

Sustainable Road Safety: Lessons from the Netherlands



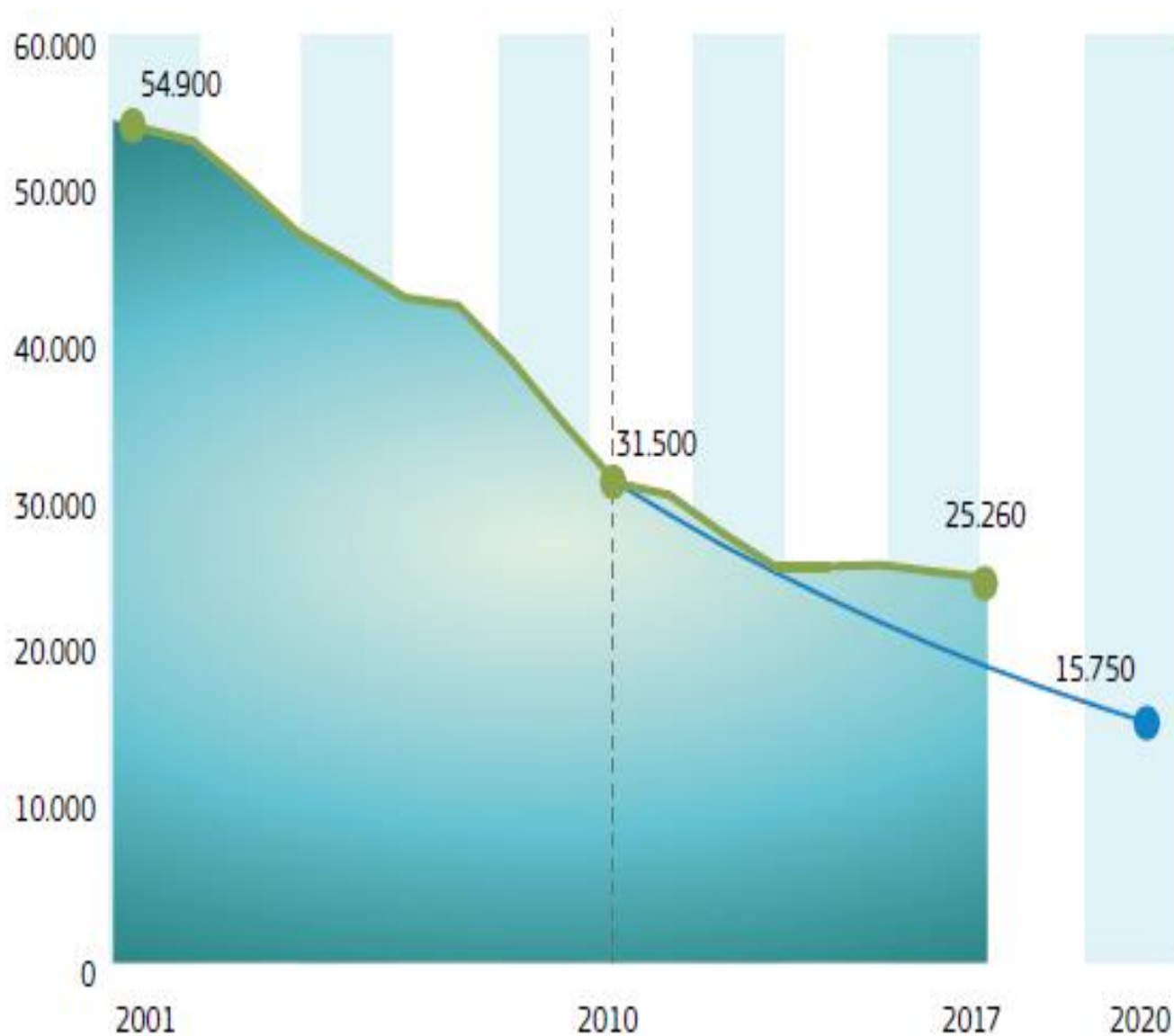
