

Serious Injuries in road traffic – an international perspective

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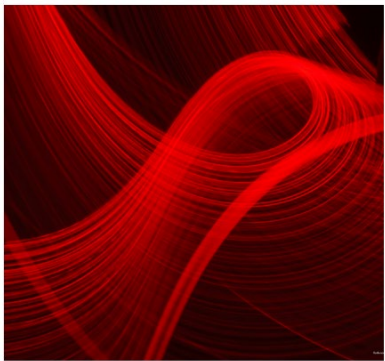
Serious injuries in road traffic

- 135,000 serious injuries in EU (2014)
- Target: halve the number in 2030 (EU, UN)
- New assessment still ongoing

- EU definition of serious injury:
 - non-fatal road traffic casualty
 - with an injury severity level of **MAIS3+**

Projects directed at serious injuries in the EU

- SafetyCube (estimation, consequences, costs, risk factors)
- Study on serious road traffic injuries in the EU



Practical guidelines for the registration and monitoring of serious traffic injuries

Deliverable 7.1



Physical and psychological consequences of serious road traffic injuries

Deliverable 7.2



Costs related to serious road injuries

Deliverable 7.3



Identification of Key Risk Factors Related to Serious Road Injuries and Their Health Impacts

Deliverable 7.4



Study on Serious Road Traffic Injuries in the EU

Contract no.: MOVE/C4/SER/2015- 162/S12.714669



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Serious Injuries

Why is it important to prevent?

Study into consequences of serious injury

- SafetyCube-study
- Method:
 - Literature review
 - Case studies (follow-up, questionnaire)
 - Spain: Health Impacts of Road traffic crashes (N=473 casualties)
 - France (Rhône region): ESPARR cohort study (n = 433 MAIS3+)
 - UK: dataset from Midlands + Impact of Injury study (N = 50+ 114 casualties)
 - Germany (Hannover): GIDAS follow-up (N=608 involved in crash)
 - MyLAC ('My Life After the Crash') follow-up study: (20 countries) (N=755 casualties)



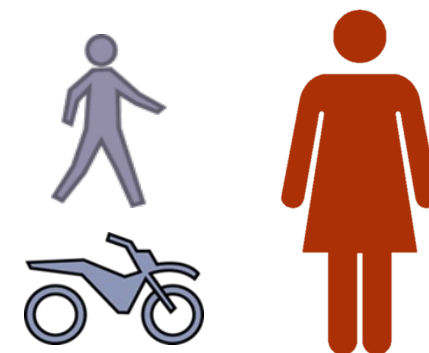
Physical and psychological
consequences of serious road
traffic injuries

Deliverable 7.2



Consequences of serious injury: results

- Non-fatal road injuries major impact on lives:
 - Pain, fatigue, mobility problems, sick leave
 - Psychological consequences (PTSD!)
 - Socio-economic consequences (financial problems)
- 75% of MAIS3+ casualties not fully recovered after 3 years
- Impact of injury severity higher for severe injury
- Influencing factors
 - Transport mode (more impact on pedestrians and motorcyclists)
 - Age (less impact on younger people)
 - Gender (more impact on females)

