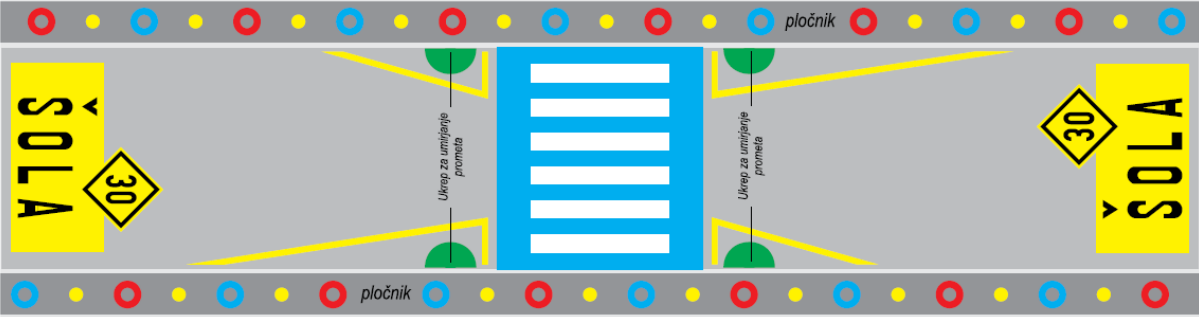
Countermeasures



- Humps
- Signs
- Narrowing street width
-
-



Countermeasures



RADAR



Recommendations for state authorities



- develop and support specific **design guidelines** for road sections in the vicinity of schools,
- define in the Road Traffic Code special **speed limits** to be applied on road sections in the vicinity of schools,
- ensure adequate **funding** for road safety interventions in primary roads in the vicinity of schools,
- ensure embedding of the **Safe System approach** into the mainstream of road design/investment and maintenance legislation and practice,
- start systematic collection of **data** on road crashes near schools and related casualties,
- systematically estimate and publish **key performance indicators** on the road network around schools,
- transfer Safe system approach to local governments and local road authorities,
- support **knowledge transfer** with demonstrations of good practices and approaches towards road authorities and regional/ local governments.



Recommendations for local governments



- ensure adequate **funding** for road safety interventions in local roads in the vicinity of schools,
- start systematic collection of **data** on road crashes near schools and related casualties,
- organize educational **campaigns** to promote safer transport to/ from schools.



Recommendations for road authorities



- form own special road safety **funds** within regular or investment funds dedicated for direct investments in road safety, to implement upgrades in the vicinity of schools
- follow the road safety trends and good practices to plan maintenance and upgrade of existing road network in the vicinity of schools (prioritise projects),
- use appropriate methodologies to **identify hazardous locations** near schools and the **causes** of road safety problems, identify intervention priorities and implement countermeasures,
- conduct “before and after” **studies** to evaluate the road safety effect of implemented interventions.



Star Rating for Schools (SR4S)

- A free to use tool for treatment support and infrastructure assessment
<https://www.starratingforschools.org/>





Road Infrastructure Safety near Schools in Danube region

Interview: Uroš BRUMEC, Ministry of Infrastructure, Slovenian Infrastructure Agency



#SaferToSchool

- Guidelines for installing urban equipment and architectural design of traffic areas to improve road safety for school children
 - <https://www.gov.si/zbirke/storitve/smernice-za-postavitev-in-izvedbo/>

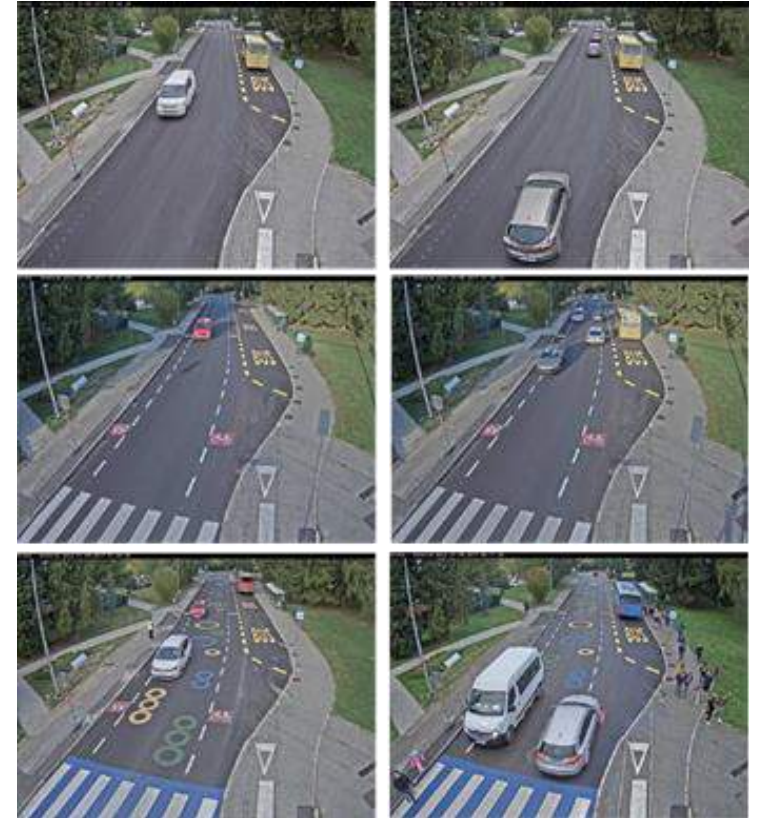


#SaferToSchool



Monitoring results – main findings:

- The design was very well accepted among children, parents, teachers, local community and drivers.
- Drivers are alerted and properly stimulated so they are **more attentive** for children presence and they **reduce speed** (v_{max} . is dramatically lowered).
- Children do not play / jump on the road 😊



#SaferToSchool



- We can fairly say that the project is a success and has beneficial results on driver behavior – **speed and attention**.
- By thoughtful incorporation of Human Factors knowledge in to the road design, we can enhance Road Safety, and at the same time tackle nowadays ever-growing problem on drivers' **Distraction and Fatigue**.

Do drivers in the area of colourful road design pay more attention to what is happening on or alongside the road?



They do tend to drive more alert, as the road design tend to “wake them up” from monotone driving (so called driving in partly automated mode – not knowing when you came home).

Does the colourful road design, around Schools, has any effect on drivers to reduce the speed?



Proper road design have a positive effect on drivers around schools, and they do tend to reduce speed. What is also very important is the fact, that extreme driving (max. speeds) are almost gone.

#SaferToSchool



#SaferToSchool



#SaferToSchool



#SaferToSchool



#SaferToSchool



Thank you for your attention and be safe 😊



@Safer_to_School

Varneje v šolo // Safer to School





COVID-19 and transport safety

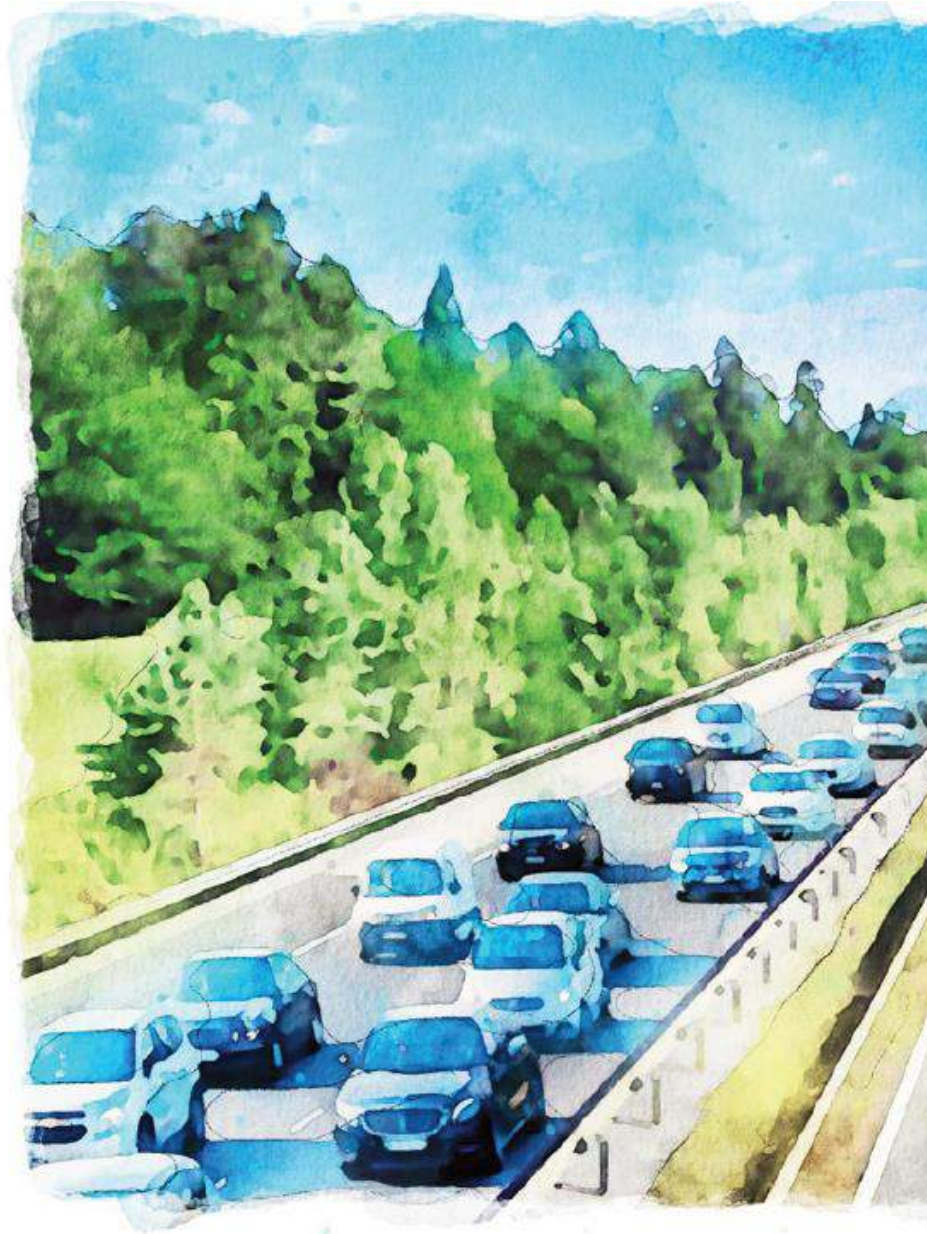
Klaus MACHATA
Austrian Road Safety Board

Interview: Marko SEVROVIC, European Institute for Road Assessment



Better **Transport Safety** COVID-19

The COVID-19 pandemic has had an unprecedented impact on mobility patterns and transport worldwide and therefore on road safety. This critical time requires action to demonstrate by facts the real impact of the pandemic on road safety in the region and lessons to be learnt from it.



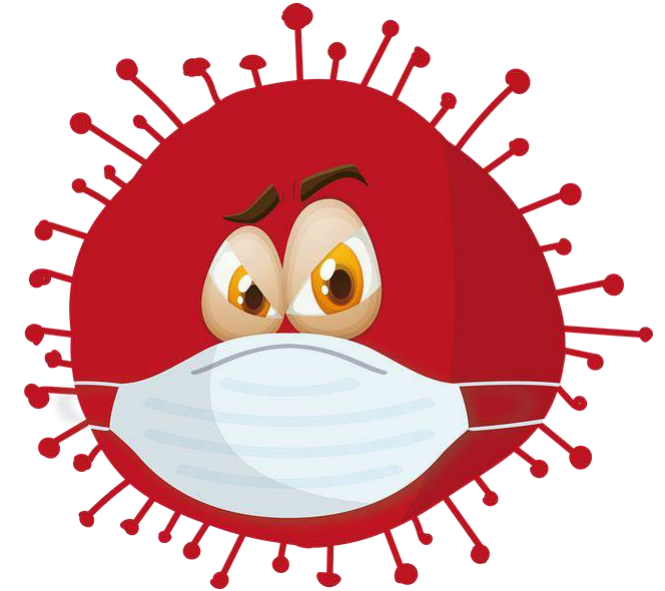
Reason for this RADAR report*



1. What was the impact of COVID-19 on ...

- Crashes & casualties?
- Transport volumes & mobility patterns?
- Behaviour of road users?
- police enforcement, safety investments, ...

2. What **should be done** to reinstate and further improve road safety in the Danube Area countries?



*data from international literature analysis and information from RADAR partner countries

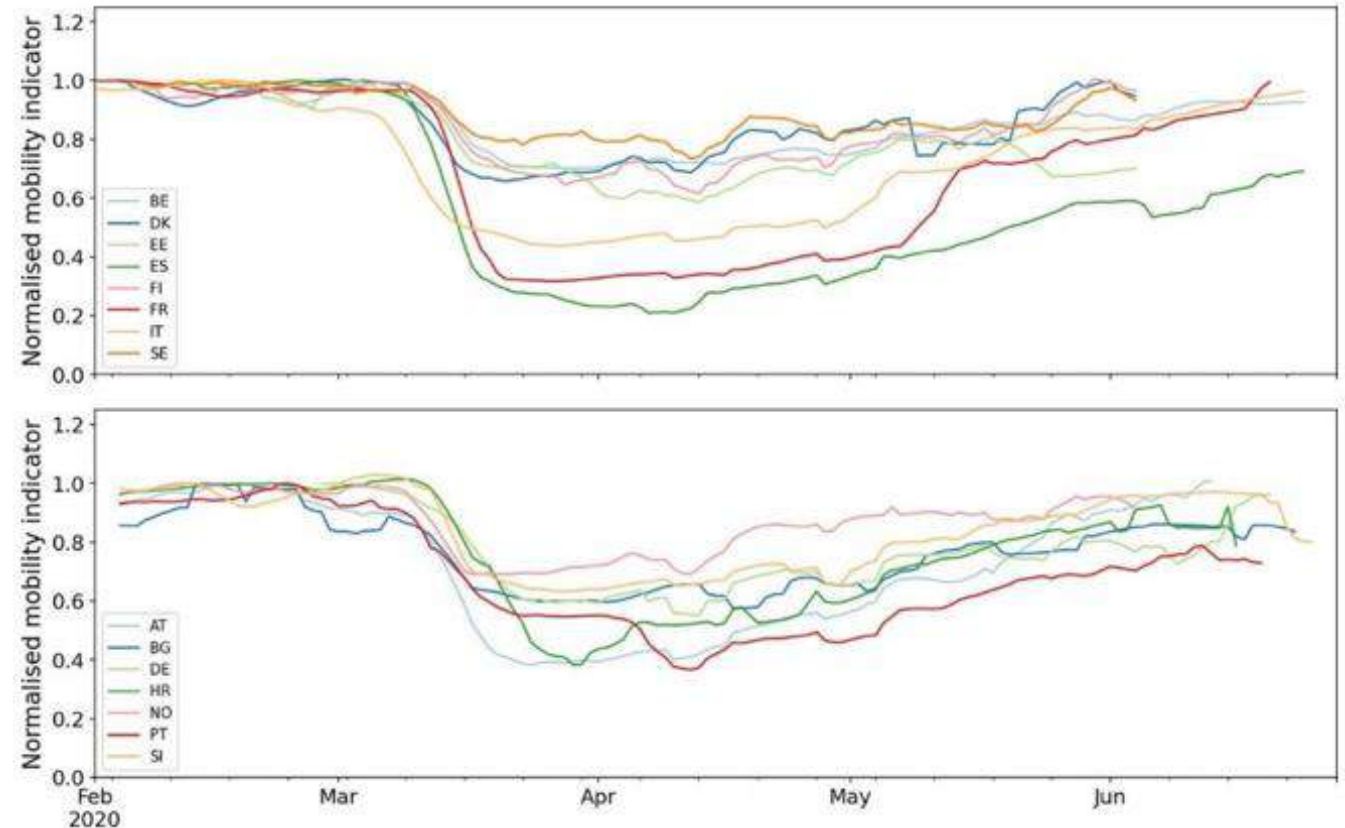


Impact on mobility

Transport volumes and travel patterns

Impact on mobility in individual countries

- Overall mobility: different pace & orders of magnitude across countries
- Different speeds of recovery