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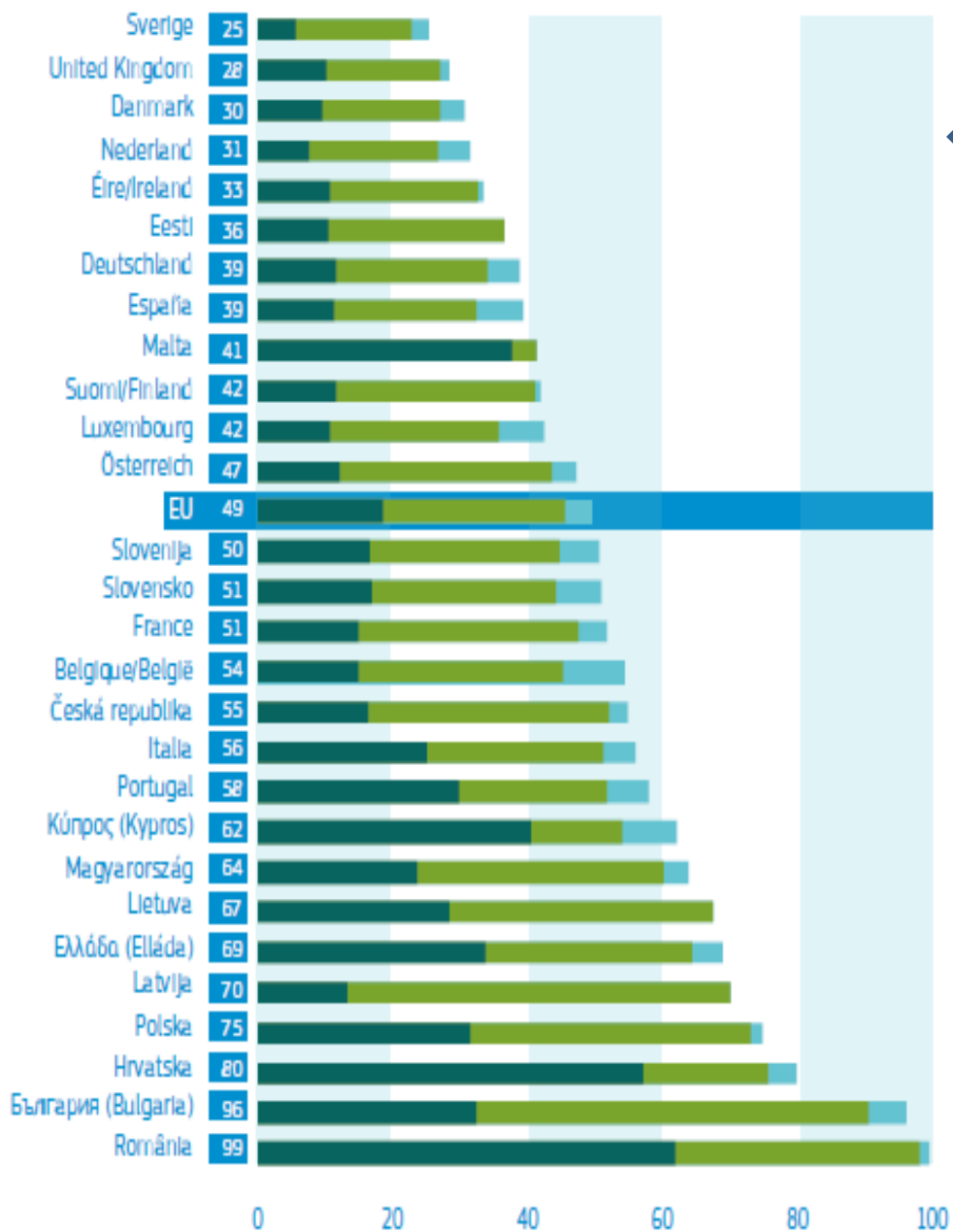
Overview:

- Road Safety developments
- Sustainable Road Safety
- Challenges and lessons

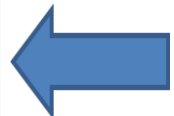
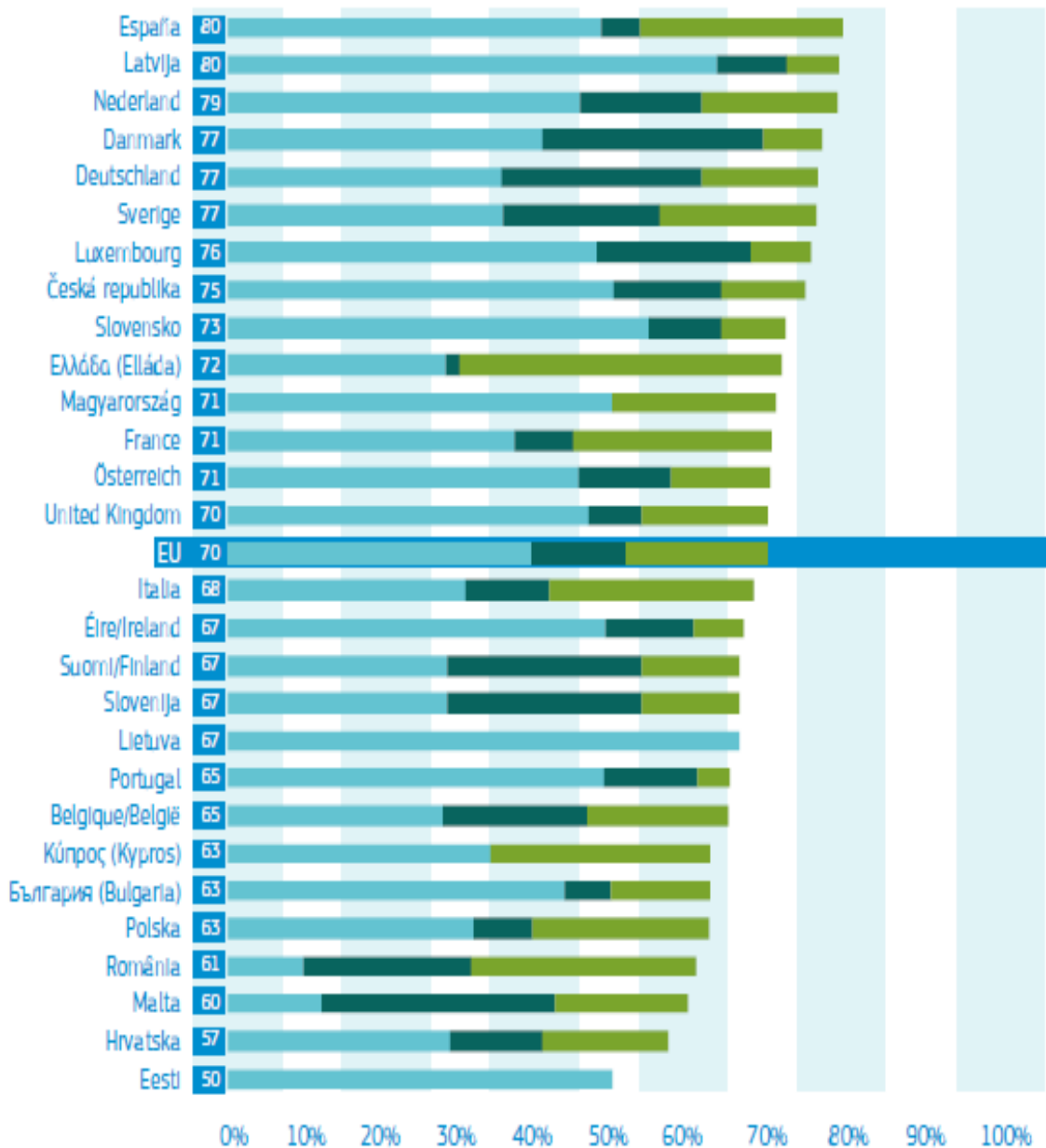




EU Traffic
fatalities
2001 – 2017



EU Traffic
fatalities
per million
inhabitants
(2017)



Percentage of vulnerable road user fatalities in urban areas (2017)