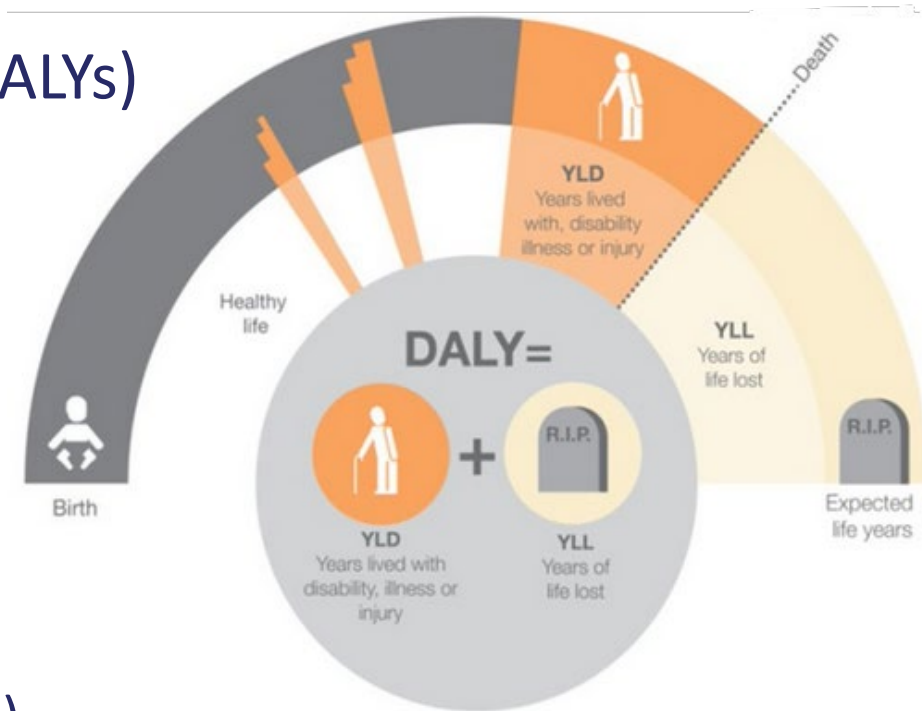


Burden of serious injuries

- Health burden: Disability Adjusted Life Years (DALYs)
 - Years of Life Lost (YLL)
 - Years Lived with Disability (YLD)

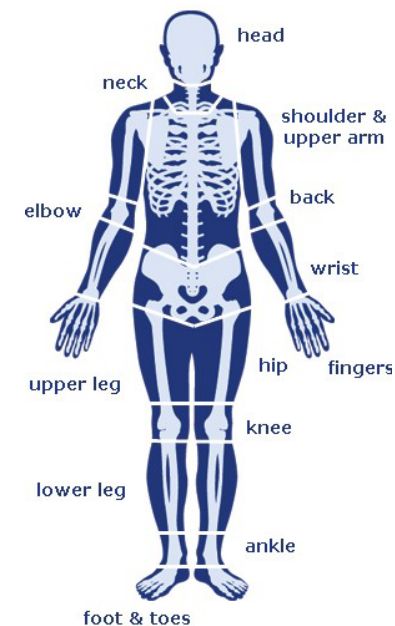
- YLD calculated

- applying INTEGRISS method (Haagsma et al., 2012)
- Data of 6 countries (Austria, Belgium, England, NL, Rhône region (FR), Spain)



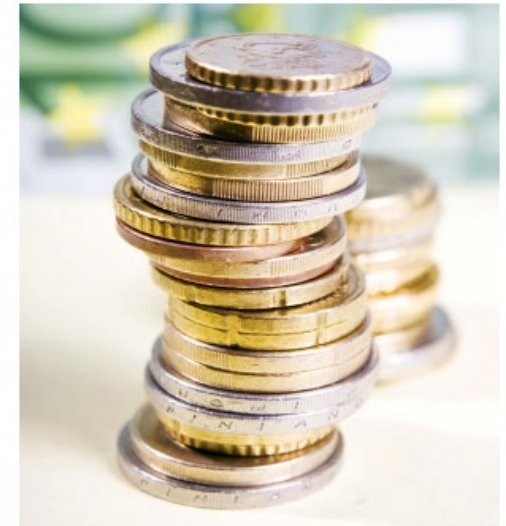
Burden of serious injuries: results

- Average burden per MAIS3+ casualty: 2.8 YLD (2.4 – 3.2)
- 19-33% MAIS3+ casualties suffer from lifelong disabilities
- Average burden per casualty differs between:
 - type of injury (high burden for spinal cord, brain/scull and lower extremity injuries)
 - transport mode (highest for car/van occupants, lowest for cyclists)
 - age and gender (lower burden for elderly, higher burden for men)
- Burden of injury differs between countries



Costs of serious injuries

- Survey among 32 EU countries (SafetyCube + InDeV)
- Costs per serious road injury: €28,000 - €975,000
- 14% - 77% of total costs of road crashes
- 0.04% - 2.7% of GDP



Costs related to serious road injuries

Deliverable 7.3



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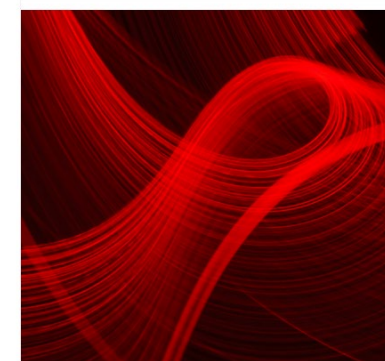
Serious Injuries

How to assess?