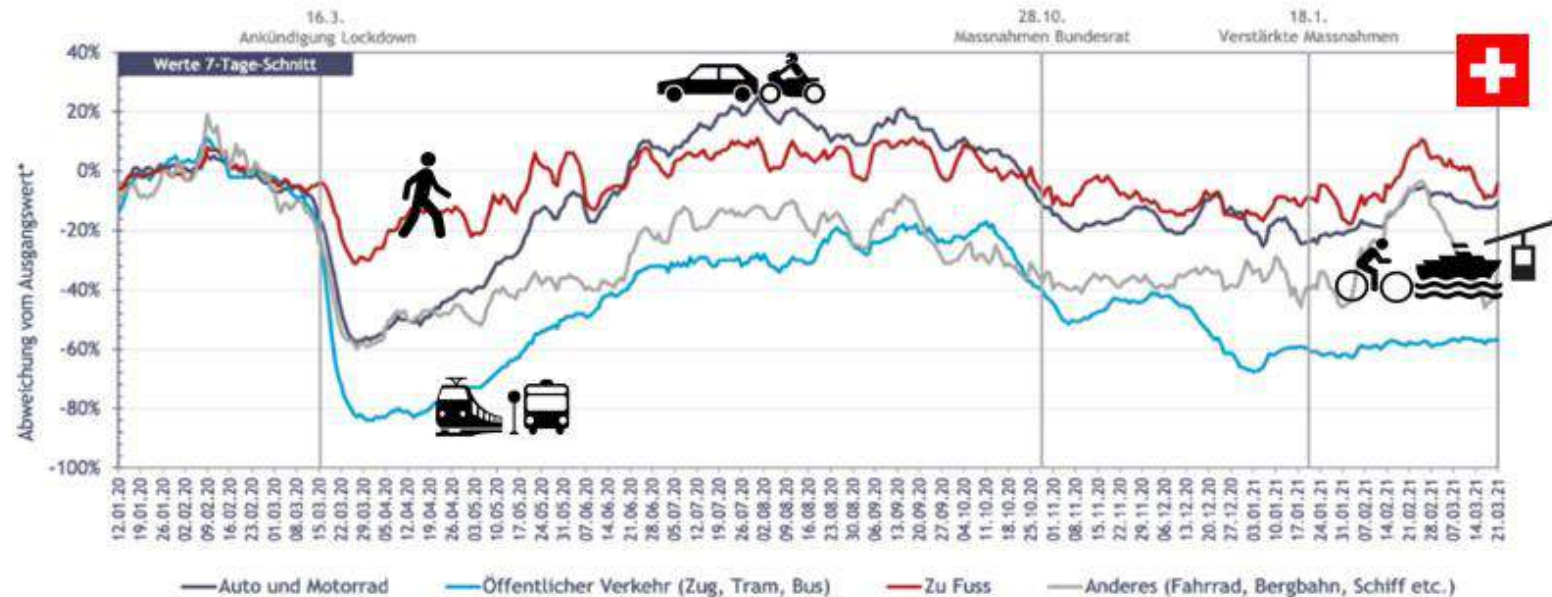


Change of mobility at country level (7-day moving average) between February 2020 and March to June 2020, Source: Santamaria et al. 2021

Impact on daily distances across transport modes

Example CH:

- walking & car & motorcycle higher than pre-crisis in summer 2020
- Public transport stayed at substantially lower levels



*Der Ausgangswert (0%) entspricht der mittleren täglichen Distanz vom 10.1. bis 29.2.2020 | Kalkuliert mit 7-Tage-Schnitt.
Durchschnittliche tägliche Basis: n=2'561 Footprints-Panelisten

Percentage changes in Switzerland (7-days-average) of the daily distances by different means of transport in comparison to the average daily distance between 10 January to 29 February 2020, Source: Moser, Mikosch & Fischer 2021

Impact on cycling

UK:

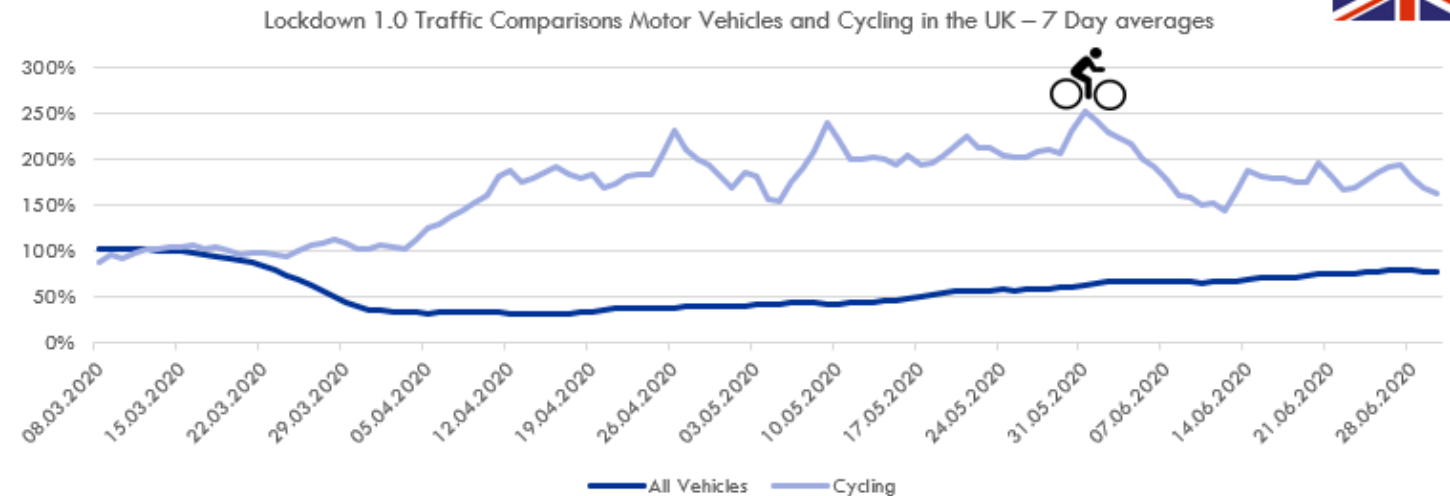
- all motor vehicles -39% (March-June 2020)
- Cycling +68%

EU:

- Cycling +8% (2019 → 2020), (weekends +23%, weekdays +3%)

Slovenia:

- 31% reported that they used the bicycle more than before the lockdown



UK: Change in traffic of all motor vehicles and cycling between March and June 2020 in the UK, 7-day averages, Source: Owen 2021, Department of Transport 2021a

EU: Percentage change in cycling levels in 2020 compared to 2019 in 11 European Countries, Canada, and the USA (for entire weeks, weekends, and weekdays), Source: Buchler & Pucher 2021

Impact on public transport

- Different orders of magnitude in cities in the EU and USA
- Different speeds of *recovery*
- *Czech Republic*
 - 32% reduction in the number of bus passengers (2020 vs. \emptyset 2017-2019)

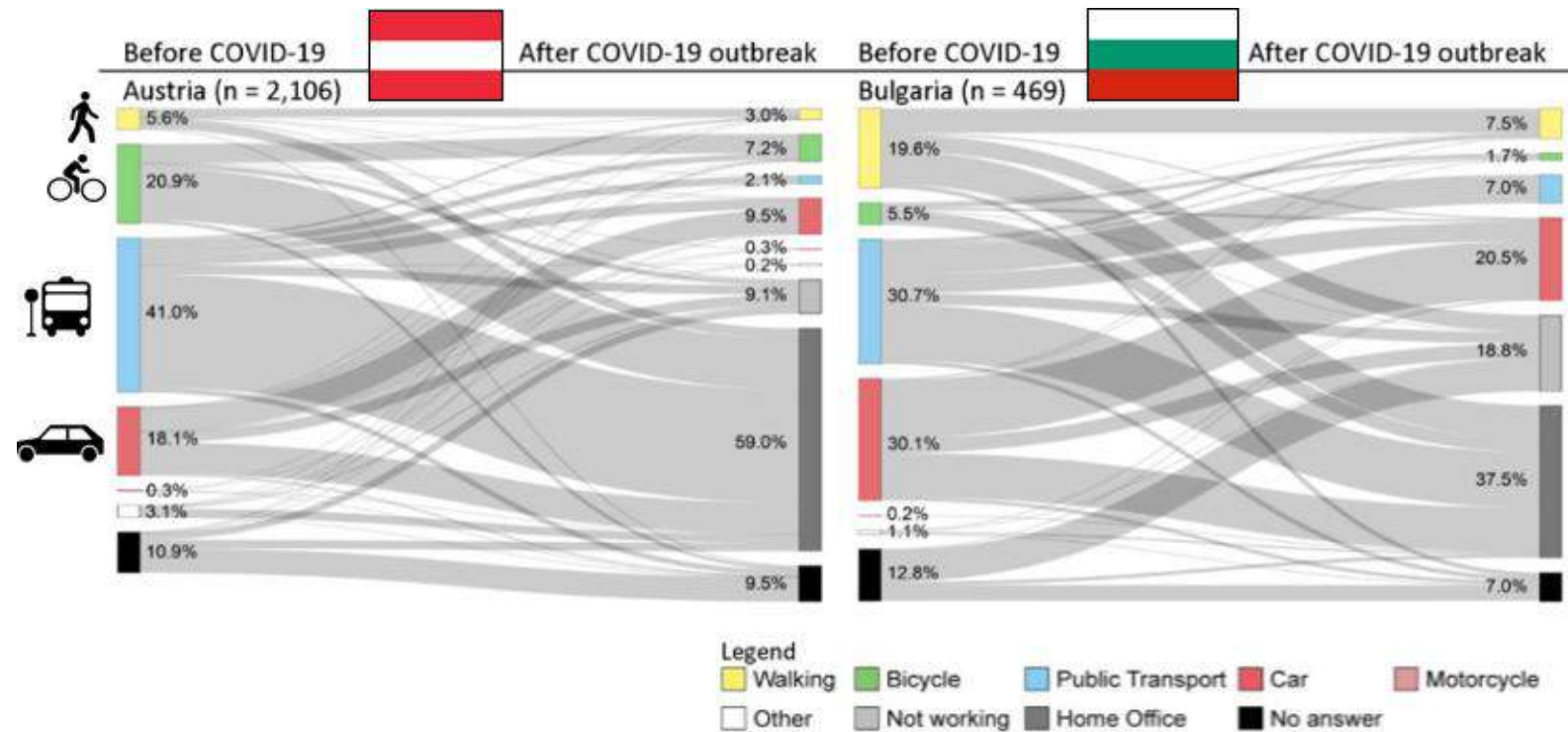


Use of public transport in selected cities in Europe and the USA, 15 January 2020 – 9 January 2021,
Source: UNECE 2021, Moovit 2020

Impact on modal split

Examples AT & BG:

- Public transport faced shifts to other transport modes & home office
- Car use: shifts to home office



Changes in commuting mode choice between before COVID-19 (left) and during the COVID-19 outbreak (right) for selected Danube Area countries, taken from a survey in 14 countries around the globe, Source: Shibayama et al. 2021

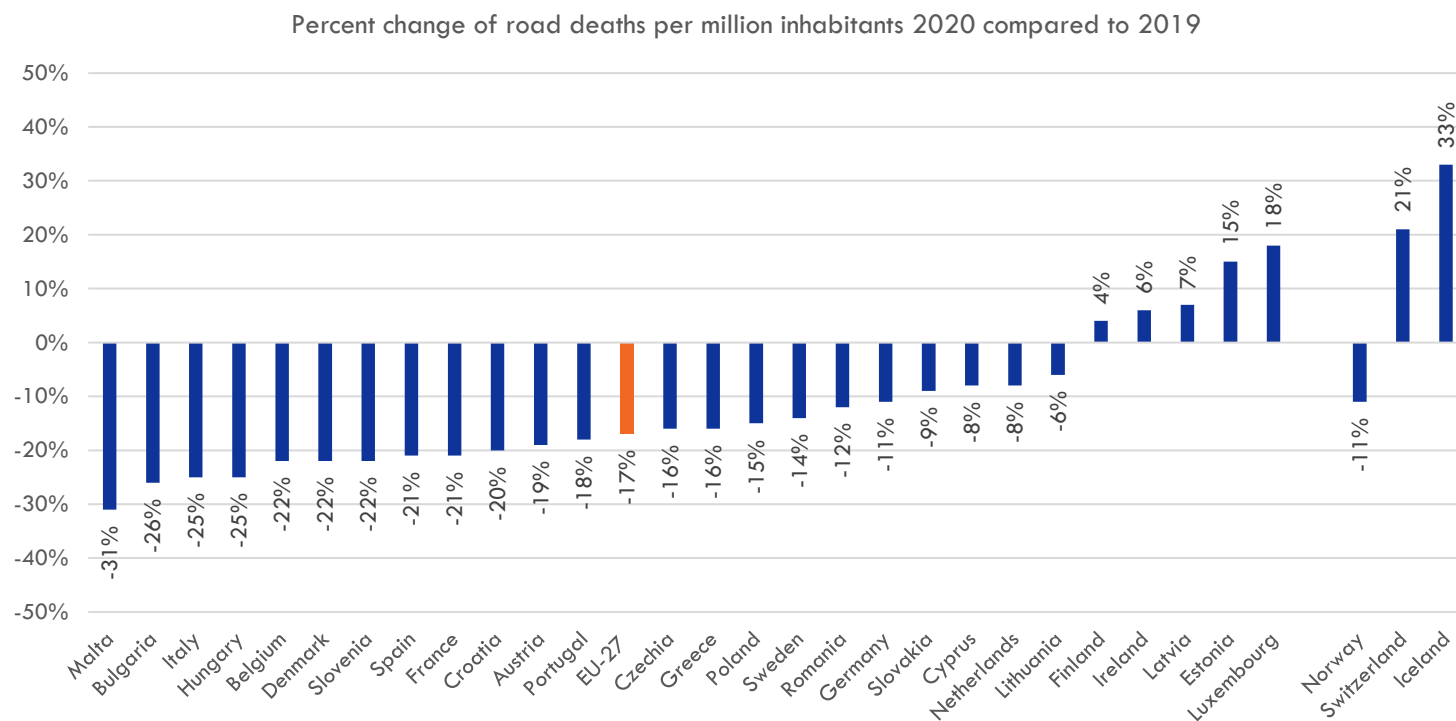
Impact on crashes & casualties

Totals & risk, detailed analysis (user type, road class, ...)