The Netherlands traffic in context



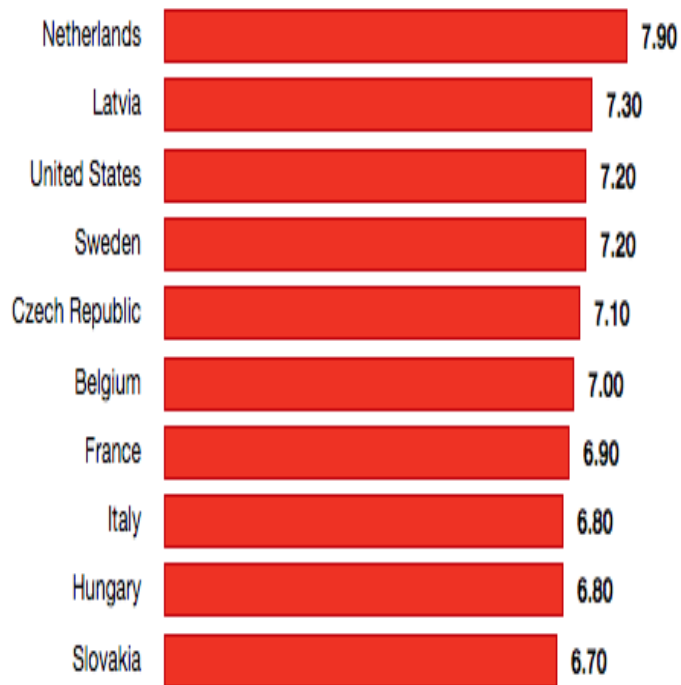
- Cars: 8.4 million
- Motorways: avg. 2,268 mv/h (max.: 5,836 mv/h)

- Bicycles: 22.7 million (2015)
 - 1.3 bike/inhabitant
 - 84% of population > 1 bike
 - 16% has an e-bike



Countries with the best driving experience

Here are the top countries in Waze's first-ever "Driver Satisfaction Index", which curates data from 50 million users and scores places based on their traffic, road infrastructure, occurrences of accidents and hazards, and access to driver resources.



Source: Waze

FORTUNE



Safe System approach to road safety

➤ Ethical imperative: no human should be killed or seriously injured as a result of a road crash 1992: the vision

➤ Four principles:

- People make mistakes → crashes & falls
- The human body is fragile
- Actors: responsibilities (shared & distinct)
- Complicated problem → systematic, integral approach



“In a safe system, the road, your vehicle, and other road users protect you against big risks in traffic.”



1992: the vision



Sustainable Road Safety measures (1)