Methods to assess data on serious injuries

- All EU member states are asked to provide data from 2014 on, by:
 1. Applying correction factors to police data
 2. Using hospital data
 3. Using linked police and hospital data

- For analyzing and understanding serious injury patterns:
 1. In depth data
 2. Hospital data (hospital discharges or trauma register)
 3. Linked police and hospital data



Practical guidelines for the registration and monitoring of serious traffic injuries

Deliverable 7.1



Issues per method

- Factor:
 - Country specific
 - Quality of data sources can differ over time and per characteristic
- Hospital data:
 - Access needed to Hospital Discharge Registers (GDPR!)
 - Selection of: traffic casualties, injury severity, non-fatal injury, first admission
- Record linkage
 - Requires one/some equal variables for linkage
 - Correction method for missing data in both datasets



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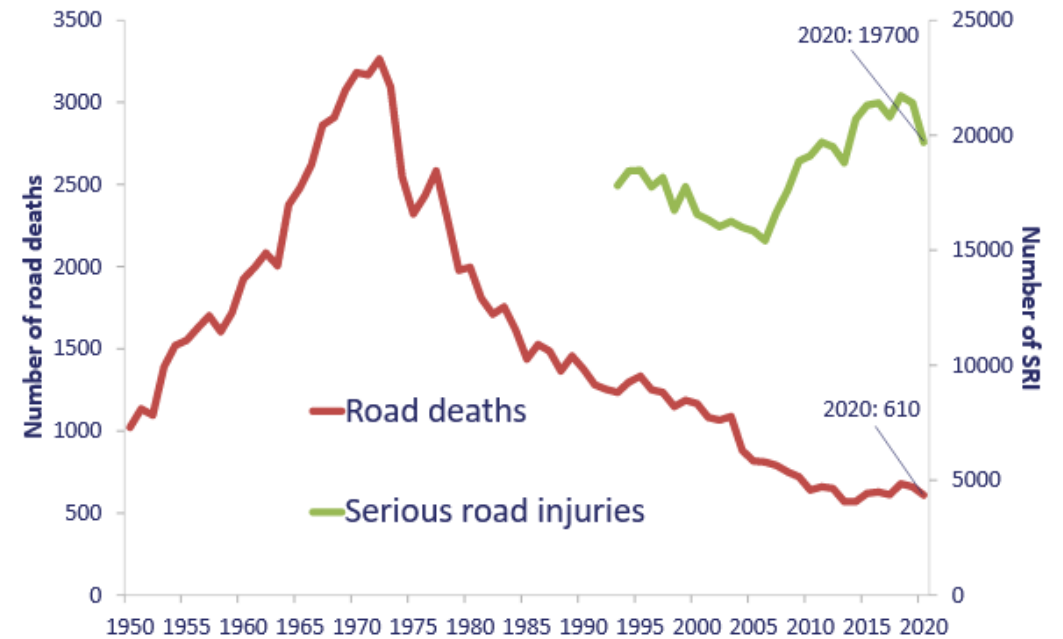
Serious Injuries

