THE FUTURE OF TRANSPORT

Type-approval requirements for motor vehicles as regards their general safety and the protection of vehicle occupants and vulnerable road users

Intelligent Speed Assistance (ISA)

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Casualty impact and cost-effectiveness evaluation

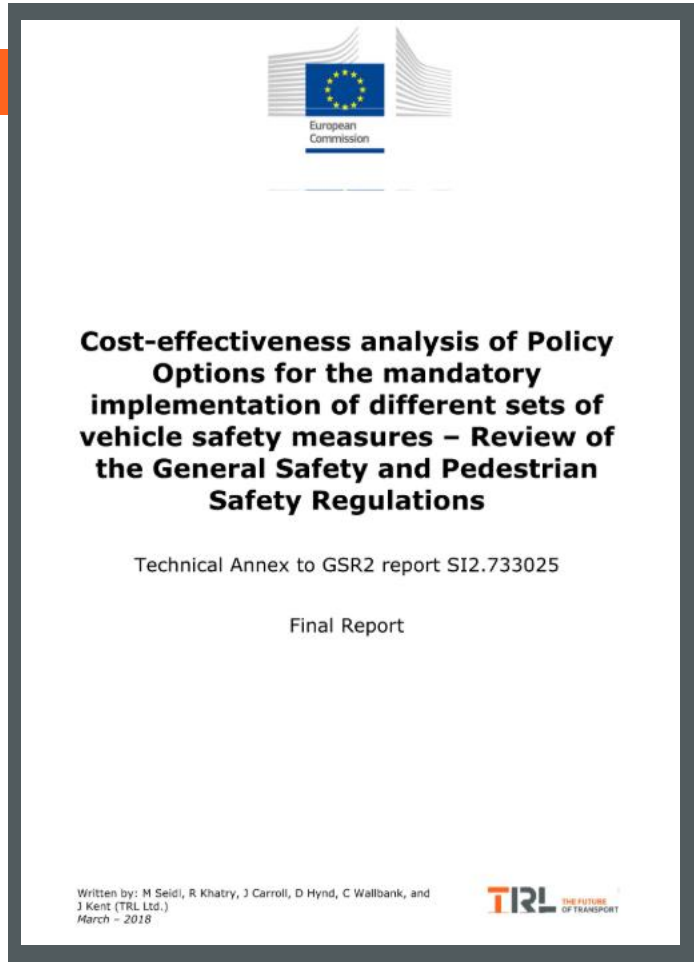
TRL study on behalf of the European Commission

Scope of the study, defined as:

- **Geographic scope**: EU-28
- **Vehicle categories covered**:

  Cars [M1], Buses [M2&M3],

  Vans [N1], Trucks [N2&N3]
- **Evaluation period**: 2021–2037



Casualty impact and cost-effectiveness evaluation

TRL study on behalf of the European Commission

Scope of the study, cont…

- **Baseline scenario**: No further policy intervention in the transport sector, but voluntary improvements and effects of already implemented policies continue: Continued dispersion of mandatory vehicle safety measures into the legacy fleet and **continued voluntary uptake of the safety measures under consideration**.
- **Action scenario:** 17 safety technologies made mandatory according to Commission proposal.

Casualty impact and cost-effectiveness evaluation

Measure	Description	Vehicle categories			
AEB-VEH	Autonomous emergency braking for vehicles (moving and stationary targets)	M1		N1	
AEB-PCD	Autonomous emergency braking for pedestrians and cyclists	M1		N1	
ALC	Alcohol interlock installation document	M1	M2&M3	N1	N2&N3
DDR-DAD	Drowsiness and attention detection	M1	M2&M3	N1	N2&N3
DDR-ADR	Advanced distraction recognition	M1	M2&M3	N1	N2&N3
EDR	Event data recorder	M1		N1	
ESS	Emergency stop signal	M1	M2&M3	N1	N2&N3
FFW-137	Full-width frontal occupant protection (current R137 configuration with Hybrid III ATDs)	M1		N1	
FFW-THO	Full-width frontal occupant protection (introduction of THOR-M ATDs and lower appropriate injury criteria thresholds to encourage adaptive restraints)	M1		N1	
HED-MGI	Adult head-to-windscreen impact (mandatory HIC limit in headform-to-glass impact tests; no mandatory A-pillar impact)	M1		N1	