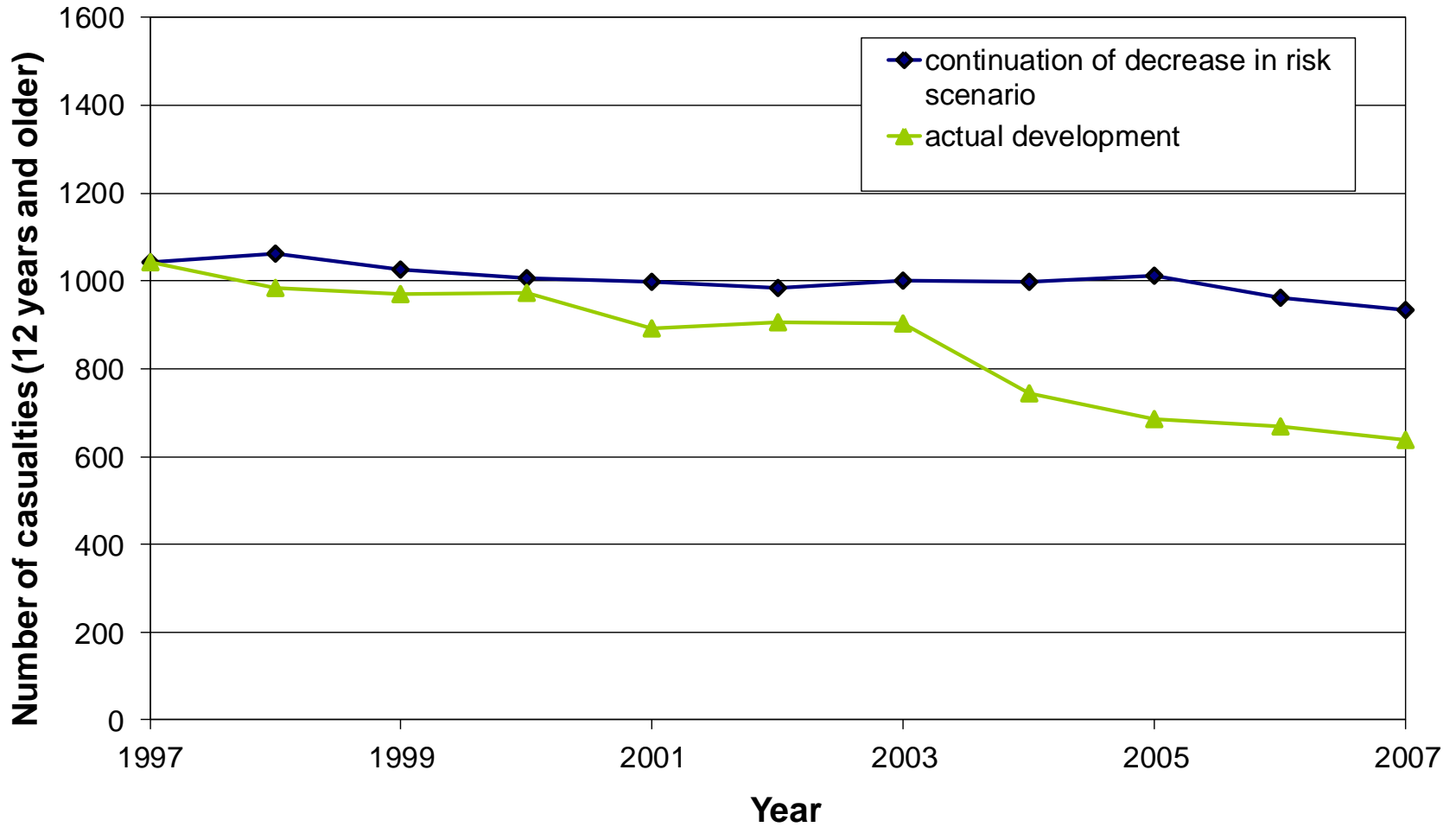
Sustainable Safety – measures (2)





Evaluation of Sustainable Safety

- Implementation of measures: mostly good, some poor
- Individual measures: effective in preventing casualties
- Decrease in risk: stronger than before (5.8% per year compared to 2.6% per year)
- All measures together prevented 300-400 fatalities per year
- Benefit-cost ratio: very high (1.0 / 3.6 - 3.7)
- **In sum: successful**