Understanding the characteristics

Serious injuries in relation to other RS indicators

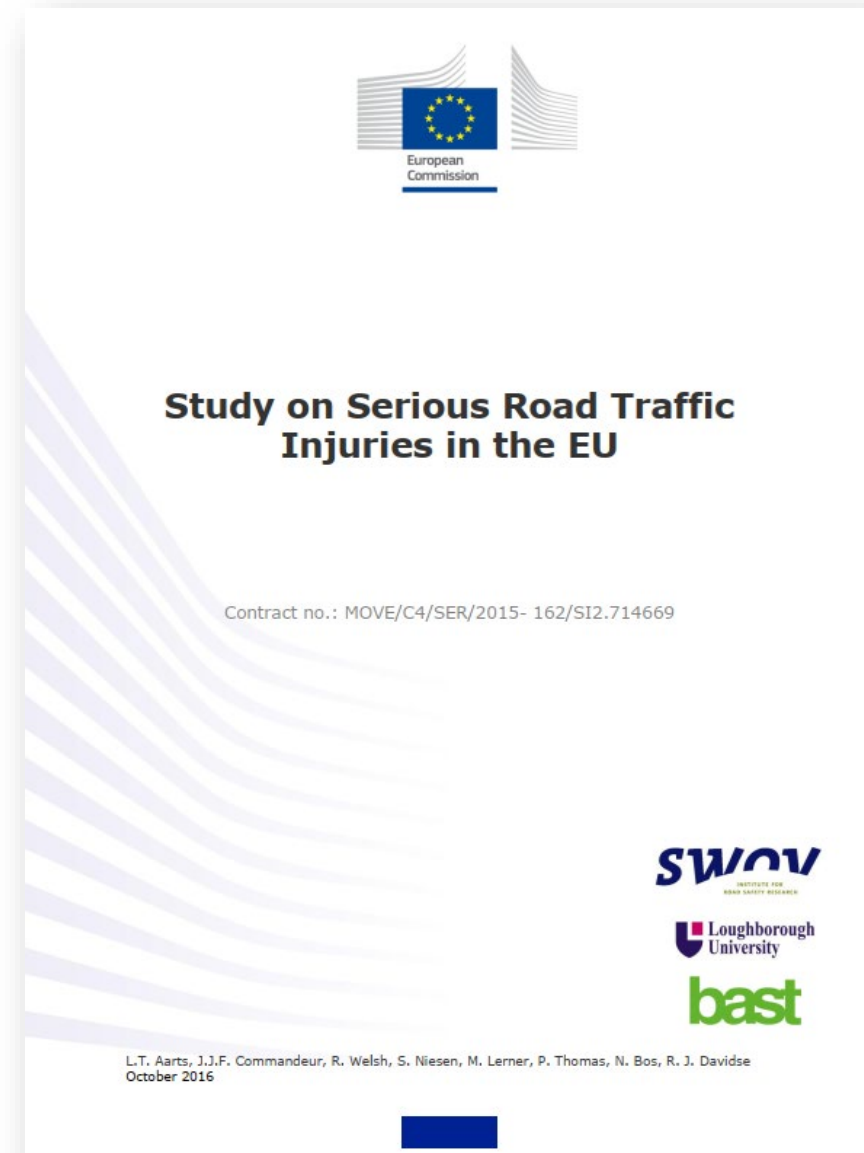


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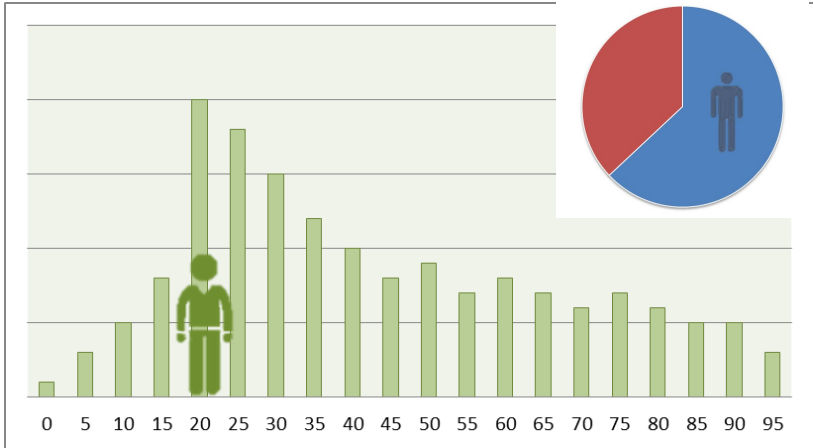
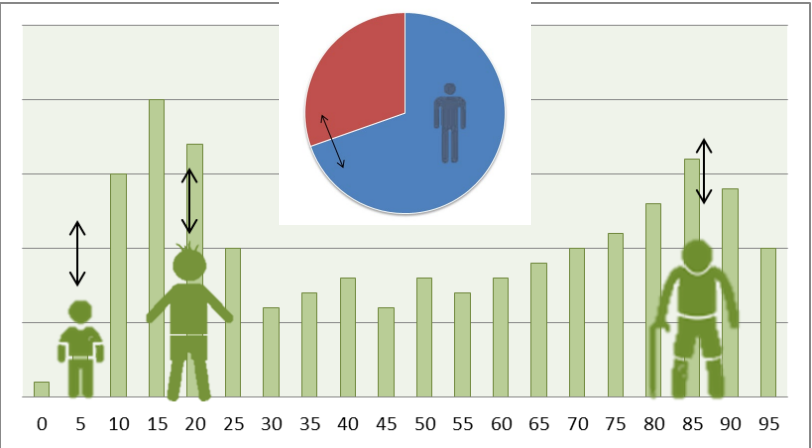
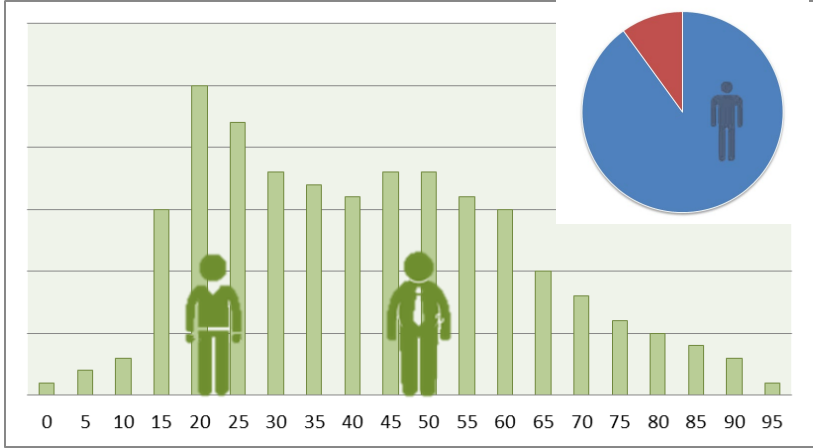
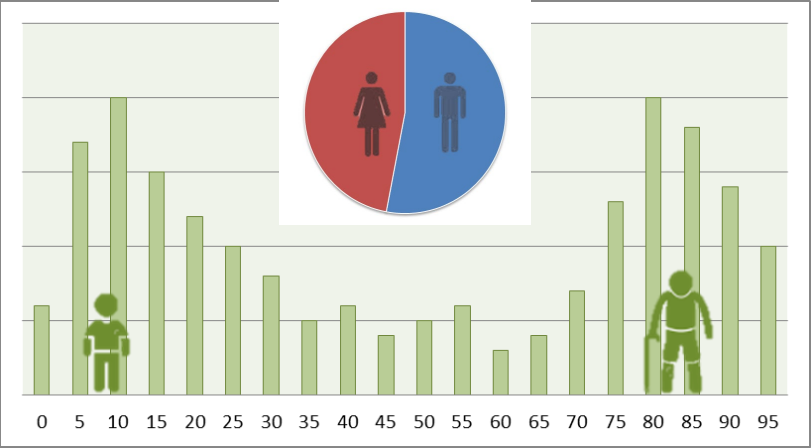


Understanding serious injuries

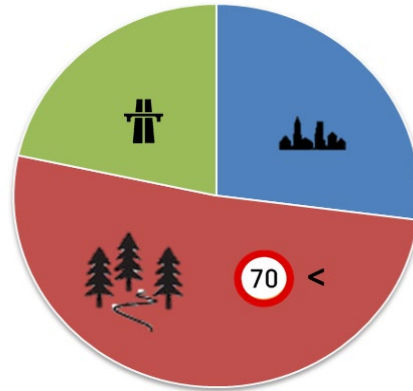