Road fatalities EU + EFTA



- -17% fatalities in the EU (2019 → 2020)
- Some notable increases, e.g. FIN, CH

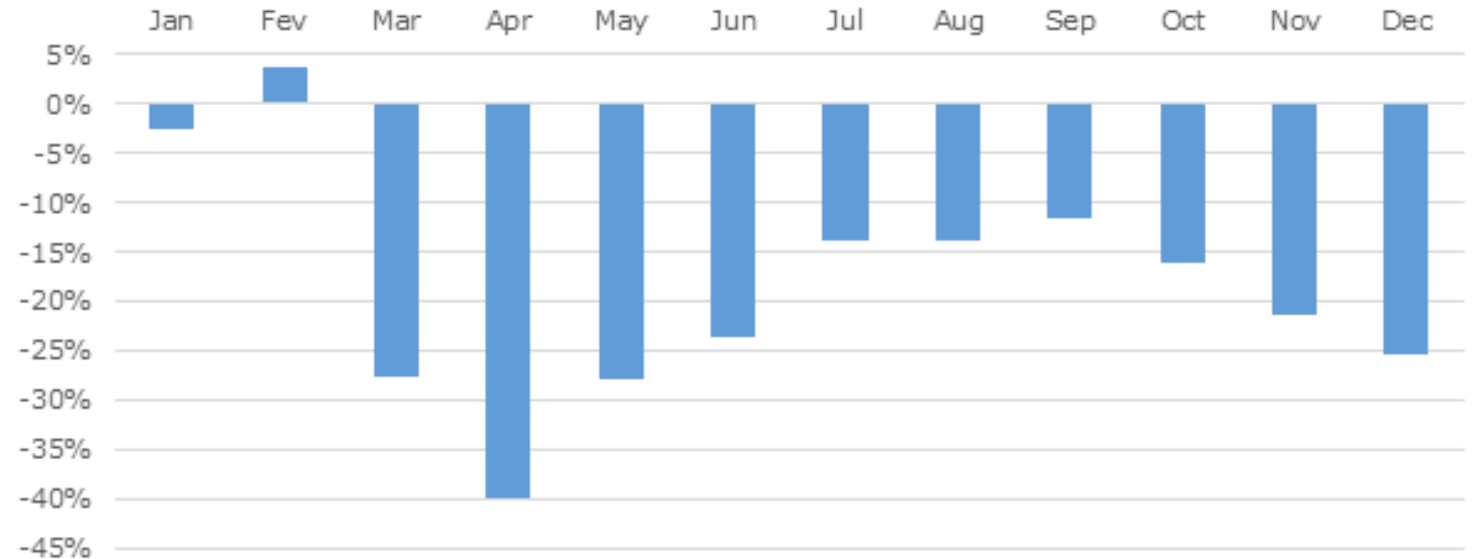


Percent change of road deaths per million inhabitants 2020 compared to 2019, Source: European Commission 2021a



Road fatalities EU (monthly)

- Higher reductions in first wave – peak reduction (-40%) in April 2020
- Summer reductions much lower



Source: CARE (EU database on road crashes)

*Trend in the monthly number of EU road fatalities 2020 compared to average 2017-2019,
Source: European Commission 2021b*



Fatality reductions comparatively poor

April 2019 → 2020: less reductions for fatalities than for traffic (most countries)

| Country | Road deaths (% change) | Traffic (% change) | Lockdown in spring 2020 |
|--------------|------------------------|--------------------------|--|
| Australia | -23 | -43 | From 23 March; gradual lifting in May/June |
| Austria | -30 | -50 | 16 March-14 April (gradual lifting) |
| Canada | -34 | n.a. | Varies by jurisdictions |
| Chile | -24 (June on June) | -56.5 (Santiago) | 18-Mar-14 May partial, to 24 June total |
| Czech Rep. | -11 | -50 (motorways) | 13 March-17 May |
| Denmark | +9 | -25 | 13 March-15 April (gradual lifting) |
| Finland | -24 | -34 | 17 March- 4 May (gradual lifting) |
| France | -56 | -75 | 17 March-10 May (gradual lifting) |
| Germany | -1 | -48 (overall), -19 (HGV) | 22 March-19 April (gradual lifting) |
| Greece | -58 | n.a. | 23 March-27 April (gradual lifting) |
| Hungary | -43 | -33 | 28 March-4 May (18 May in Budapest) |
| Ireland | -22 | -62 (cars), -17 (HGV) | 13 March-18 May (gradual lifting) |
| Israel | -28 | -60 | 15 March-29 April |
| Italy | -79 | -75 (overall), -39 (HGV) | 9 March-18 May (gradual lifting) |
| Japan | -21 | n.a. | 9 March-18 May (gradual lifting) |
| Lithuania | -71 | -36 (overall), -15 (HGV) | 17 March-17 June |
| Mexico | -23 | -59 | 23 March-1 June |
| Morocco | -65 | n.a. | 20 March-24 June |
| Netherlands | +6 | -35 | No full lockdown |
| New Zealand | -80 | -74 | 26 March-14 May |
| Norway | n.a. | -25 | 12 March-11 May |
| Poland | -32 | n.a. | 13 March-20 April (gradual lifting) |
| Portugal | -59 | n.a. | 19 March-18 May |
| Serbia | -49 | n.a. | 15 March-4 May |
| Slovenia | -11 (Mar to May) | -53.5 | 15 March-18 May (gradual lifting) |
| South Africa | -78 | -77 | 26 March through July |
| Spain | -49 | -75 | 15 March-11 May |
| Sweden | +6 | -22 | No lockdown |
| Uruguay | -51 | n.a. | No mandatory measures |

Changes in road deaths based on provisional data, for Canada based on preliminary data from a sample of jurisdictions.

Road deaths and traffic in April 2020 compared to April 2019, Source: ITF 2020



Fatalities reduced less than all casualties

- UK: from March 2020, reductions for fatalities much less than for all casualties
- Casualty reductions similar to traffic volumes
- *Moldova*
 - -26% injuries, only -14% fatalities (2020 vs. Ø 2017-2019)

| | | Number/percentage change compared with same month in the previous year (P) | | | | | |
|-------------------------------|-------------------|--|----------|-------|-------|-------|-------|
| FATALITIES AND ALL CASUALTIES | | January | February | March | April | May | June |
| Killed | Number | 160 | 130 | 110 | 80 | 90 | 110 |
| | Percentage change | U7% | U10% | U20% | U48% | U30% | U9% |
| All casualties | Number | 12,310 | 11,030 | 8,190 | 3,930 | 7,040 | 8,650 |
| | Percentage change | D4% | U3% | U33% | U67% | U45% | U33% |

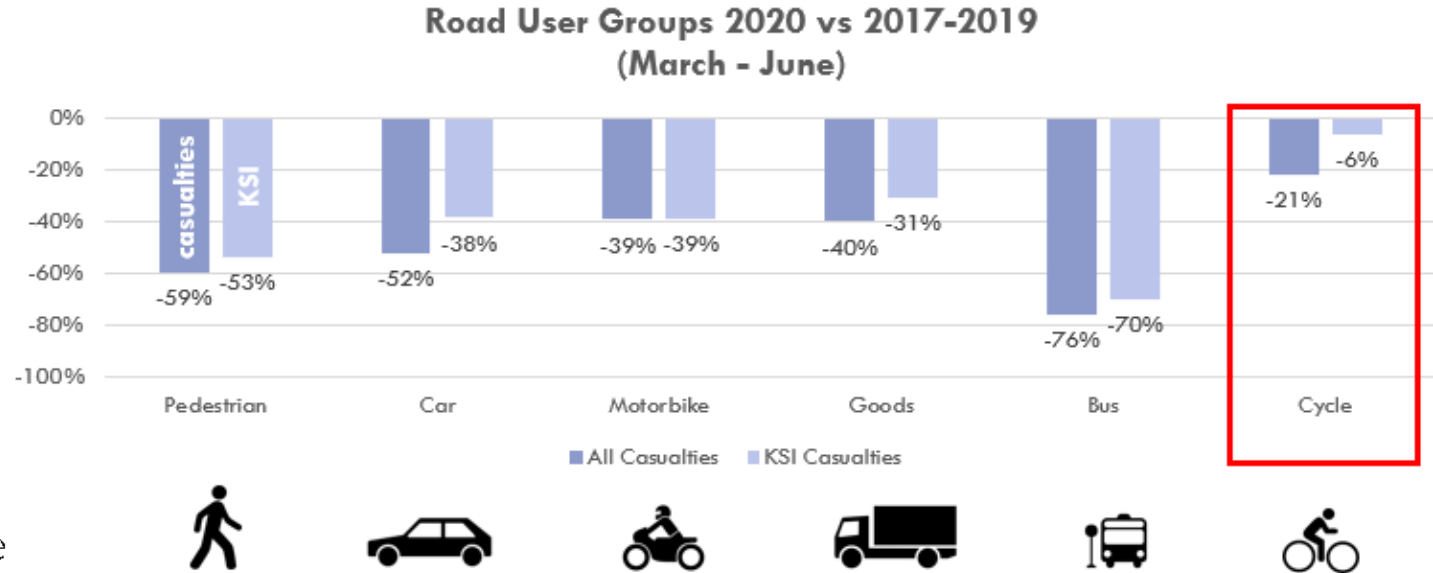
P Provisional estimates (rounded to the nearest 10)

Percentage change of all casualties and fatalities in the UK, January to June 2020 compared to 2019, Source: Department for Transport 2021b

Road user type

- UK:
 - KSI reductions less than all casualties for all modes
 - Smallest reductions for cyclists, especially KSI
- AT: cyclist fatalities +13%, injuries +6%
- DE: cyclist fatalities ±0%, injuries +8%
- CH: cyclist fatalities +19%, severe injuries +12% motorcycle +29% / -1%
- HR and HU: reductions for cyclist fatalities, smallest reductions for cyclist (severe) injuries

all: 2020 vs. Ø2017-2019



Percentage change of all casualties and KSI (killed and serious injuries) casualties between March and June 2020 compared to Ø2017-2019 by road user groups in the UK, Source: Owen 2021

Fatality rate by road type

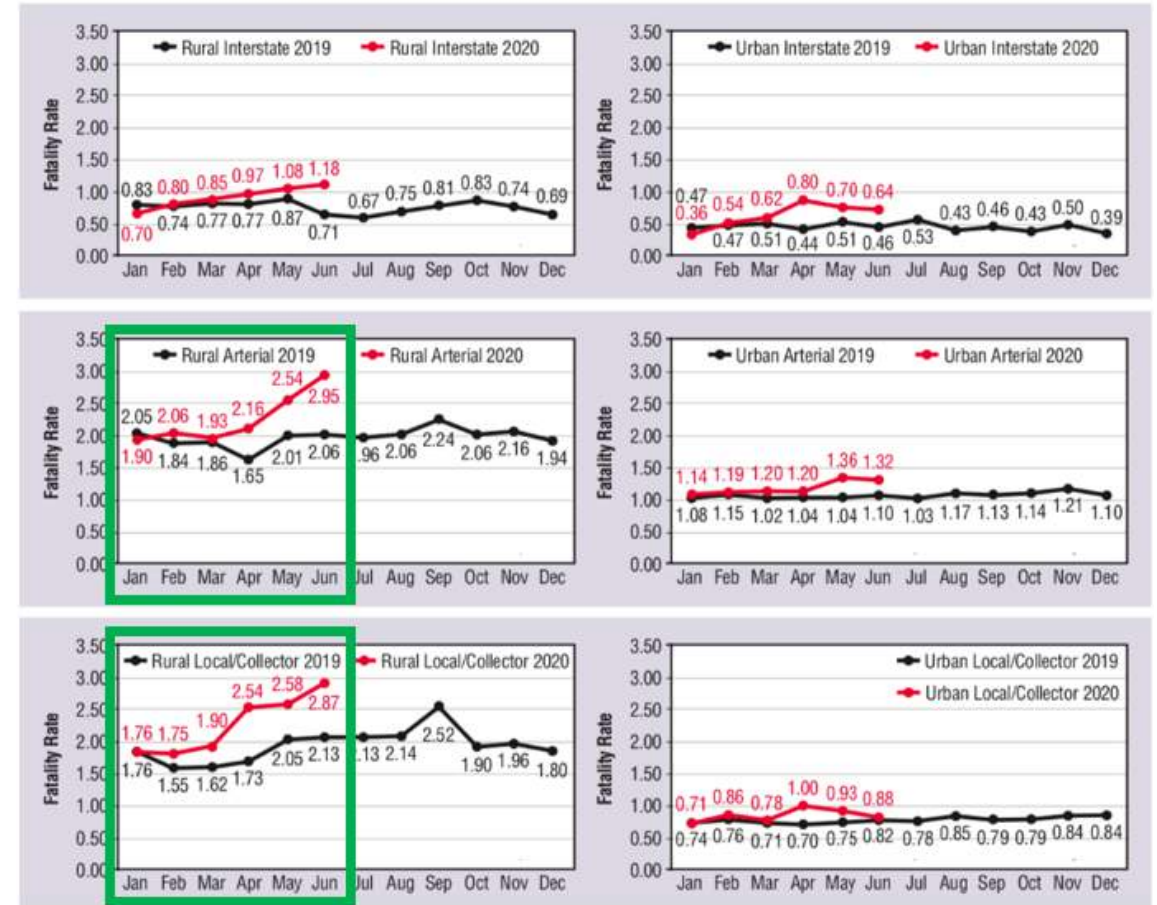


USA:

- fatality rate* increased by 34% for 2nd quarter 2020, and 26% for 3rd quarter (fatalities up 13%)
- increase mainly driven by rural roads (arterial / collector / local)
- higher shares for fatal single-vehicle-crashes

Hungary:

- lower reduction in absolute number of fatalities (not rate) for rural roads than for motorways and urban roads (2020 vs. 2017-2019)



Fatality Rate by Roadway Function Class for 2019 to June 2020, Source: NHTSA 2020b

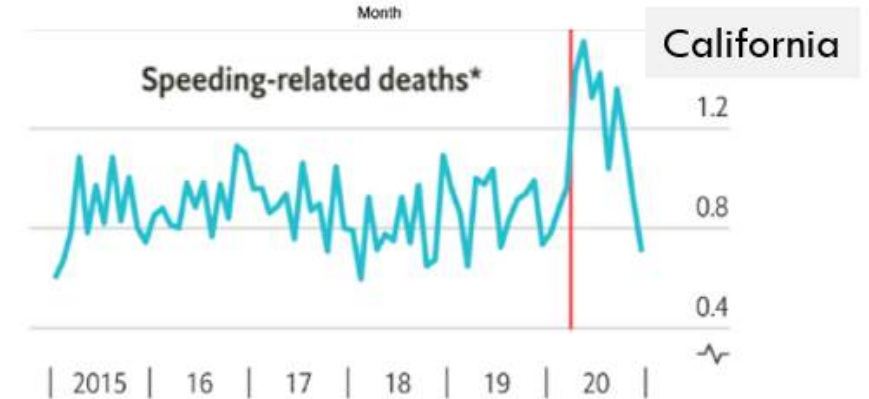
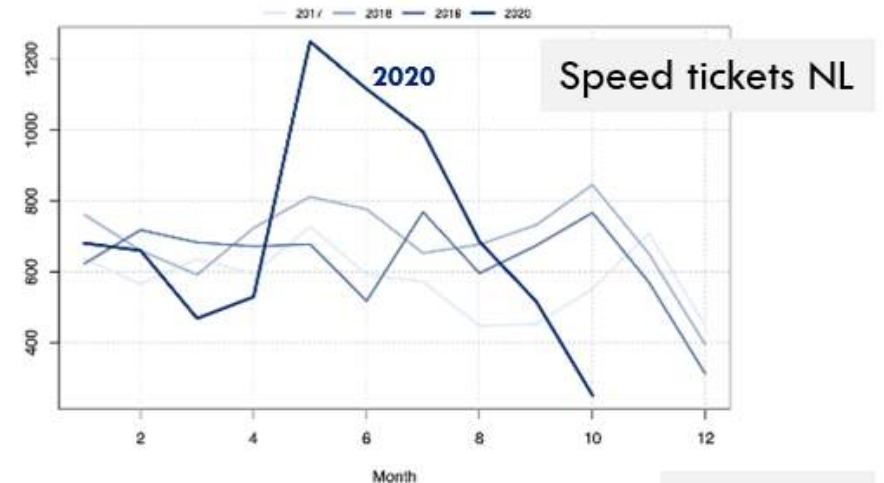


Impact on risk-taking behaviour

Speeding, seatbelt use, drink driving, handheld mobile phone use, ...

Speeding & inappropriate speed

- NI: sharp increase in speed tickets May-July 2020
- AT: proportion of extensive violations (+30 km/h) tripled (KFV survey)
- AT: fatal crash cause *inappropriate speed*: 36% (2020) vs. 26% (Ø2017-2019)
- CH: fatal crash cause *speeding/inappropriate speed*: 18.1% (2020) vs. 15.4% (Ø2017-2019)
- HU: *share of road fatalities / serious injuries for which inappropriate speed was primary cause of accident*: 41.5% / 38.8% (2020) vs. 39.2% / 34.8% (Ø2016-2019)
- California: 23% increase in speeding-related fatalities
- MD & SI: reductions in the share of speeding-related fatalities



*Share of collisions involving speeding that were fatal

Upper: Monthly number of fines for speeding in Northern Ireland 2017-2020, Source: Vandoros & Papailias 2021
 Lower: Development of the share of deaths involving speeding in California 2015 to 2020, Source: The Economist 2021



Seatbelts, driving under the influence, distraction



- Seat belt wearing rates may have decreased – unrestrained passenger deaths partly increased, (but *reductions* in violations with regard to seatbelt use in Moldova and Croatia)
- Driving under the influence of alcohol or drugs: presumably only minor changes. Young males potentially **more likely** to drink & drive.
- For distracted driving mixed results, presumably no major changes in crash occurrence.