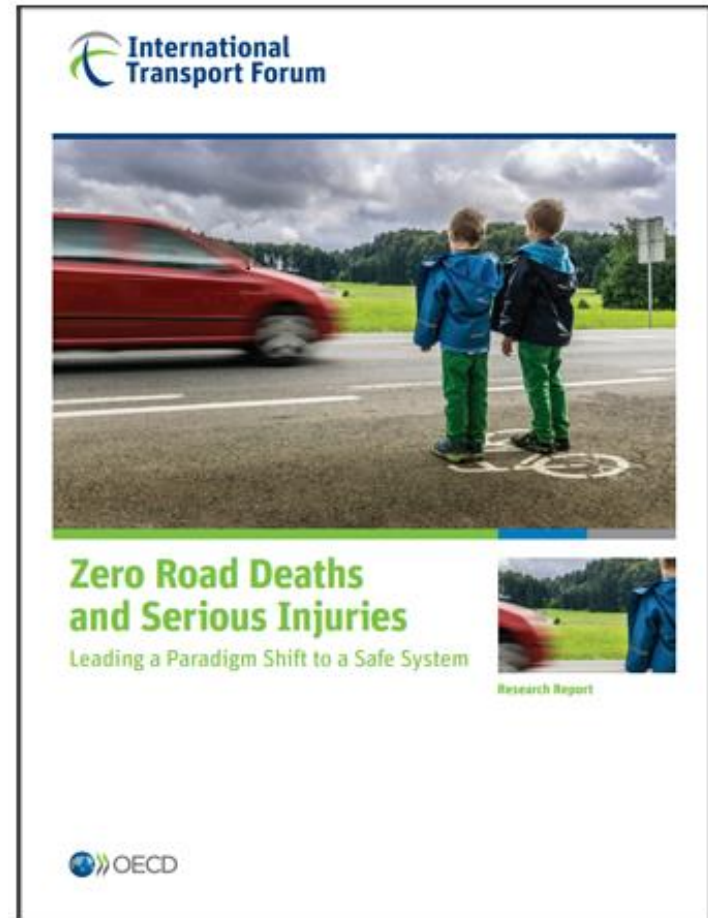
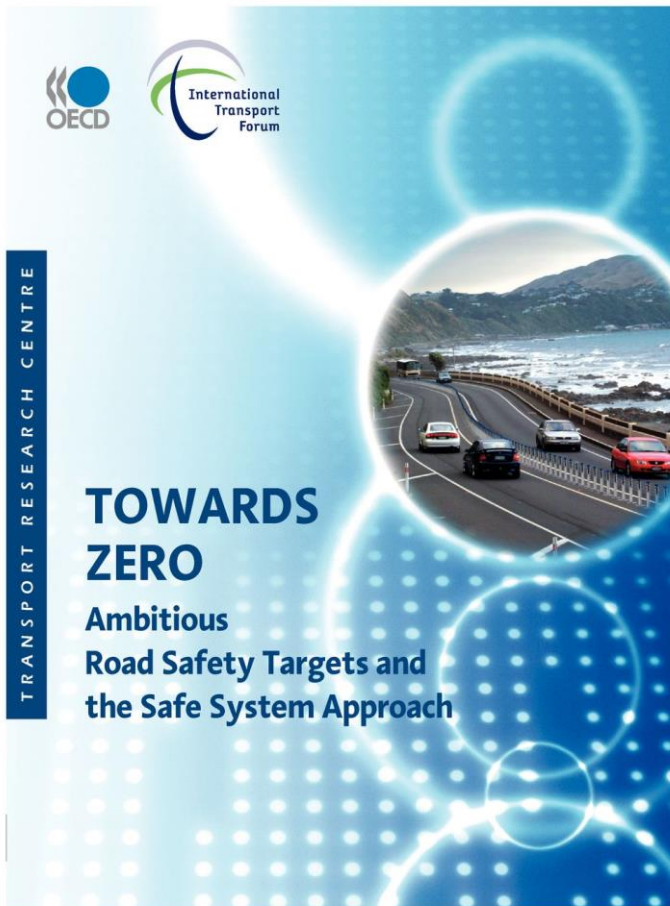


National Strategic Road Safety Plan 2008 - 2020

Inleiding - Wereldkampioen blijven

Nederland is op grond van het lage aantal verkeersdoden 'wereldkampioen verkeersveiligheid'. Die titel hebben wij te danken aan de voortdurende inzet van vele betrokkenen, zowel binnen als buiten de overheid.