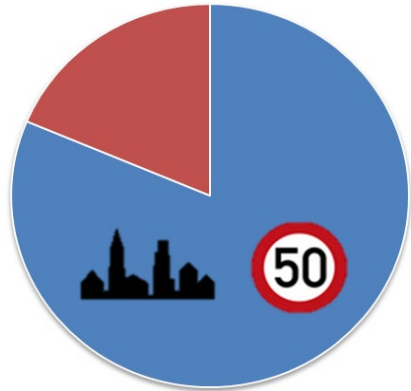
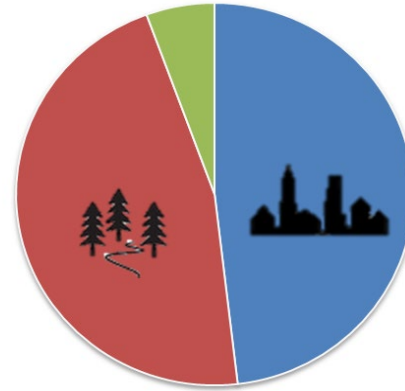
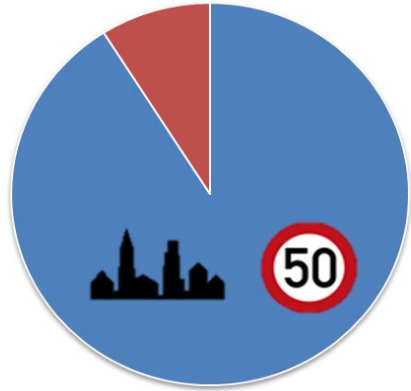
- Understanding main contributing factors
- Focus on main modes of road transport
 - Pedestrians (N = 10,203)
 - Cyclists (N = 30,237)
 - Motorcyclists (N = 9,119)
 - Car occupants (N = 21,296)
- National databases
 - Information on MAIS3+ casualties
 - Disaggregated information of crash characteristics
 - Macroscopic or in-depth