Casualty impact and cost-effectiveness evaluation

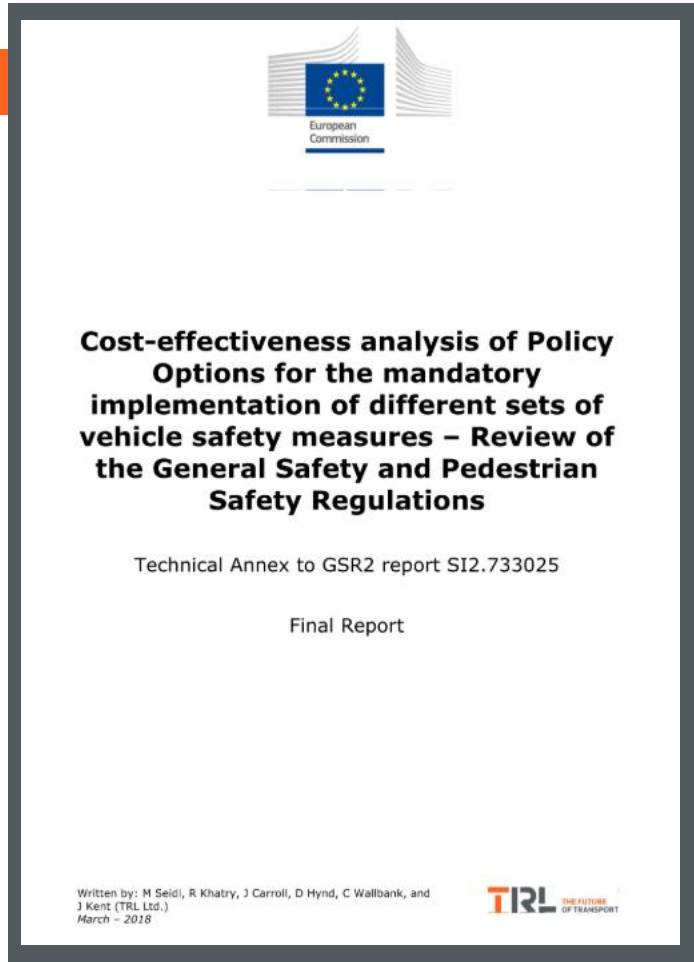
Measure	Description	Vehicle categories			
ISA-VOL	Intelligent speed assistance (voluntary type system; can be overridden by driver and switched off for the rest of journey)	M1	M2&M3	N1	N2&N3
LKA-ELK	Lane keeping assist (emergency lane keeping system that intervenes only in case of an imminent threat such as leaving the road, or leaving the lane with oncoming traffic)	M1		N1	
PSI	Pole side impact occupant protection	M1		N1	
REV	Reversing camera system	M1	M2&M3	N1	N2&N3
TPM	Tyre pressure monitoring system		M2&M3	N1	N2&N3
VIS-DET	Front and side vulnerable road user detection and warning (no auto braking)		M2&M3		N2&N3
VIS-DIV	Minimum direct vision requirement (best-in-class approach)		M2&M3		N2&N3
HED-MGI	Adult head-to-windscreen impact (mandatory HIC limit in headform-to-glass impact tests; no mandatory A-pillar impact)	M1		N1	

Casualty impact and cost-effectiveness evaluation

TRL study on behalf of the European Commission

Scope of the study, cont…

- **Extensive stakeholder engagement** (over 100 stakeholders)
- **Benefits considered**: Monetary values of casualties prevented (fatal, serious, slight) by safety measures
- **Costs considered**: Cost to vehicle manufacturers (OEMs) of fitment of safety measures to new vehicles