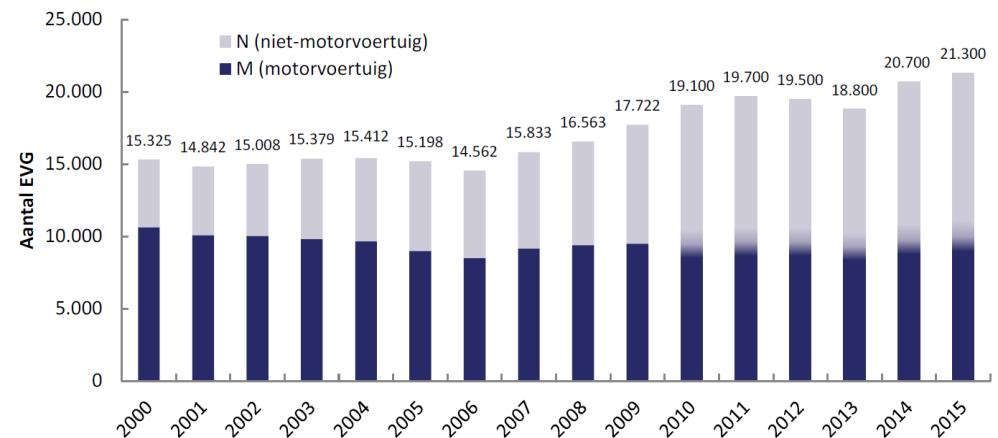
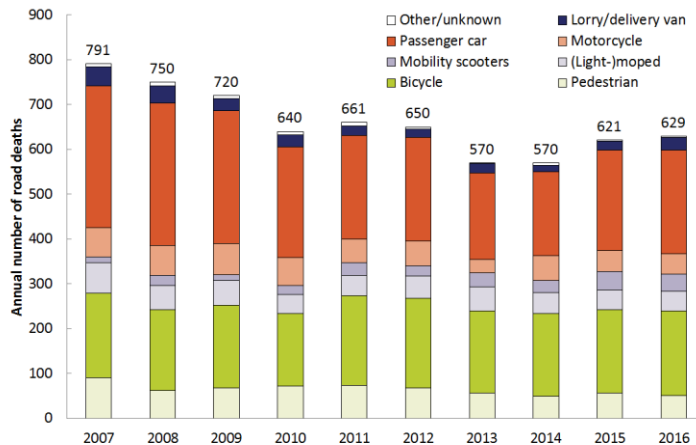
Waar wereldkampioenen in de sport soms besluiten om op het hoogtepunt te stoppen, gaan wij door. Móeten wij door. Want jaarlijks eist het verkeer nog altijd vele honderden doden en duizenden ziekenhuisgewonden (791 doden in 2007 en 16.750 ziekenhuisgewonden in 2006). Door de spreiding over het jaar en het alledaagse karakter hebben verkeersongevallen niet de impact van een vliegramp, maar achter de ongevalstatistieken gaan wel groot menselijk leed en enorme maatschappelijke kosten schuil. Het is onze drijfveer om dat leed en die kosten te voorkomen en te beperken.



Curse of success?



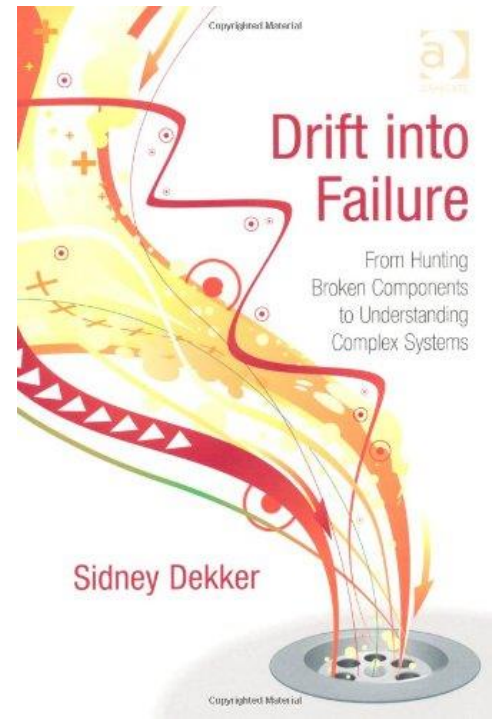
- Measures: no full implementation (quality / coverage)
- SRS: less effective in preventing serious road injuries



“Drifting into failure”?

“Every successful safety system should beware when:

- resources are limited (no money),
- there is a competition for goals (climate change), and
- people have high expectations of technological innovations as solutions.”