Conclusions & Recommendations

Some of the current observations in the aftermath of COVID-19 (at least for some countries) are:

- Everything decreased: crashes, fatalities, number/distance of trips.
- Injuries decreased at similar rates as kilometres driven.
- Fatalities decreased less (or even increased – rural roads!),
→ fatality risk increased
- Smaller reductions or increases for bicyclists (increase in bicycle traffic noted in many countries!)
- Use of public transport did not recover as fast as other modes.
- the impact of the 2nd lockdown on mobility was less severe than the 1st.
- average speeds were largely unchanged or increased slightly – but extensive speed violations increased more substantially.
- Share of inadequate speed as prime causal factor increased.
- Share of killed car occupants not using the seatbelt increased.
- little change for alcohol/drugs and distraction.



Recommendations (1/3)

Recommendations for state governments/ministries/agencies:

- Safe System, with special emphasis on rural roads!
- Review speed limits for rural roads.
- Adequate resources for police forces
- Review legal sanctions for excessive speed violations
- Raise use of seatbelts in passenger cars!



Recommendations (2/3)

Recommendations for local governments:

- Curb inappropriate speeds: enforcement, education & awareness-raising
- 30 km/h limit in urban areas
- Support active mobility (walking, cycling), provide them with safe & adequate share of road space.
- Re-establish the modal share of public transport



Recommendations

(3/3)

Recommendations for road authorities:

- Provide evidence base to prioritise infrastructure investments based on safety: crash locations, traffic flows, speed levels, road infrastructure design.
- Make sure that for each road construction, reconstruction or maintenance project, the implementation of Safe System principles is considered.



Thank you for
your attention
– and support!



KLAUS MACHATA; KFV – AUSTRIAN ROAD SAFETY BOARD



RISM Directive

Bojan JOVANOVIĆ

University of Zagreb, Faculty of Transport and Traffic Sciences

Interview: Peter LIPAR, University of Ljubljana, Faculty of Civil and Geodetic Engineering



Implementation of the EC Directive 2019/1936/EC Amendment in countries of the Danube Area Region



Directive 2008/96/EC

EU parliament and Council

- Sets up legal framework for RSIA, RSA, RSI and NSM approaches
- For newly design and existing roads
- Focused mainly on National TEN-T road network



Directive 2019/1936/EC

- Road safety inspections mandated on TEN-T + main national road network
- Incorporates network-wide road safety assessment
- Increased focus on VRU's during safety assessments
- General requirements regarding the characteristics of road signs and traffic signs (Automated vehicles)

Goal: Improve the road safety status

By 31 October 2027 and every 5 years thereafter, a report on the implementation of Directive 2019/1936/EC,



Main changes in RISM Directive



1

Prescribes transparency and directs further actions

2

Incorporates a network-wide road safety assessment.

3

Extends the scope of the Directive beyond the Trans-European Transport Network (TEN-T)

4

Establishes general requirements regarding the characteristics of road signs and traffic signs.

5

Introduces an obligation for vulnerable road users to be systematically taken into account

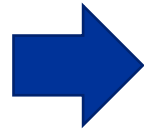


EU Member states: primary obligations

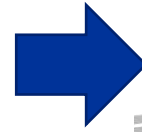
*Implement amendments by
17 Dec 2021!*



Member
states of
the
European
Union



Directive
2019/1936/EC



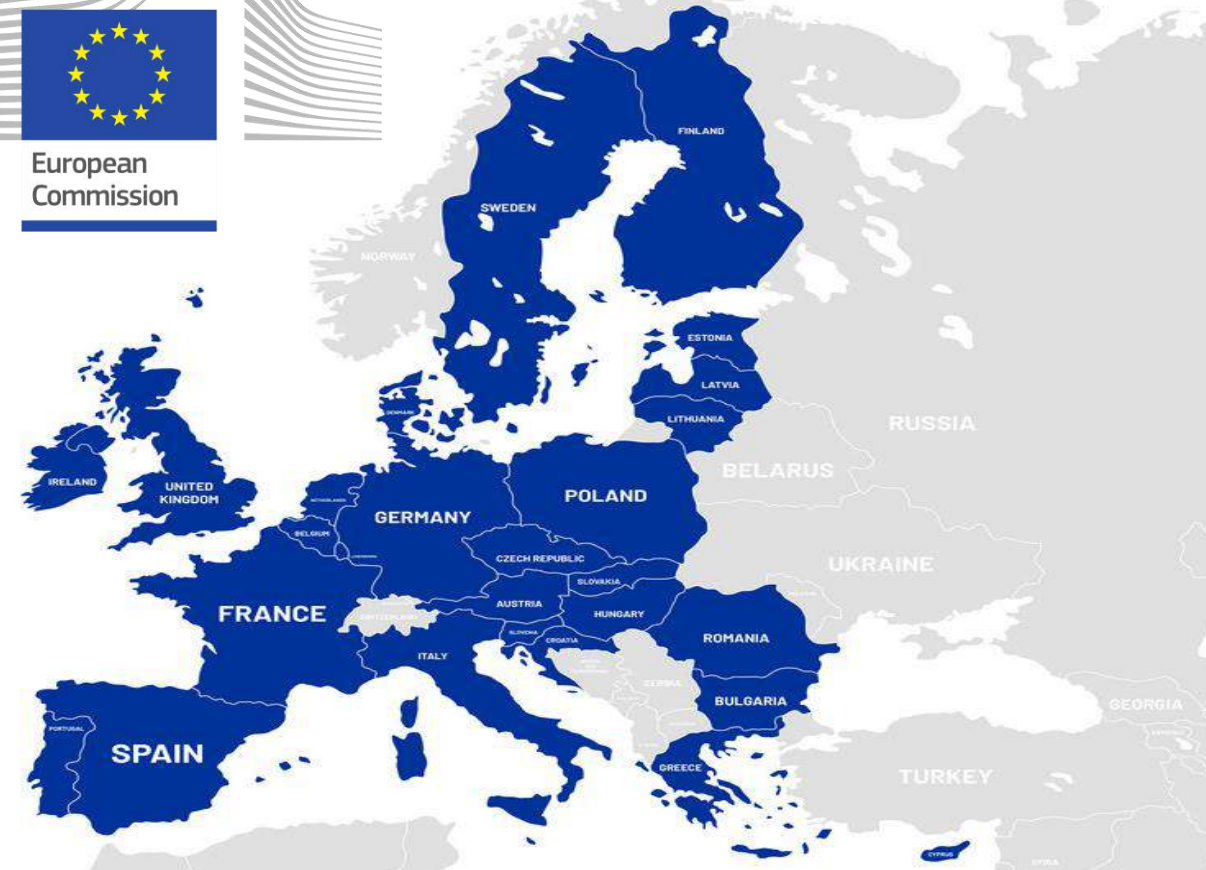
Report to



European
Commission



- Amend respective national laws
- Define which roads represent the national main road network
- Deliver a list of roads to the Commission
- **First network-wide road safety assessment is carried out by 2024 at the latest and then every 5 years after**
- Deliver results of the safety inspections in a common format which would allow for comparison between states
- **Report on the safety classification of the entire network assessed By 31 October 2025 and then every 5 years after!**



Extending the scope of the Directive beyond the Trans-European Transport Network (TEN-T)



?
Which roads to include



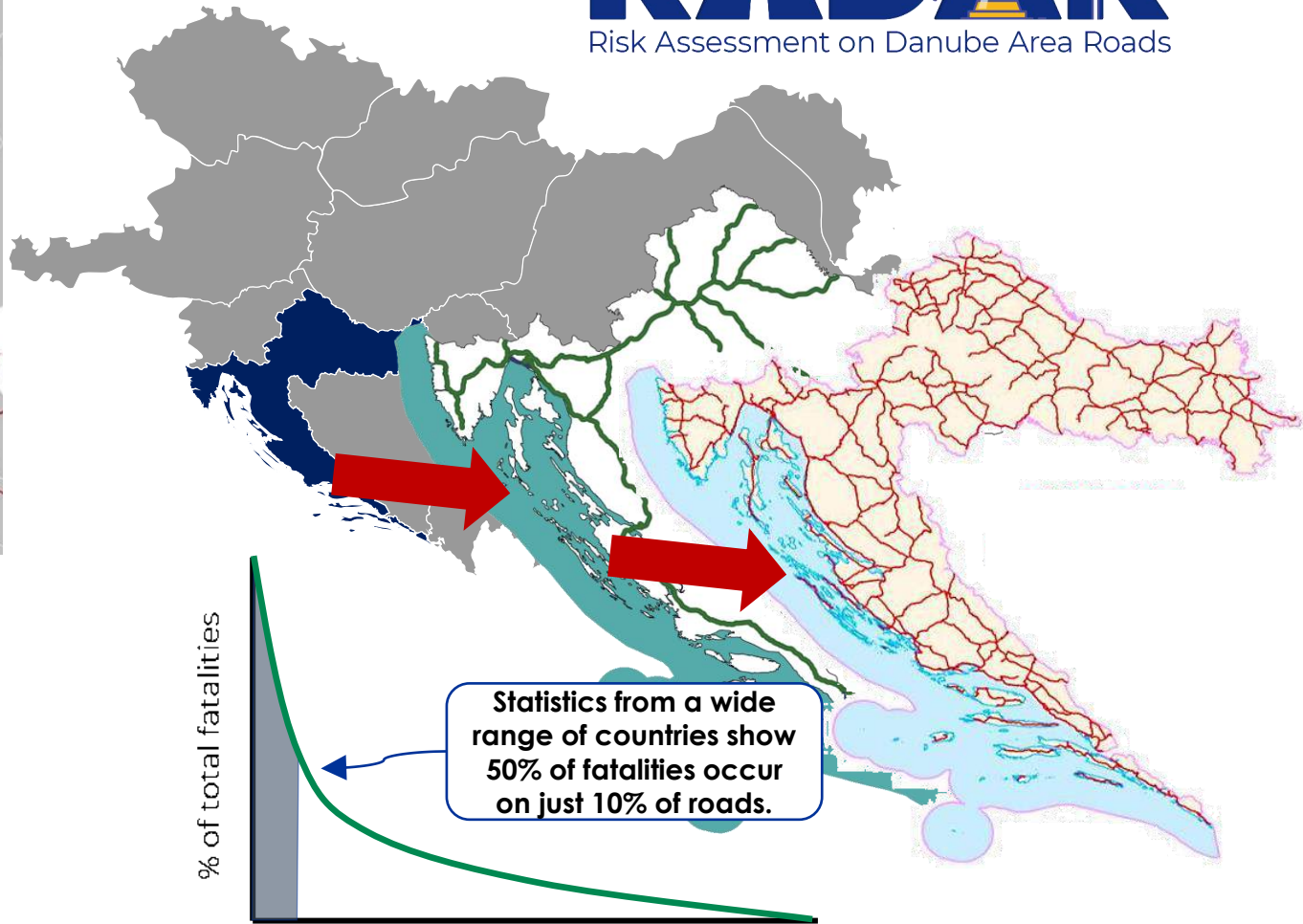
TEN-T Roads

Primary roads

Motorways



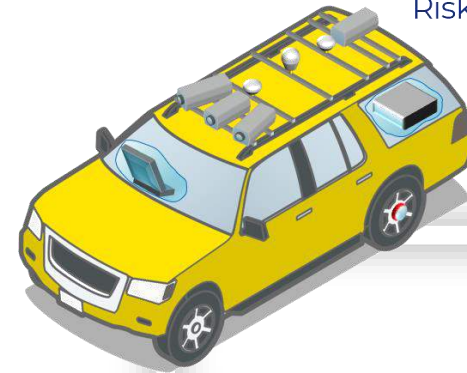
Roads outside urban areas (funded by EU)



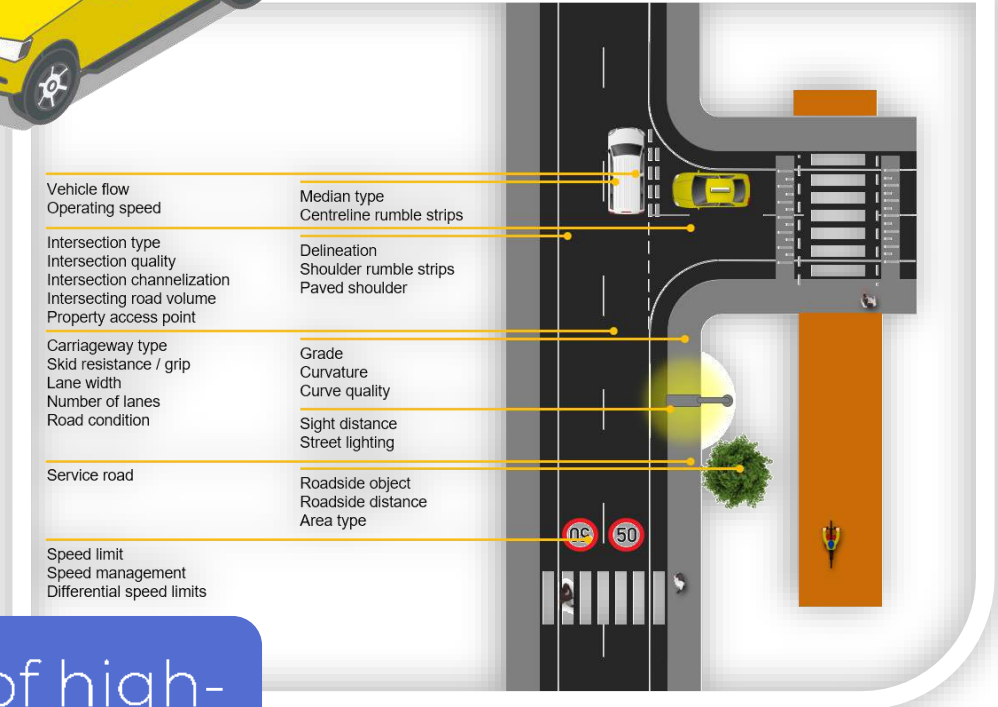
Types of evaluation of accident and impact severity risk

• Take into account the indicative elements set out in Annex III.

Network-wide road safety assessment



- ANNEX III**
INDICATIVE ELEMENTS OF NETWORK-WIDE ROAD SAFETY ASSESSMENTS
- General:
 - (a) type of road in relation to the type and size of regions/cities it connects;
 - (b) length of road section;
 - (c) area type (rural, urban);
 - (d) land use (educational, commercial, industrial and manufacturing, residential, farming and agricultural, undeveloped areas);
 - (e) property access points density;
 - (f) presence of service road (e.g. fire shops);
 - (g) presence of road works;
 - (h) presence of parking.
 - Traffic volumes:
 - (a) traffic volumes;
 - (b) observed motorcycle volumes;
 - (c) observed pedestrian volumes on both sides, noting "along" or "crossing";
 - (d) observed bicycle volumes on both sides, noting "along" or "crossing";
 - (e) observed heavy vehicle volumes;
 - (f) estimated pedestrian flows determined from adjacent land use attributes;
 - (g) estimated bicycle flows determined from adjacent land use attributes.
 - Accident data:
 - (a) number, location and cause of fatalities by road user group;
 - (b) number and location of serious injuries by road user group.
 - Operational characteristics:
 - (a) speed limit (general, for motorcycle);
 - (b) operating speed (85th percentile);



Primary visual examination

Analysis of high-risk road sections



Assesment of the opportunity to establish common specifications related to road markings and road signs



Member states



Group of experts



Consultation with



The interaction between various driver assistance technologies and infrastructure;

Type and frequency of maintenance necessary for various technologies, including an estimate of costs.