Casualty impact and cost-effectiveness evaluation

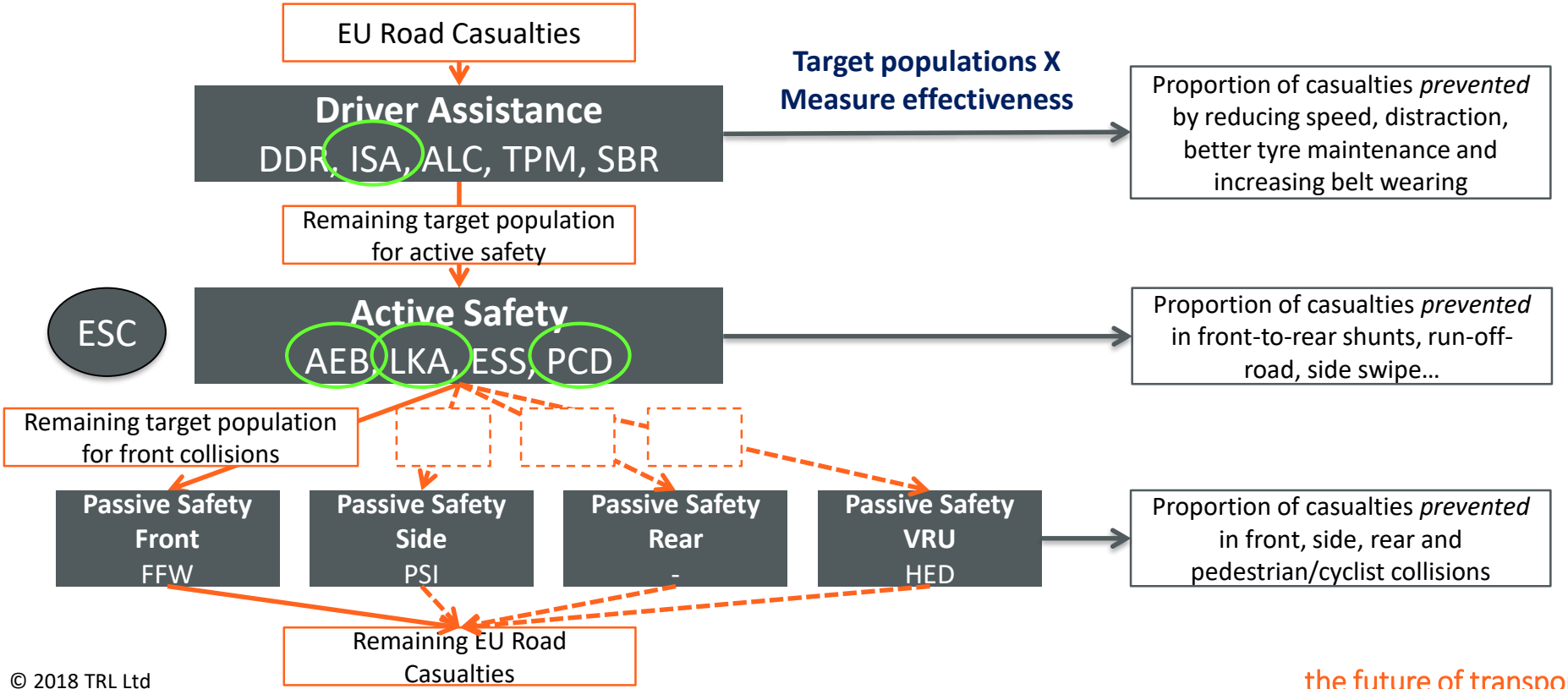
TRL study on behalf of the European Commission

Scope of the study, cont…

- **Treatment of uncertainty**:
  - Interval analysis and scenario analysis
- **Results**:
  - Benefit-to-cost ratios (BCRs) and numbers of casualties prevented. All results are **in comparison to the baseline scenario.**
- **All evidence published**

Avoidance of double-counting of casualties prevented

Safe System approach to maximise casualty prevention – Example for M1 (Cars)



Key Results

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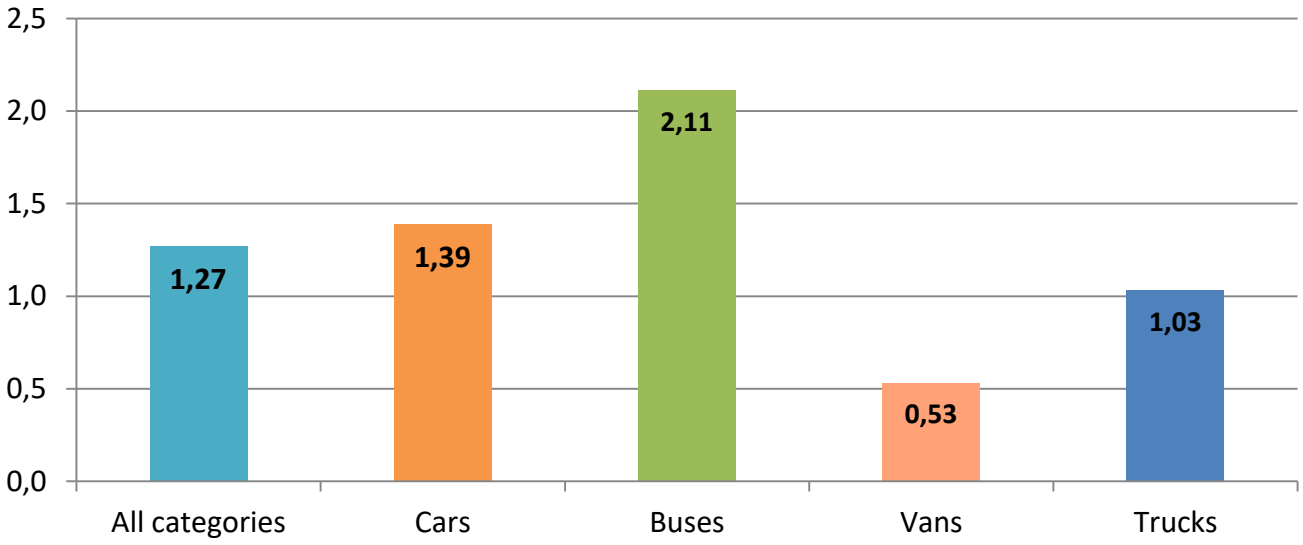
Cost-effectiveness