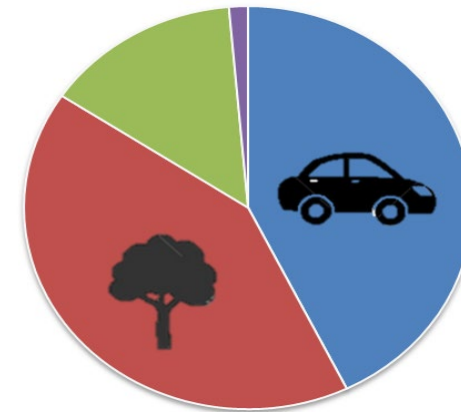
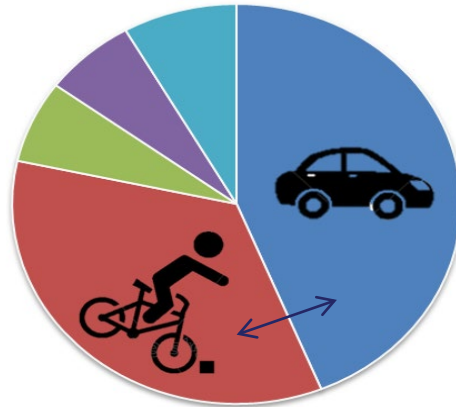
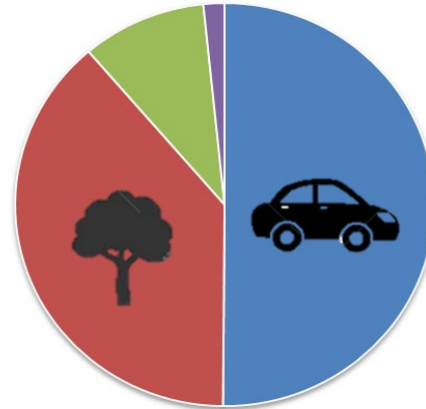
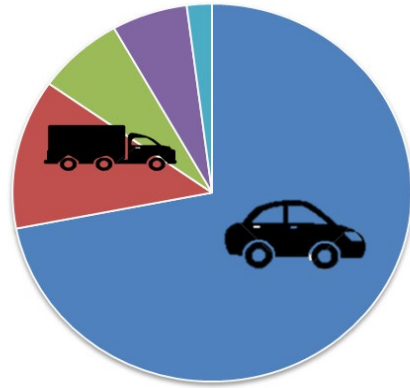
Age and gender



Location of crash



Crash opponents



Contributing crash factors



- Failures in looking or judgement;
- Speed-related issues;
- Psychoactive substances;

- Failures in looking or judgement;
- Speeding;
- Loss of control;