Effect of the weather and traffic on road markings and road signs

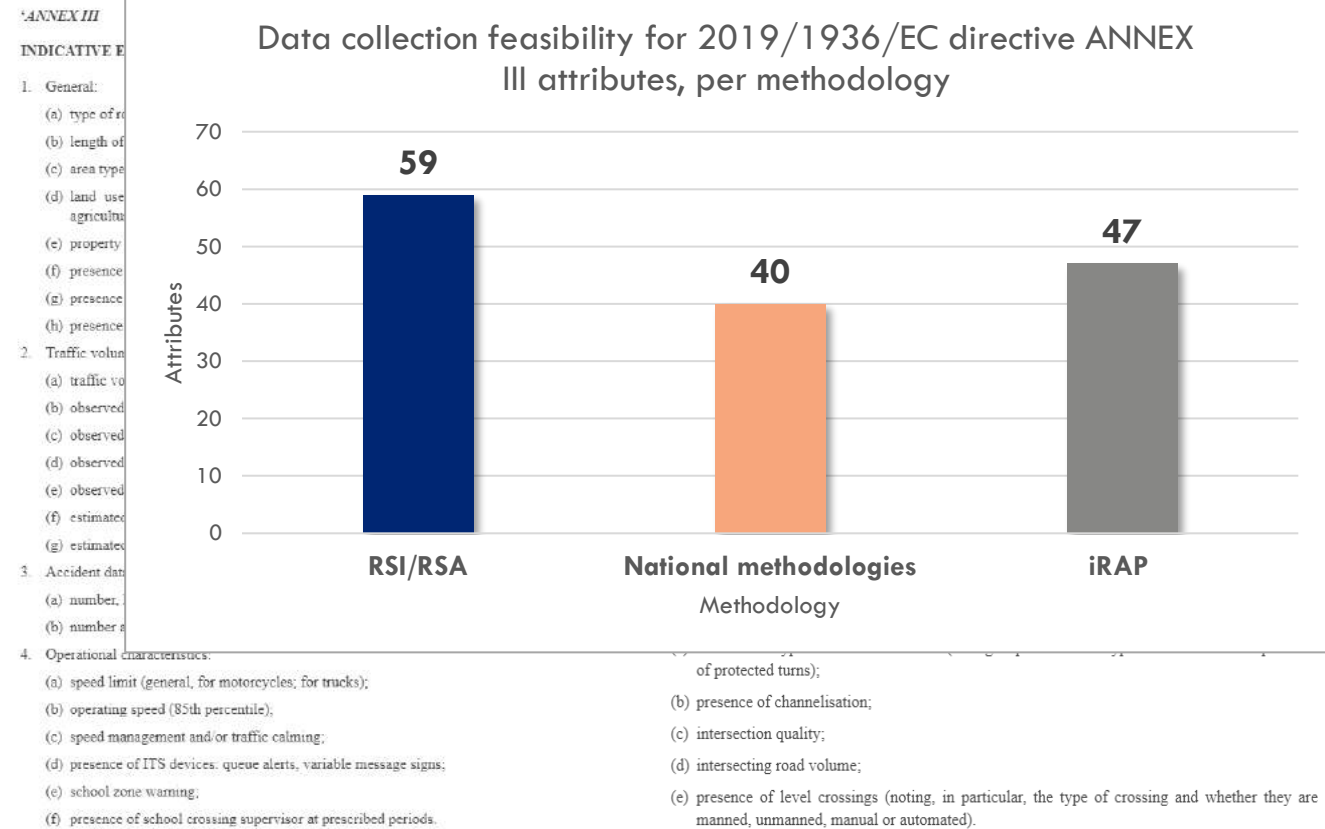
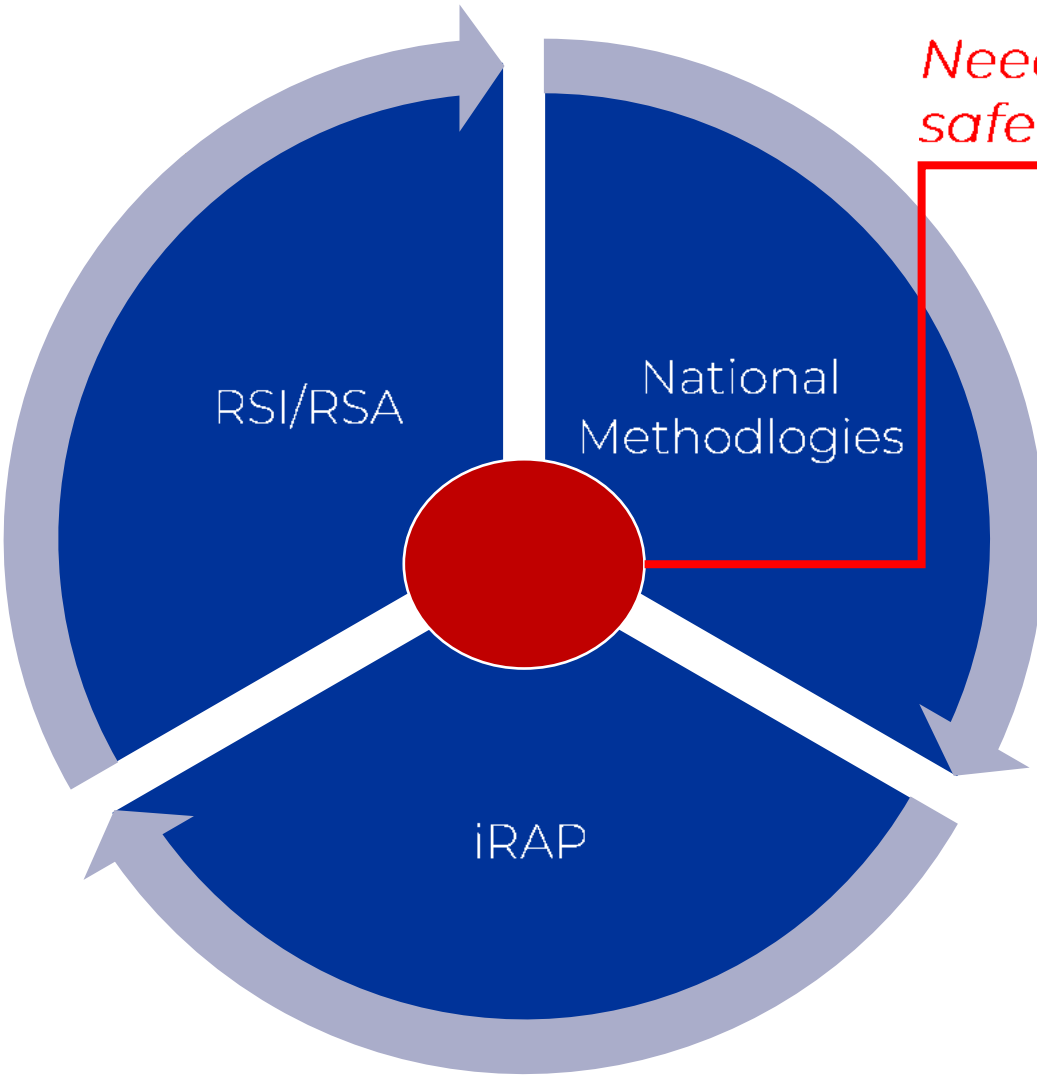
Assess the opportunity to establish common specifications related to road markings and road signs



Implementation of common road safety assessment methodology



Need to develop, unified road safety assessment approach!



List of obligations for European Commission according to EC Directive 2019/1936/EC



- 1 · Publish the list of roads notified in accordance with Directive.
- 2 · Guidance for the design of “forgiving roadsides”, “self-explaining and self-enforcing roads” in the initial audit of the design phase
- 3 · Guidance for performing systematic network-wide road safety assessments and safety ratings.
- 4 · Guidance on quality requirements regarding VRUs.
- 5 · May adopt additional implementing acts to provide guidance on reporting the fatal and serious road crashes.



List of obligations for member states according to EC Directive 2019/1936/EC



Directive
2019/1936/EC



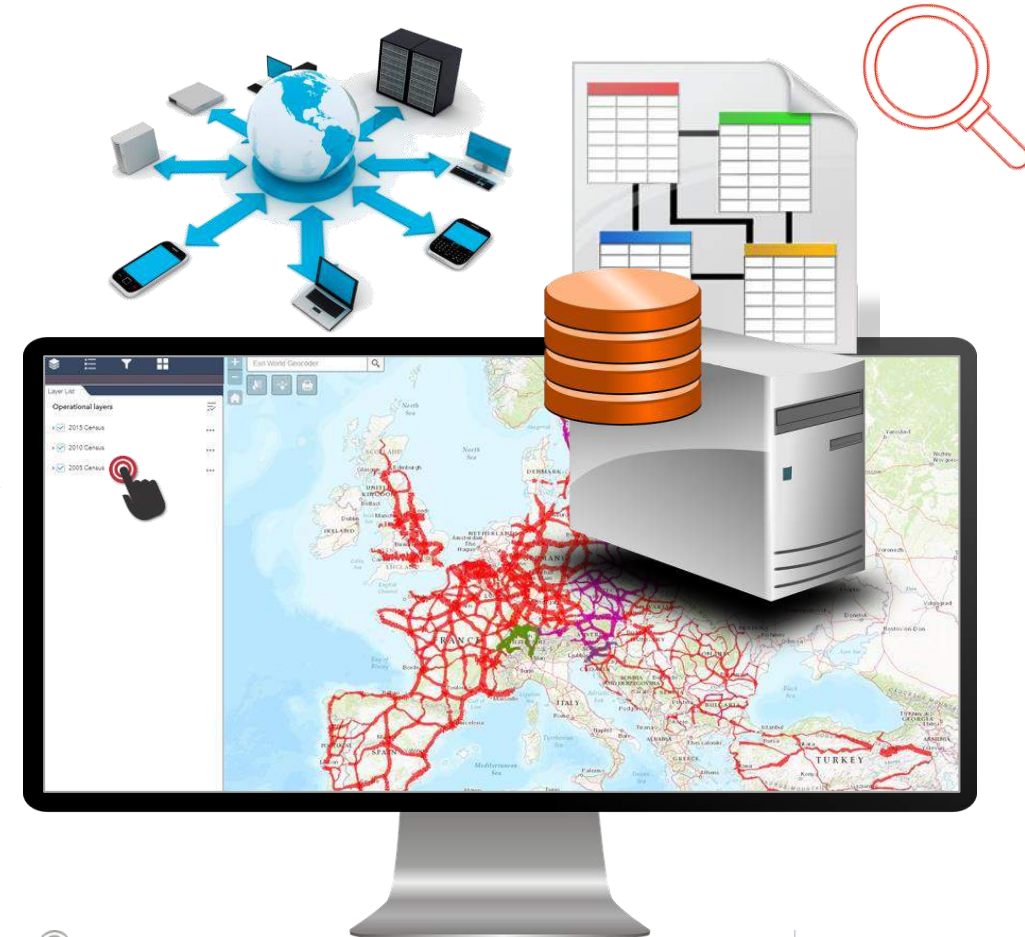
- 1 Classify all sections of the road network in at least 3 categories
- 2 Perform targeted road safety inspections or by direct remedial action based on the results obtained by Network Wide Road Assessment.
- 3 Target primarily high-risk road sections which offer the opportunity for the implementation of most cost-effective countermeasures
- 4 Prepare and regularly update a risk-based prioritised action plan
- 5 Ensure that VRUs are considered in road safety assessments
- 6 Pay specific attention to readability and detectability of traffic signs and markings for human drivers and automated driver assistance systems
- 7 Endeavour to establish a online national system for the purpose of voluntary reporting of road safety-related information
- 8 Ensure that road safety auditors trainings include aspects related to VRUs

Development of online maps and systems for the exchange of information and best practices between the Member States

European online map of the road network within the scope of Directive 2019/1936/EC



System for the exchange of information and best practices between the Member States

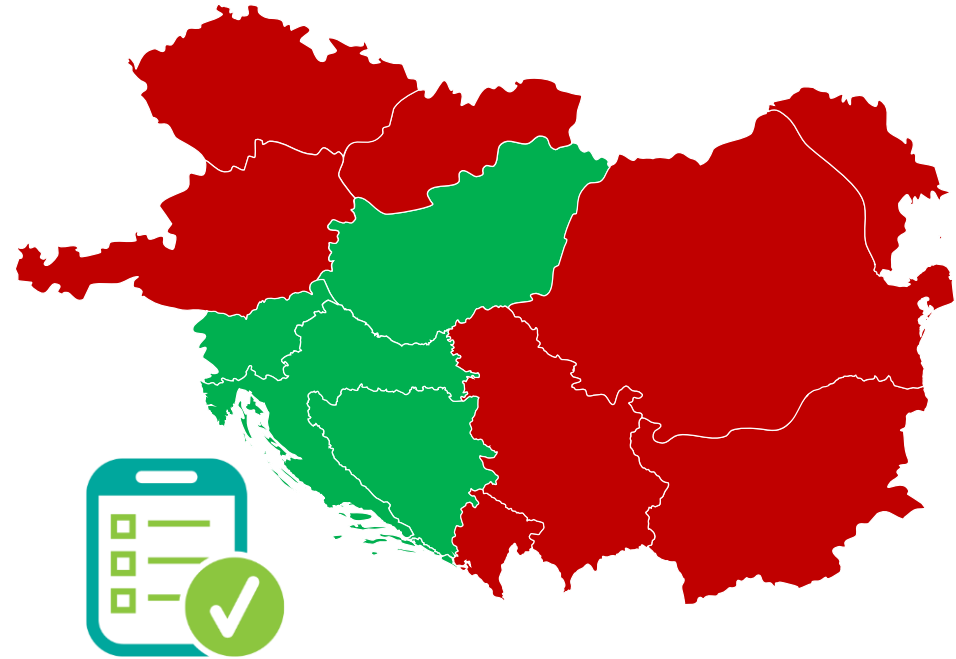


Analysis of RISM Directive implementation status and achievements in the Danube Area



Forseen challenges in RISM directive implementation process

- Unclear definition of “Primary” road network
- Lack of traffic data and road crash data
- Poor quality of road crash data
- Difficulty to access personal injury accident data
- Difficulty of integrating the aspects considering VRUs
- Funding and organisation related challenges
- Challenges regarding legal framework
- Problems with distinguishing the difference between targeted and periodical road safety inspections
- Problems with ensuring the independence of road safety auditors
- Need to develop common methodology for performing Network-wide road assessments

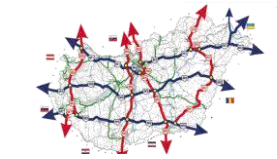


Recommendations for state governments/ministries/agencies



Defining the Primary road network

National authorities should encourage including roads where at least 50% of fatal and serious accidents occur



Country specific classification

Should be encouraged in order to enable proper classification of high, medium and low risk roads



Safe system concepts

Should be built in in all road infrastructure related legal acts.



VRUs

Pay special attention to VRUs and promoting Active modes of Transport by developing dedicated road infrastructure.



Investment plans

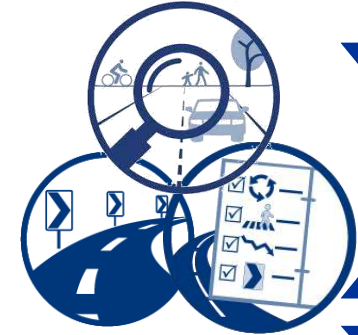
Should be made based on cost/benefit analysis with modelling of savings in terms of fatal and serious injuries prevented.



Road safety design standards

Raise the minimal road safety design standards for new and existing road infrastructure

Recommendations for local governments



Road safety
audit and
inspection
procedures

Should be performed on regional road network based on crash occurrence analysis.



VRUs

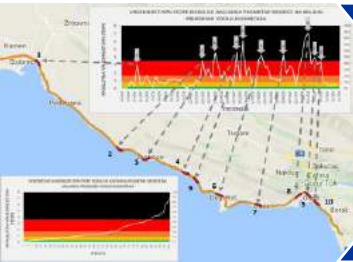
Pay special attention to VRUs and promoting Active modes of Transport by developing dedicated road infrastructure in urban and suburban areas.



Speed Limit
Zones

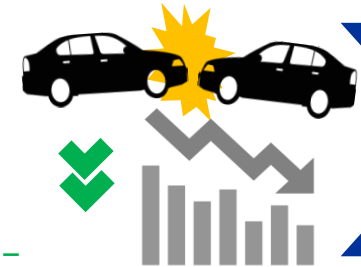
Promote and expand 30 km/h speed limit zones in residential areas.