Benefit-to-cost ratios (BCR) of the Commission Proposal



Values greater than 1 indicate that the benefits are greater than the costs

Years: 2021–2037

EU-28

Compared to the baseline scenario

Key Results

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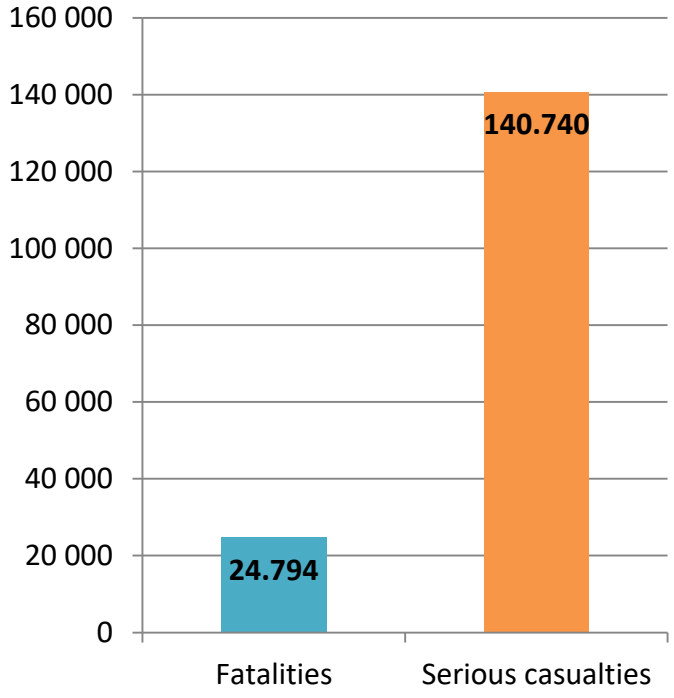
Casualties prevented

Total sum; years 2021–2037; EU-28; compared to the baseline scenario

	All categories
Fatalities prevented	24,794
Serious casualties prevented	140,740
Slight casualties prevented	515,681



The functionality of ISA

Comparison of Intelligent Speed Assistance (ISA) and Speed Limit Information (SLI)

ISA	SLI
Functionality: Traffic sign recognition and (optional) maps of speed limits with GPS positioning	
System will inform the driver of the speed limit – assistance system only	
System will be turned on at ignition	
Alert the driver when their speed is greater than the posted speed limit via a dedicated and appropriate haptic feedback through the accelerator control	Provide information about current speed limit. [*Potentially warn (visual or audio) the driver if current speed is greater than speed limit – feedback method to be confirmed*]
Can be overridden by driver	
If the driver does not override (accelerate or brake), the vehicle will assist the driver and slow down to the permissible speed	If the driver does not react (accelerate or brake), the vehicle will continue to travel above permissible speed

Potential benefits of ISA

Comparison of Intelligent Speed Assistance (ISA) and Speed Limit Information (SLI)

ACEA Accidentology analysis

EC Casualty impact and cost-effectiveness evaluation

	ISA	SLI
Vehicle type	M1 & N1	
Target Population %	16.4% to 20.8%	
Target Population N	4,149 to 5,262 pa	
Other measures	ESC	
Potential Benefit %	5.2% to 8.7%	~3.5% *
Potential Benefit N	1,316 to 2,201 pa	886 pa

* ACEA ~3.5% [Wilkie and Tate (2003) & Carston and Tate (2005)]

ISA (2,201) – SLI (886) = **1,315 more fatalities pa**

Conclusions

The European Commission proposal on vehicle General Safety Regulation

- An ambitious proposal to reduce the number of deaths and injuries on EU roads – Savings of almost **25,000 fatalities and 140,000 serious casualties** over 16 years.
- Cost-effective – **Benefits to society exceed the costs**.
- **Extensive Stakeholder engagement**, including **ACEA commissioned Accidentology study**, which provided direct evidence for the Impact Assessment (IA), notably on ISA.
- **IA concluded that ISA is cost-effective** at preventing collisions and mitigating the impact and injury severity of others.

Conclusions

The European Commission proposal on vehicle General Safety Regulation

- **ISA increases the potential effectiveness of active and passive safety measures** by helping drivers to comply with speed limits.
- **SLI is not an effective alternative to ISA – adopting SLI could result in ~ 1,300 more deaths every year on EU28 roads**.
- The **GSR proposal is technologically advanced** – helping the **EU Industry to remain competitive** with regard to the **challenges of developing automated vehicles**, because it includes measures to address **Driver Distraction, Speeding** and **Vulnerable Road User protection**.

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