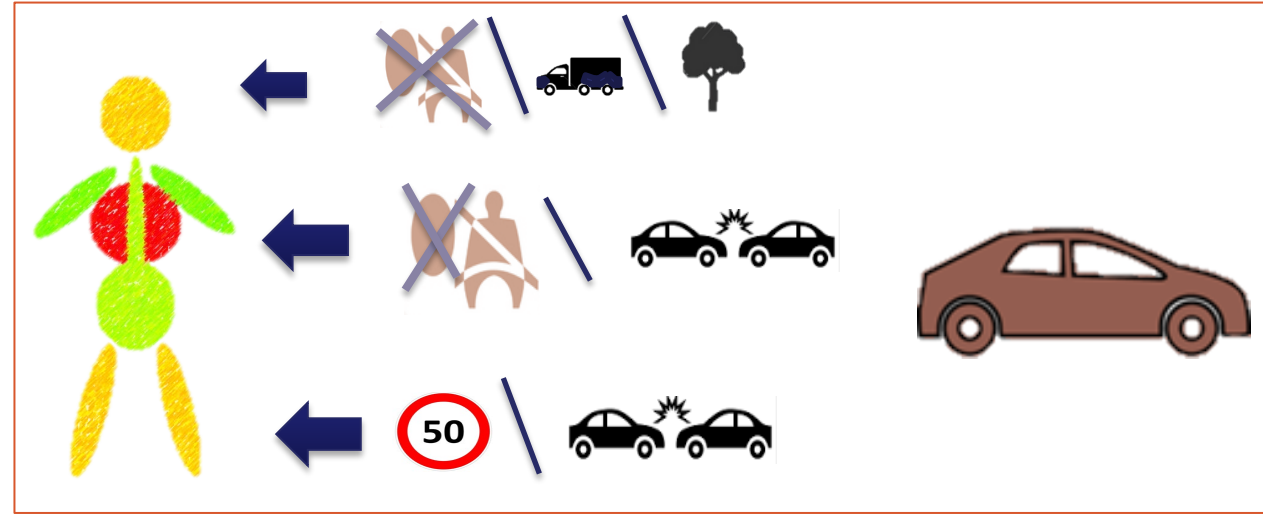
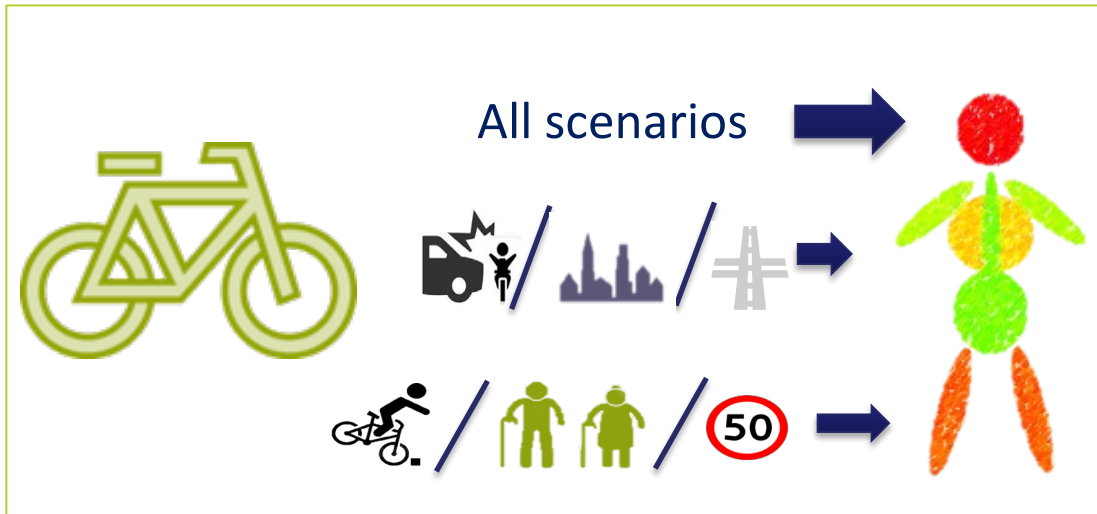
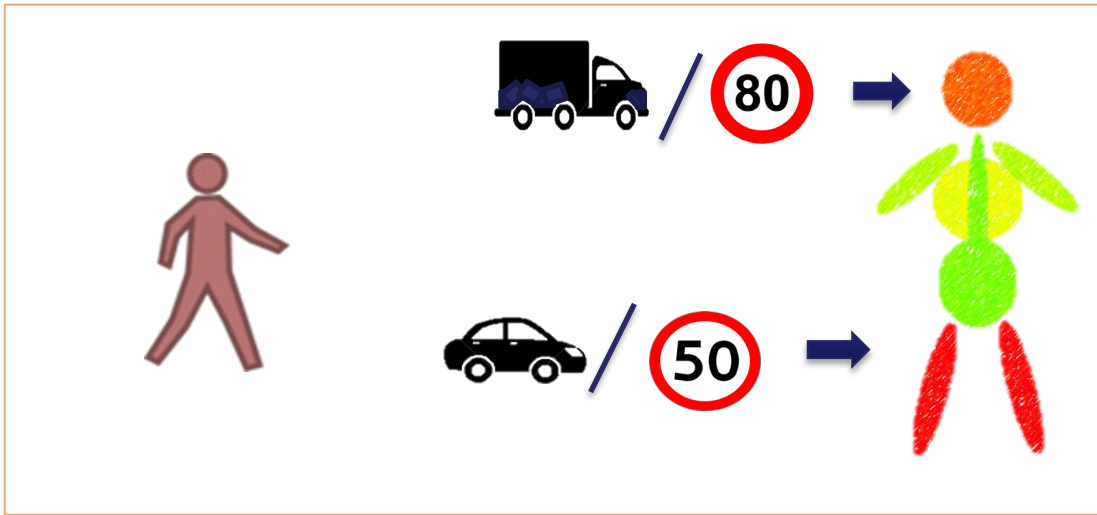