Recommendations for road authorities



Road safety priorities

Significantly increase weight of road safety priorities in investment and maintenance plans development.



Strategy and action plan

Define clear strategy and action plan to reduce 50% of fatal and serious accident on managed road network by 2030.



Internal road safety guidelines

Set internal guidelines above the minimal road safety standards

QUESTION 1

What is your view on the definition of "primary" road network in accordance with RISM 2019/1936? Countries need to define their RISM directive "primary" road network and there seems to be a discussion going on in many countries which roads to include in that list?

QUESTION 2

Can you comment on the recommendations sheet (page 40) from the RADAR RISM report?

- Final Conference / September 23, 2021

Thank you for your attention!

Project co-funded by European Union funds (ERDF, IPA, ENI).

RADAR PROJECT'S FINAL CONFERENCE IS AN ACCOMPANYING EVENT OF SLOVENIAN PRESIDENCY OF THE COUNCIL OF THE EU.





Danube Region Infrastructure Improvement Strategy and Action Plans in individual countries

Marko SEVROVIC

European Institute for Road Assessment – EuroRAP (EIRA-EuroRAP)



Aim of the DIRSIS document



- ✘ The Danube Infrastructure Road Safety Improvement Strategy (DIRSIS) is a **main deliverable of the RADAR project**.
- ✘ DIRSIS provides **vision, objectives, and goals** for road safety in the Danube Region on 6 Thematic Areas that RADAR is focusing on.
- ✘ DIRSIS **aims for Policy Integration and better-coordinated intervention** on road safety infrastructural solutions at a transnational level.
- ✘ It is estimated that the **adoption** of the approach set out by DIRSIS **has the potential** to reduce severe casualties by **around 25-40%** on the roads where it is applied.



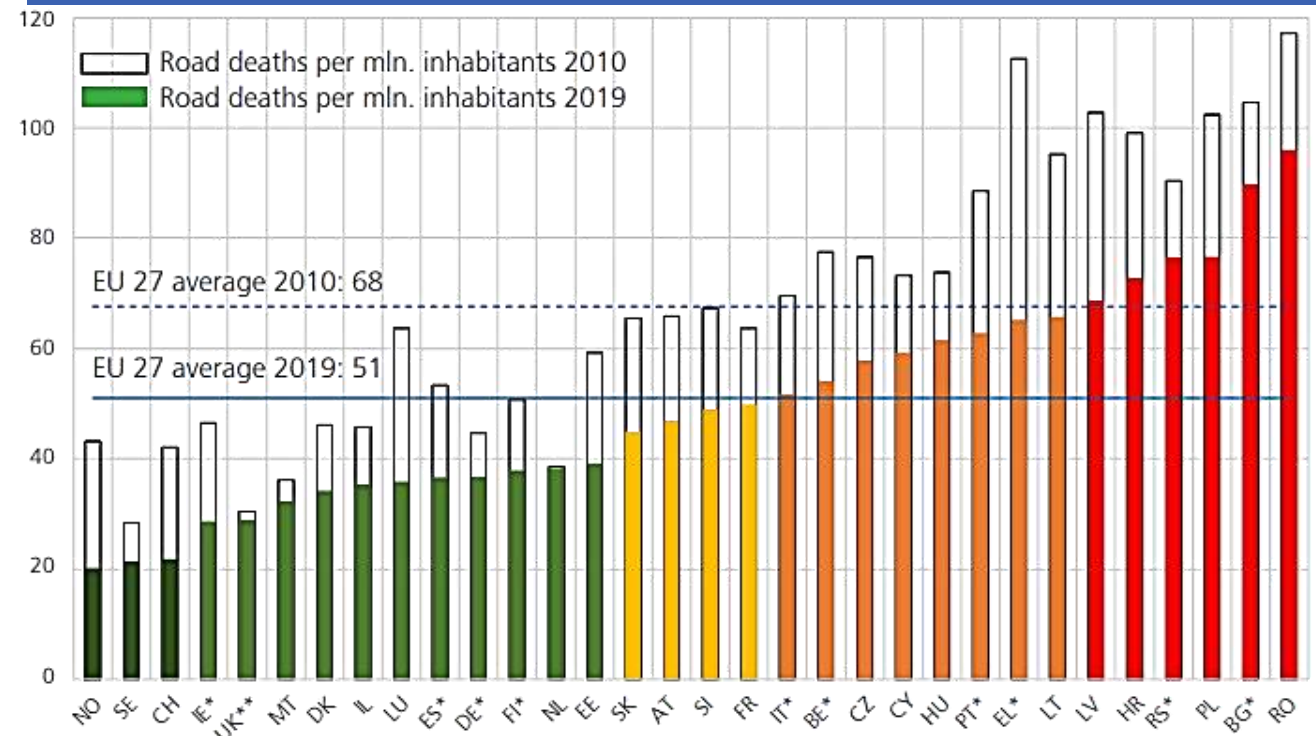
General road safety data of the EU

- Between 2010 and 2019 the average mortality rate in the 27 EU member states decreased from 68 to 51 killed/million inhabitants.

| Categories for characterizing the mortality rate of European countries: | |
|---|------------|
| Mortality rate (killed/million inhabitants): | Colour: |
| <22 | Dark green |
| 23-39 | Green |
| 40-50 | Yellow |
| 51-67 | Orange |
| >68 | Red |

- The three leading countries are:
 - ⊗ Norway
 - ⊗ Sweden
 - ⊗ Switzerland

Mortality rate (killed/million inhabitants) in the European countries (present EU Member States, the United Kingdom (earlier member of the EU), Norway, Switzerland, Israel, Serbia) (ETSC, 2020)

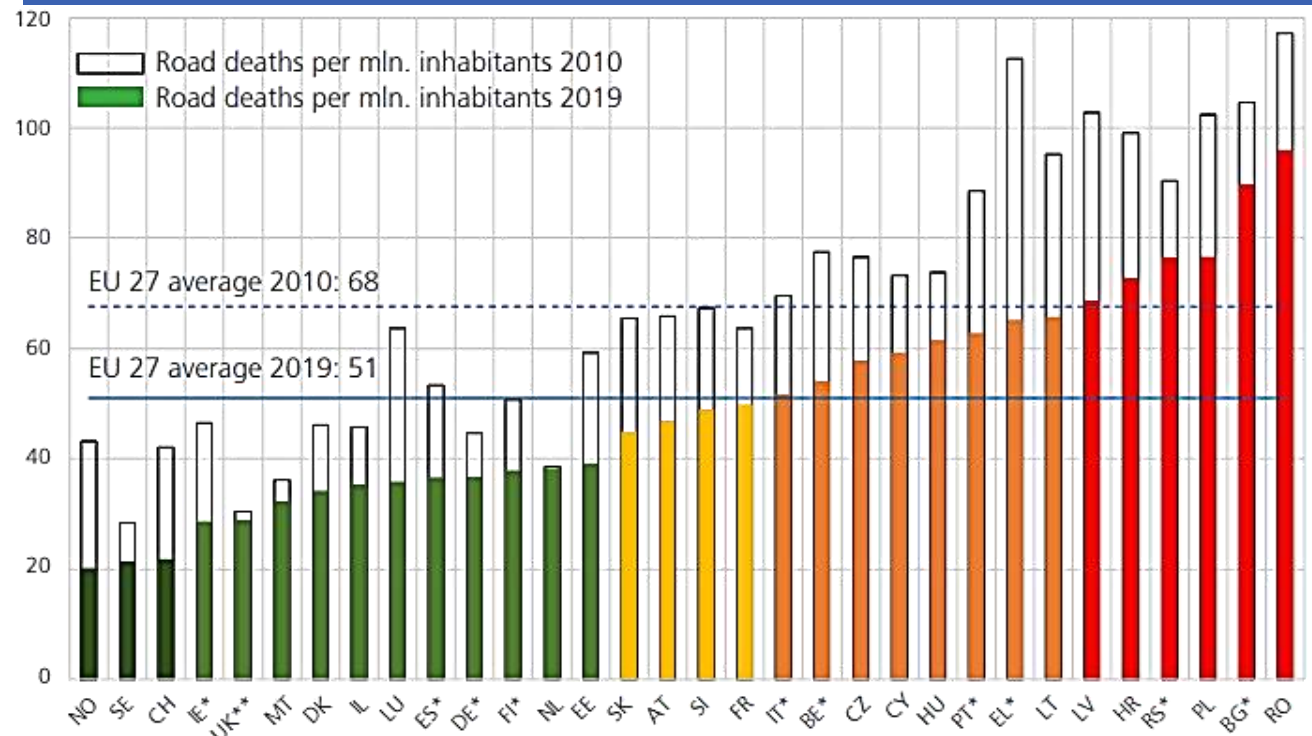


General road safety data of the EU

- Danube area mortality rates:

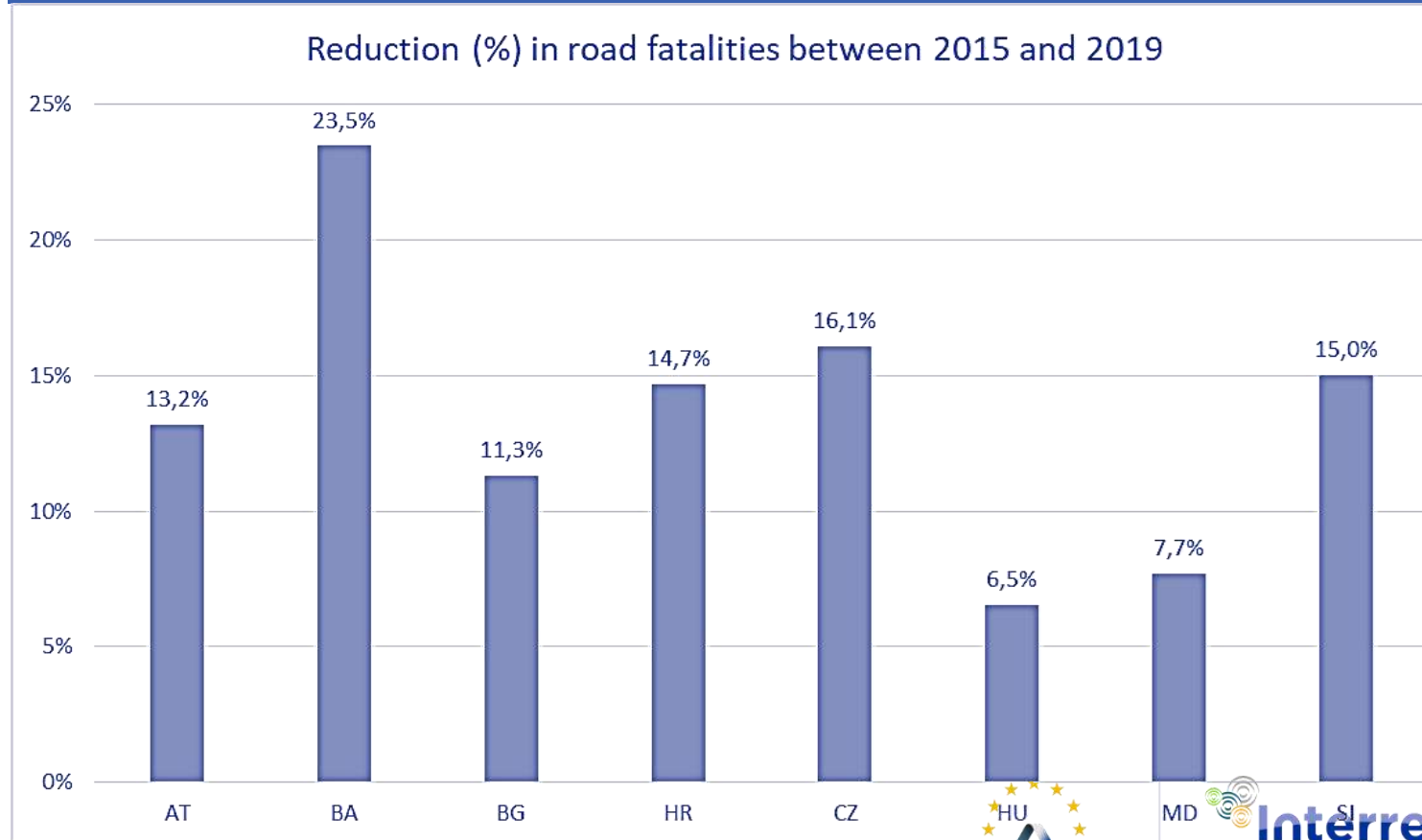
- ⊗ Austria and Slovenia have the lowest values (47 and 48,7 killed/million inhabitants) and belong to yellow group.
- ⊗ The Czech Republic and Hungary with mortality rates 57,8 and 61,6 are in the „orange” group of countries.
- ⊗ Croatia and Bulgaria with mortality rates 73,2 and 90 are positioned in the last, red group of countries.
- ⊗ Moldova – with its mortality rate (103,3 killed/million inhabitants) is the last one in the comparison.

Mortality rate (killed/million inhabitants) in the European countries (present EU Member States, the United Kingdom (earlier member of the EU), Norway, Switzerland, Israel, Serbia) (ETSC, 2020)



General road accident data of the Danube area

Change (%) in the number of road fatalities in the partner countries between 2015 and 2019



- ✘ The largest (23,5 %) reduction in Bosnia and Herzegovina.
- ✘ Czech Republic -16,1 %
- ✘ Slovenia - 15 %
- ✘ Croatia - 14,7 %
- ✘ Austria - 13,2 %
- ✘ Bulgaria - 11,3 %
- ✘ Moldova - 7,7 %
- ✘ Hungary - 6,5 %

General road accident data of the Danube area

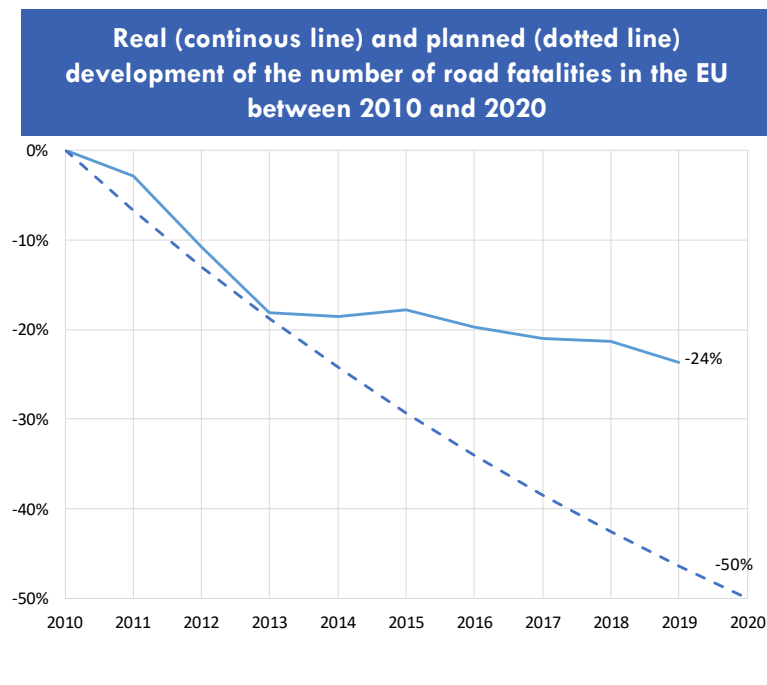
- ✘ As can be seen in the international literature, in most cases, **only one** indicator is used for international comparison, the so-called **mortality rate**.
- ✘ This indicator could be used without distortion only in case if all countries could have the **same level of motorization** (motor vehicles/1000 population).
- ✘ Since this is not the case in reality, there is always some degree of distortion if only this indicator is used.
- ✘ It is a well-known fact that the level of motorization has an influence on the level of road safety.

| Level of motorization (motor vehicle/1000 inhabitants) in the partner countries | | | | | |
|---|-------|-------|-------|-------|-------|
| | 2015 | 2016 | 2017 | 2018 | 2019 |
| AT | 762,5 | 764,8 | 771,9 | 781,6 | n.a |
| BA | n.a | n.a | n.a | n.a | n.a |
| BG | n.a | n.a | n.a | n.a | n.a |
| HR | 460,5 | 480,5 | 500,8 | 527,0 | 548,8 |
| CZ | 691,8 | 714,8 | 740,6 | 754,7 | 768,4 |
| HU | 394,3 | 409,2 | 429,9 | 451,8 | 473,3 |
| M D | 275,3 | 319,1 | 341,7 | 364,0 | 376,7 |
| SI | 720,7 | 740,8 | 773,6 | 792,4 | 805,3 |

Road safety targets of the EU



- ETSC document proposed new interim targets of reducing the number of road deaths by 50 % between 2020 and 2030 as well as reducing the number of serious injuries by 50 %.
- Unfortunately, there is no document available as a scientific background (forecast) of the EU target for the period 2020-2030.



- ✘ The present EU programme does not seem as successful as the first one.
- ✘ Until 2019 only 24 % decrease could be reached in the number of road fatalities.
- ✘ The EU targets are often characterized as „ambitious but realistic“.
- ✘ Based on the data, the present programme does not seem to be realistic.
- ✘ It is suggested to strengthen the methodology of the target setting in order to get a target which is not only ambitious but realistic as well.



Main intervention areas



- The present EU road safety policy framework 2021-2030 includes the following main intervention areas:
 - ⊗ Infrastructure - safe roads and roadsides
 - ⊗ Safe vehicles
 - ⊗ Safe road use
 - ⊗ Fast and effective emergency response



Strategic recommendations on the focus areas



- Following the policy orientations and main intervention areas of the EU, project RADAR focused its activities on 6 thematic areas (TA):
 - ✘ TA1: General suitability of the road sections for safety and maintenance upgrading using Safer Roads Investment Plans;
 - ✘ TA2: Provision for vulnerable road users (pedestrians and cyclists);
 - ✘ TA3: ITS and other techniques for speed management strategies;
 - ✘ TA4: road safety near schools;
 - ✘ TA5: Transport Safety and COVID19
 - ✘ TA6: Road Infrastructure Safety Management Directive 2019/1936/EC (RISM) in Danube area



Investing in safe infrastructure



Recommendations for:

State governments/
ministries/
agencies

To define a national minimal standard for existing and new roads based on internationally recognized methodology for road infrastructure safety rating.

To ensure certain portion of road infrastructure investments is allocated to road safety intervention.

To ensure embedding of the Safe System approach into the mainstream of road design/investment and maintenance legislation and practice.

To ensure trainings of road safety auditors.

To transfer Safe system approach to local governments and local road authorities.

To take into serious consideration also 2nd level roads, like regional roads.

Make knowledge transfer with demonstrations of good practices and approaches for road authorities and to regional/local governments.



Investing in safe infrastructure



Recommendations for:

Local governments

To start systematic road safety data collection and analysis to plan interventions/investments on most critical locations.



Investing in safe infrastructure



Recommendations for:

Road authorities

To form own special road safety funds within regular or investment funds dedicated for direct investments in road safety upgrades in terms of road safety equipment and measures at locations with most effectiveness.

To follow the road safety trends and good practices to plan maintenance and upgrades of existing road network in operation.

To use the methodologies for selecting most critical locations with highest potential savings.

To ensure public accessibility to the list of high accident concentration road sections / hot spots.



Provision for vulnerable road users



Recommendations for:

State governments/
ministries/
agencies

To incorporate the principles and concepts of Safe System approach in relevant legislation and VRUs countermeasures selection criteria.

To develop/incorporate a unified protocol for assessment of the risks of VRUs, which will ensure that results are understood and comparable between countries.

The countermeasures selection, prioritization and implementation process for VRUs should only be based on official, standardized, objective methodology which considers all relevant road safety indicators.

To define a national minimal standard threshold values of relevant road safety indicators based on which high-risk road sections for VRUs will be identified.

To ensure that available funds are primarily invested in low-cost, high-impact countermeasures, by considering the concepts of tactical urbanism and space-wise planning.

To develop/restructure and link datasets on road traffic accidents and road network.

To link the police database on road traffic accidents with hospital data in order to minimize the VRUs accidents under-reporting issue.

To change traffic culture and public awareness by disseminating relevant information to the public by various media sources.

To make knowledge transfer with demonstrations of good practices and approaches for road authorities and to regional/local governments.



Provision for vulnerable road users



Recommendations for:

Local governments

To ensure that results obtained by road safety assessments performed in individual municipalities at local level are standardized and comparable between different municipalities and on the National level.

To start systematic, high-quality road safety data collection and analysis to plan interventions/investments on most critical locations.



Provision for vulnerable road users



Recommendations for:

Road authorities

To use the official, standardized, objective methodology for selecting most critical locations for VRUs with highest potential savings.

To ensure that types of pedestrian/cyclist facilities and crossing arrangements are selected based on the operating speed of traffic flow and pedestrian, cyclists and vehicle peak-hour flow volumes.

To periodically collect relevant supporting data on characteristic locations on the road network on a mandatory basis and update relevant databases.

To periodically perform analysis of effectiveness and efficiency of implemented countermeasures for VRUs.

To engage all stakeholders in the process of the road design (engineers need to collaborate with different stakeholders and NGOs).



ITS and other techniques for speed management



Recommendations for:

State governments/
ministries/
agencies

To define – at least on long run - a national minimal standard for the safety of existing and new roads based on one of the internationally recognized methodologies.

To elaborate guidelines for Intelligent Transportation System, speed management and traffic calming approaches.

To ensure certain portion of road infrastructure investments is allocated to road safety intervention.

To ensure embedding of the Safe System approach into the mainstream of road design/investment and maintenance legislation and practice.

To ensure trainings of road safety auditors.

To transfer Safe system approach to local governments and local road authorities.

To take into serious consideration also 2nd level roads, like regional roads.

Make knowledge transfer with demonstrations of good practices and approaches for road authorities and to regional/local governments.



ITS and other techniques for speed management



Recommendations for:

Local governments

To start systematic road safety data collection and analysis to plan interventions/investments on most critical locations.

New ideas and recommendations:

Speed-activated warning signs (e.g. “Slow down” in the approach of bends and other dangerous locations).

Variable speed limit signs on high-level roads (traffic and/or weather-dependent).

Time-dependent speed limits, e.g. in the vicinity of schools during opening hours.

Transversal rumble strips in the approach of junctions or sharp bends.

Efficiency of administration of fines from automatic speed enforcement.

Lack of resources among authorities tasked with the issuing of fines.

Different degrees of automation (centralized & nearly full automation in France. Inefficient manual processing in other countries...).



ITS and other techniques for speed management



Recommendations for:

Road
authorities

Speed limits setting: elaboration and continuous revision of guidelines & systematic implementation.

Speed limits consistency: differentiated speed limits depending on the function, alignment, volume and structure of traffic must be defined, in accordance with the reasonable local speed limits.

Speed enforcement: implementation of section control, minimization of the obstacles in violation, processing procedures.

Speed data collection and analysis: systematic collection of speed data development of anonymized speed database.

Further development of the methodology of analysis (for example speed development by road types, etc.).



Safe infrastructure near schools



Recommendations for:

State governments / ministries / agencies

Develop and support specific design guidelines for road sections in the vicinity of schools.

Define in the Road Traffic Code special speed limits to be applied on road sections in the vicinity of schools.

Ensure adequate funding for road safety interventions in primary roads in the vicinity of schools.

Start systematic collection of data on road crashes near schools and related casualties.

Systematically estimate and publish key performance indicators on the road network around schools.

Ensure embedding of the Safe System approach into the mainstream of road design/investment and maintenance legislation and practice.

To transfer Safe system approach to local governments and local road authorities.

Support knowledge transfer with demonstrations of good practices and approaches towards road authorities and regional/local governments.



Safe infrastructure near schools



Recommendations for:

Local governments

Ensure adequate funding for road safety interventions in local roads in the vicinity of schools.

Start systematic collection of data on road crashes near schools and related casualties.

Organize educational campaigns to promote safer transport to/ from schools.



Safe infrastructure near schools



Recommendations for:

Road authorities

Form own special road safety funds within regular or investment funds dedicated for direct investments in road safety, to implement upgrades in the vicinity of schools.

Follow the road safety trends and good practices to plan maintenance and upgrades of existing road network in the vicinity of schools.

Use appropriate methodologies to identify hazardous locations near schools and the causes of road safety problems, identify intervention priorities and implement countermeasures.

Conduct “before and after” studies to evaluate the road safety effect of implemented interventions.



Transport Safety and COVID19



Recommendations for:

State governments/
ministries/
agencies

To review the default speed limit for rural roads and adapt where necessary, with a view to preventing collision forces that humans cannot survive or would cause serious injury.

To set the necessary steps to implement a Safe System, with special emphasis on rural roads, so that they eventually become self-explaining and forgiving to human error.

To provide police forces and other enforcement entities with adequate resources and legal precautions for re-instated & intensified and effective speed enforcement

To consider tougher legal sanctions for excessive speed violations, such as higher and income-dependent fines, prolonged licence withdrawal, and confiscation of vehicles.

To encourage the use of seatbelts in passenger cars through awareness and enforcement measures.



Transport Safety and COVID19



Recommendations for:

Local governments

To put high priority on enforcement and educational & awareness-raising activity to curb inappropriate speeds.

To consider the implementation of a 30 km/h limit in urban areas (potentially excluding major urban thoroughfares) and other traffic calming measures.

To help making the apparently higher usage levels of active mobility (walking, cycling) sustainable by providing them with safe facilities and an adequate share of road space.

To set the necessary promotive steps to re-establish the modal share of public transport – by far the safest and most sustainable transport mode – at least to pre-pandemic levels.



Transport Safety and COVID19



Recommendations for:

Road
authorities

To establish an evidence base to prioritise infrastructure investments based on safety: crash locations, traffic flows, speed levels, road infrastructure design & safety data.

To make sure that for each road construction, reconstruction or maintenance project, the implementation of Safe System principles is considered.



Road Infrastructure Safety Management Directive 2019/1396/EC (RISM) in Danube area



Recommendations for:

State
governments/
ministries/
agencies

In the process of definition of Primary road network, national authorities should encourage including roads where at least 50% of fatal and serious accidents occur.

Country specific national classification criteria should be encouraged in order to enable proper classification of high, medium and low risk roads, based on accident reduction potential as a direct consequence of road infrastructure improvements.

Ensure adequate funding for road safety interventions in primary roads in the vicinity of schools.

Safe System concept should be built in in all road infrastructure related legal acts.

Special attention needs to be given to protecting the Vulnerable Road Users and promoting Active modes of Transport by developing dedicated road infrastructure.

All investment plans in road infrastructure safety improvements should be made based on cost/benefit analysis with modelling of savings in terms of fatal and serious injuries prevented.

Raise the minimal road safety design standards for new and existing road infrastructure.



Road Infrastructure Safety Management Directive 2019/1396/EC (RISM) in Danube area



Recommendations for:

Local
governments

Road safety audit and inspection procedures should be performed on regional road network based on crash occurrence analysis.

Special attention needs to be given to protecting the Vulnerable Road Users and promoting Active modes of Transport by developing dedicated road infrastructure in urban and suburban areas.

Promote and expand 30 km/h speed limit zones in residential areas.



Road Infrastructure Safety Management Directive 2019/1936/EC (RISM) in Danube area



Recommendations for:

Road
authorities

Significantly increase weight of road safety priorities in investment and maintenance plans development.

Define clear strategy and action plan to reduce 50% of fatal and serious accident on managed road network by 2030.

Set internal guidelines above the minimal road safety standards.



DIRSIAP



Danube Infrastructure Road Safety Improvement Action Plans (DIRSIAP)

- One of RADAR's ultimate objectives
- Based on RADAR's core strategy document – DIRSIS
- Composed around RADAR's six main areas of actions ("Thematic Areas")

DIRSIAP



Developing
Interventions

Draft Action
Plan template



National
Specific Action
Plans



National
Uptake
Workshops



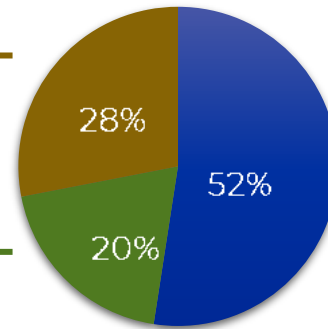
Signed
Memorandum
of
Understanding



DIRSIAP - Interventions

| Road authorities | |
|------------------|-------------------------|
| Thematic Area | Number of interventions |
| TA1 | 4 |
| TA2 | 5 |
| TA3 | 5 |
| TA4 | 4 |
| TA5 | 2 |
| TA 6 | 3 |
| Total | 23 |

DIRSIAP interventions

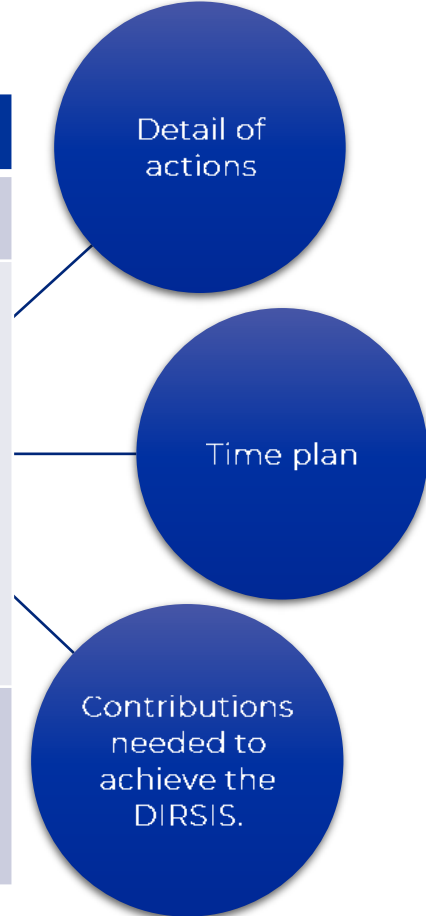


| National Level | |
|----------------|-------------------------|
| Thematic Area | Number of interventions |
| TA1 | 7 |
| TA2 | 9 |
| TA3 | 8 |
| TA4 | 8 |
| TA5 | 5 |
| TA 6 | 6 |
| Total | 43 |

| Regional and local level | |
|--------------------------|-------------------------|
| Thematic Area | Number of interventions |
| TA1 | 1 |
| TA2 | 3 |
| TA3 | 2 |
| TA4 | 3 |
| TA5 | 4 |
| TA 6 | 3 |
| Total | 16 |

- National Level
- Regional and local level
- Road Authorities

DIRSIAP – Intervention Table Structure

| National/Regional/Road Authority level | Intervention | Time frame | Financial resources | Main actor(s) | |
|--|---|------------|---------------------|---------------|--|
| | Description of intervention [Intervention tag, for example IA5/national/sanctions] | | | |  |
| | Explanatory notes A short description and rationale/justification for the intervention in your country: <ul style="list-style-type: none"> • Why is it necessary (what is the current problem)? • How will it be implemented (what steps are required in the process)? • When will it be implemented, what are required financial resources, and from which fund or budget they will they be obtained from? • Who will be the actors (main actors and other contributing players, and their interaction)? • ... | | | | |
| Uptake Plan A list and short description of national uptake activities and targeted national documents acknowledging the intervention | | | | | |

DIRSIAP



- All PPs are currently in the process of developing their nation-specific Action Plans



THANK YOU FOR YOUR ATTENTION!

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The RADAR project

Questions

Olivera ROZI

European Institute of Road Assessment – EuroRAP (EIRA-EuroRAP)



- Final Conference / September 23, 2021

Striving for Safer Infrastructure for all Road Users in the Danube Area

Project co-funded by European Union funds (ERDF, IPA, ENI).

RADAR PROJECT'S FINAL CONFERENCE IS AN ACCOMPANYING EVENT OF SLOVENIAN PRESIDENCY OF THE COUNCIL OF THE EU.





The RADAR project

National uptake: round table discussions



Olivera ROZI

European Institute of Road Assessment – EuroRAP (EIRA-EuroRAP)



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The RADAR project

Closing part



Olivera ROZI

European Institute of Road Assessment – EuroRAP (EIRA-EuroRAP)





What have we learnt from and in RADAR?