- Failures in looking or judgement;
- Reckless driving;
- Loss of control;

- Loss of control;
- Speeding;
- Psychoactive substances;



Crash scenarios and injury



Serious injuries: part of the iceberg or unique patterns?

- Similar patterns in EU road fatalities:
 - Gender & age of casualty
 - Location and time of crashes
- Serious injuries tends to show more:
 - Females in pedestrians + bicyclist casualties
 - Urban areas

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Serious Injuries

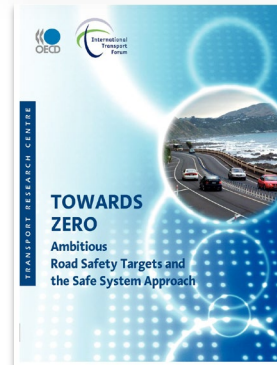
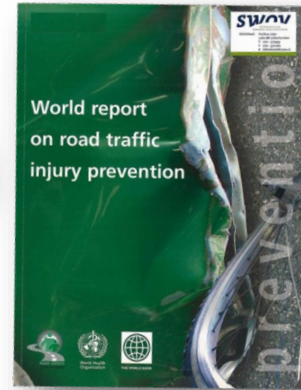
Safe System solutions

The Safe System Approach



Key elements	Aims of a safe system
People make errors	Prevent the occurrence of errors
People are vulnerable	Prevent heavy forces on the human body
Shared responsibility	Prevent blaming the road user for his/her weaknesses
Integral approach	Prevent isolated measures

- Understanding the human element
- System design that fits to the human characteristics
- Proactive approach: don't wait for crashes to happen



Serious injuries and Safe System Approach

- National, regional, local level
 - Develop data management system to distinguish MAIS3+
 - Formulate severe injury target
 - Implement effective evidence-based measures
 - Learn from other countries (data management, effective measures)
- Ideas for safe system measures
 - Reduce conflicts between VRU and motorised traffic
 - Speed reduction to protect VRU
 - Forgiving infrastructure to all vehicle modes
 - Smooth infrastructure for two-wheeler vehicles (bicyclists, powered two-wheelers)
 - Enforcement for prevention of hazardous behaviour (i.e. speeding, and drink-driving)



Serious injuries and Safe System Approach

- Ideas for safe system measures
 - Reduce conflicts between VRU and motorised traffic
 - Speed reduction to protect VRU
 - Forgiving infrastructure to all vehicle modes
 - Smooth infrastructure for two-wheeler vehicles (bicyclists, powered two-wheelers)
 - Enforcement for prevention of hazardous behaviour (i.e. speeding, and drink-driving)
- Accompanying measures:
 - Gather MAIS3+ data to monitor progress
 - Use targets and intermediate targets
 - Make appointments on responsibilities for measures and results



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Serious Injuries

Safe System solutions

Final words

1. Serious injuries: serious consequences, burden and societal costs
2. Definition: MAIS3+
3. Hospital data required
4. Study patterns in own country as basis for effective measures
5. Safe System approach directed at fatalities and serious injuries



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**Thank
you!**

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