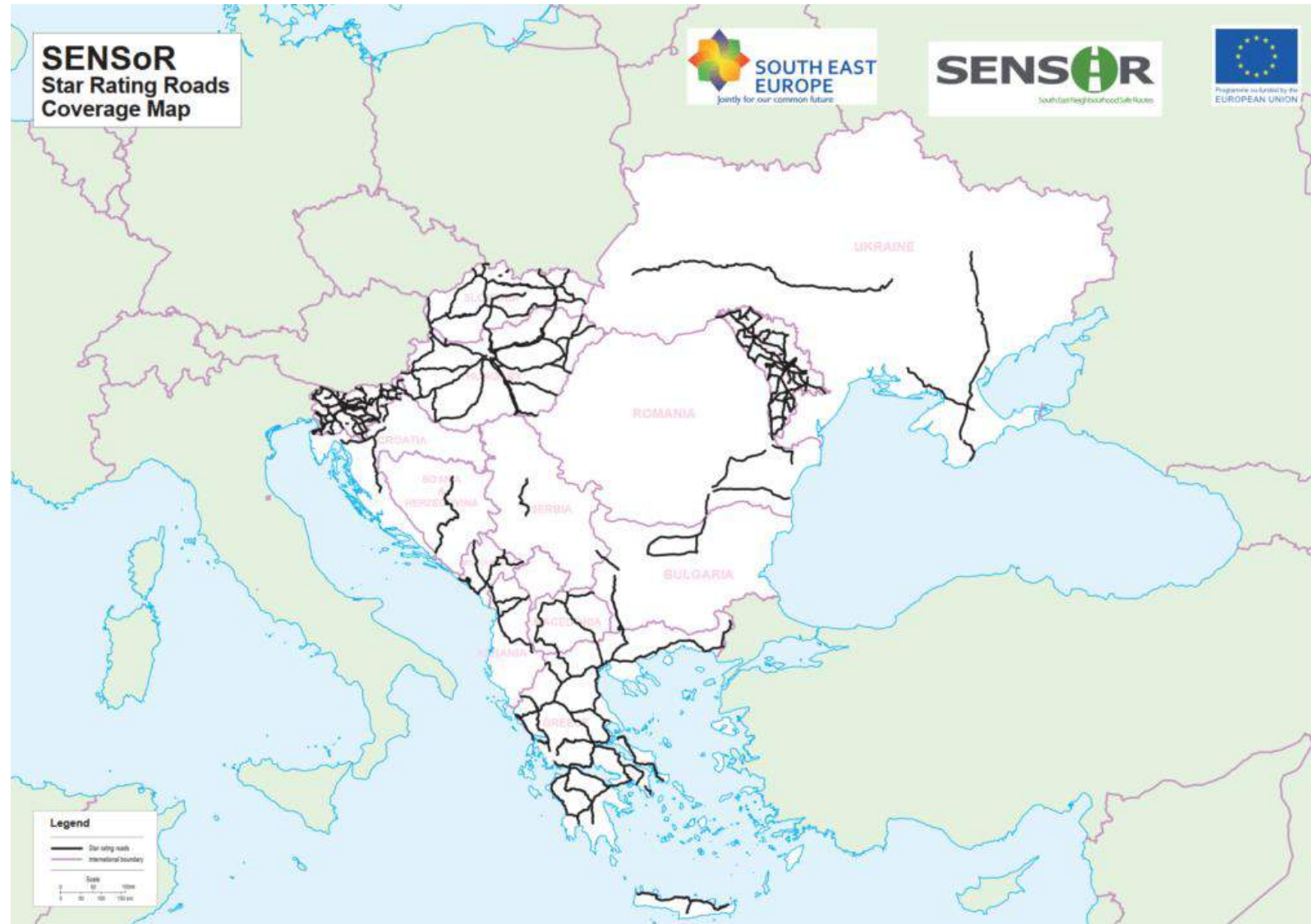
Olivera ROZI

European Institute of Road Assessment – EuroRAP (EIRA-EuroRAP)



Before RADAR...

- SENSoR project (2012-2014)
SEE programme: app
20.000km of road networks
assessed for safety
- 60-70% of inter-urban roads
found high or very high risk
- High rates of casualties
among VRUs and poor road
management where
different road users are



In RADAR

Number of coronavirus (COVID-19) cases in Europe

3.1.3. Crash data

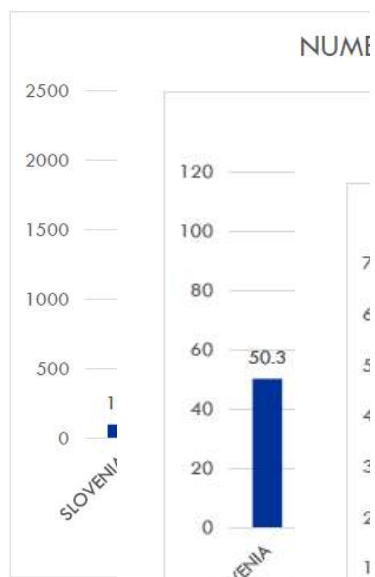
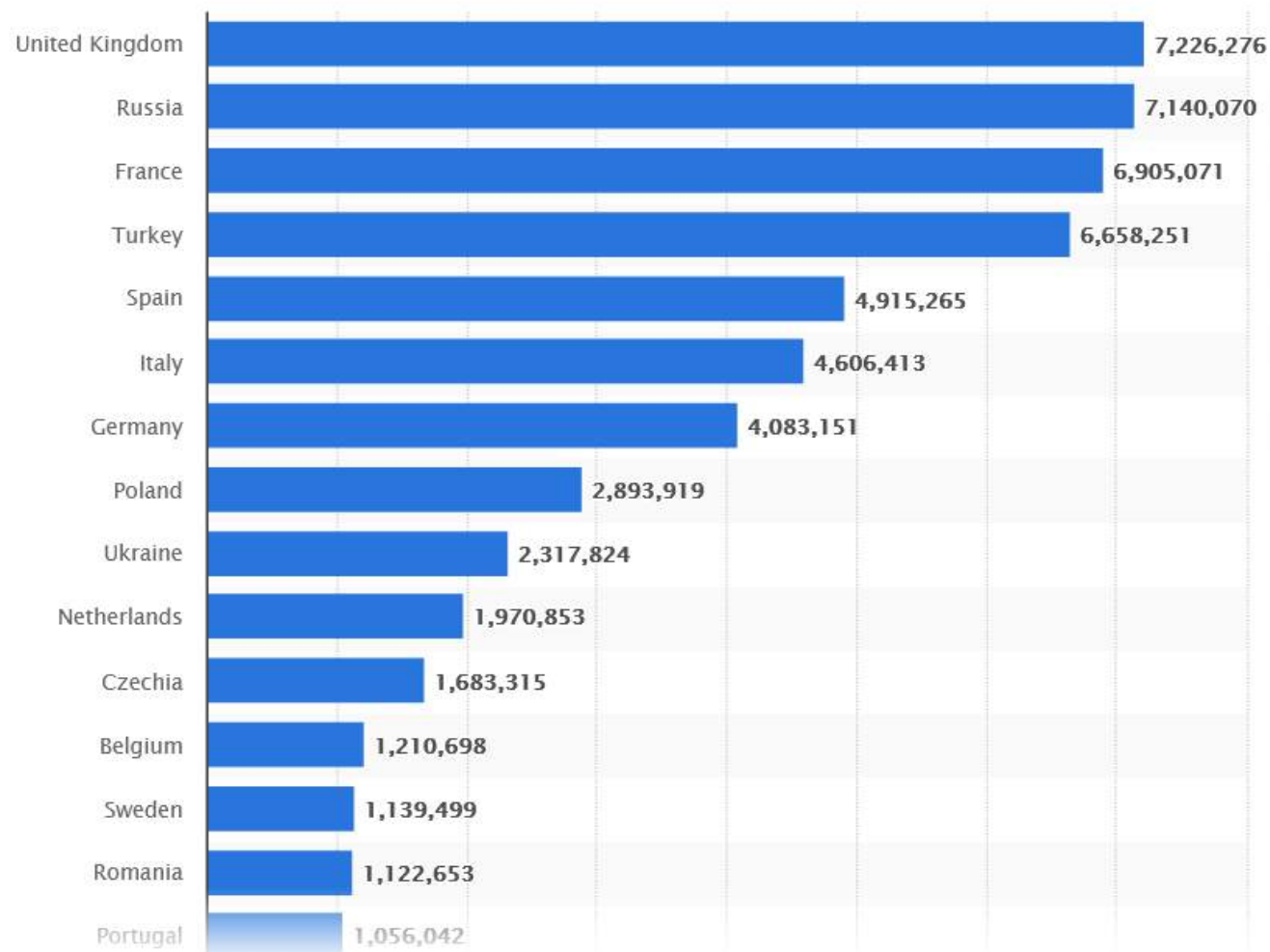


Figure 42 Numb

Figure 43 Fatalities

Figure



Then and now...



- “Great for saving lives in the Danube region!”
 - too early to tell, but some great innovation; what will your follow-up be?; the project *is* valued in the region
- “You all have different skills, knowledge and experience. Please share and be generous”
 - some great examples of this – many more experienced road safety practitioners
- “Make opportunities for others. RADAR more powerful if others talk about it”
 - look at the audiences: results, outputs (website), conferences, meetings, articles, social media, **today's conference**
- “...expect the unexpected...”
 - agility and resilience during tough times ?



RADAR is...

- Road Safety
- Vulnerable Road User
- Infrastructure risks improvements
- Cost Benefit Investments
- Strategy
- Safe Speed
- Social Innovation

And...





Road Safety does not end with RADAR

Marko SEVROVIC

European Institute for Road Assessment – EuroRAP (EIRA-EuroRAP)



Lessons learned



Provides a strategic foundation for the improvement of Road Safety within the Danube region.

As such, the project was shaped by critical insights, learnings and experiences collected from a range of national and global stakeholders.

- ✘ Exchange of knowledge and know-how
- ✘ Funding opportunities
- ✘ Emergence of new partnerships
- ✘ Bringing the road safety community within the region together

How do we think about the future?



- ✘ We know current crash patterns
- ✘ We know that we don't know future crash patterns



Who said...?



“There are known knowns.

These are things we know that we know.

There are known unknowns.

That is to say, there are things that we know we don't know.

But there are also unknown unknowns.

There are things we don't know we don't know.”

Donald Rumsfeld

NATO Press conference, 6 June 2002 <http://www.nato.int/docu/speech/2002/s020606g.htm>



Current crash patterns - Rural roads, Great Britain, fatal and serious casualties, 2015



| Collision partners | Conventional car | Infrastructure (Roadside hazards) | Motorcycle | Bicycle | Pedestrian | Other vehicles |
|-----------------------------------|------------------|-----------------------------------|------------|---------|------------|----------------|
| Conventional car | 22% | 28% | 12% | 6% | 5% | 8% |
| Infrastructure (Roadside hazards) | | | 8% | 2% | n/a | 2% |
| Motorcycle | | | 1% | <1% | <1% | 2% |
| Bicycle | | | | <1% | <1% | 1% |
| Pedestrian | | | | | n/a | 1% |
| Other | | | | | | 1% |



Current crash patterns - **Urban** roads, Great Britain, fatal and serious casualties, 2015



| Collision partners | Conventional car | Infrastructure (Roadside hazards) | Motorcycle | Bicycle | Pedestrian | Other vehicles |
|-----------------------------------|------------------|-----------------------------------|------------|---------|------------|----------------|
| Conventional car | 11% | 6% | 16% | 15% | 29% | 3% |
| Infrastructure (Roadside hazards) | | | 4% | 1% | n/a | 2% |
| Motorcycle | | | <1% | <1% | 2% | 2% |
| Bicycle | | | | <1% | 1% | 3% |
| Pedestrian | | | | | n/a | 5% |
| Other | | | | | | <1% |



“Knows unknowns” – crash patterns



Assessment on Danube Area Roads

| Collision partners | Conventional car | Automated car | Infrastructure (Roadside hazards) | Motorcycle | Bicycle | Pedestrian |
|-----------------------------------|------------------|---------------|-----------------------------------|------------|---------|------------|
| Conventional car | ✓ | ? | ✓ | ✓ | ✓ | ✓ |
| Automated car | | ? | ? | ? | ? | ? |
| Infrastructure (Roadside hazards) | | | | ✓ | ✓ | ✓ |
| Motorcycle | | | | ✓ | ✓ | ✓ |
| Bicycle | | | | | ✓ | ✓ |
| Pedestrian | | | | | | ✓ |



What about electric?

A)



B)



VOTE!



- Use your phone or PC to go to:

www.menti.com

Then use the code **6743 7352** to vote



Let's see the results



<https://www.mentimeter.com/s/a12edf3bb7c60d5628987e4dd4ebfdb2/7cc7d2c7f1a0>



Things to remember!



Political will at the highest level is paramount



Safe System needs to be integrated within the road safety management



Managing the evolving nature of transport and mobility

THANK YOU FOR YOUR ATTENTION!

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The RADAR project

Conclusion and goodbyes

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QUESTIONS?

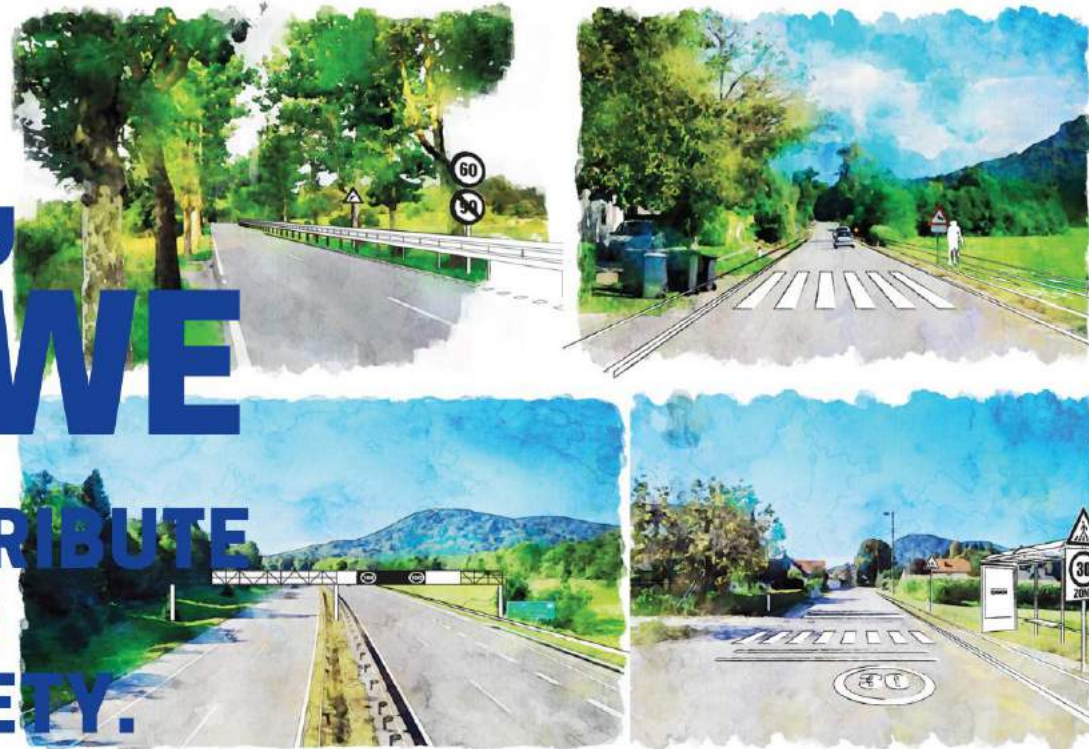
Contacts and links



Lead Partner:

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**YOU,
ME, WE
CAN CONTRIBUTE
TO BETTER
ROAD SAFETY.**



Your road safety is on our RADAR - www.interreg-danube.eu/RADAR



Thank you for your attention!

Project co-funded by European Union funds (ERDF, IPA, ENI).



**SREČNO POT
SRETAN PUT
БОН БОЯЖ
ŠŤASTNOU CE
GUTE REISE
JÓ UTAT
DRUM BUN**