The Way Forward: Facing challenges, exploiting opportunities



Challenge #1:

'Implementation gap' in infrastructure



Challenge # 2: Sufficient means (maintenance)

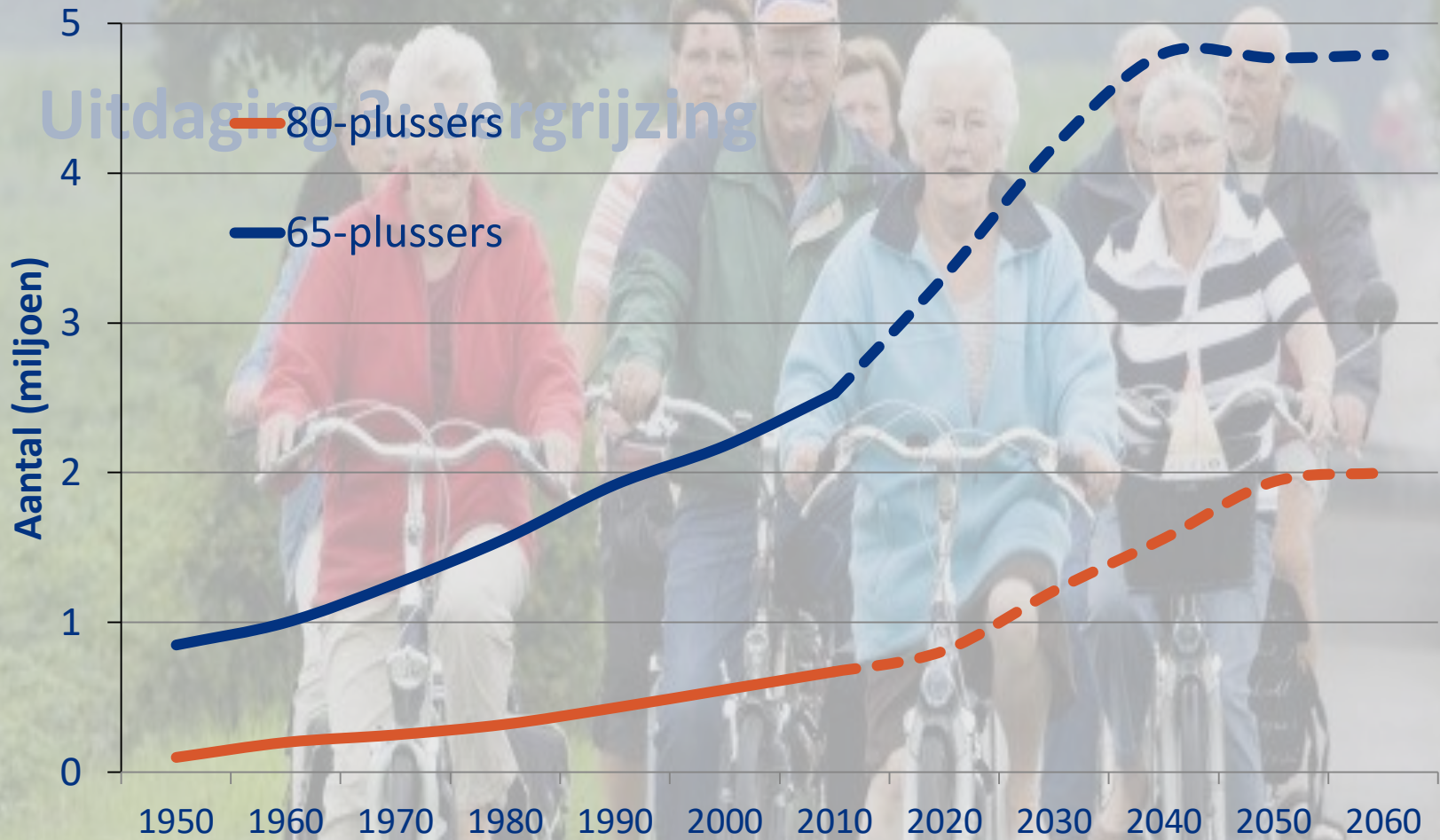
'Municipalities face budget cuts...'

'New tasks for cities may affect Road Maintenance...'

'70% of civil servants expect lack of funding...'



Challenge #3: An aging population



Challenge #4: More traffic and diversity



Challenge #5: Behaviour

SWOV
WETENSCHAPPELIJK
ONDERZOEK VERKEERSVEILIGHEID

**Gebruikers van het
fietspad in de stad**
Aantallen, kenmerken,
gedrag en conflicten

R-2015-21



SWOV
WETENSCHAPPELIJK
ONDERZOEK VERKEERSVEILIGHEID





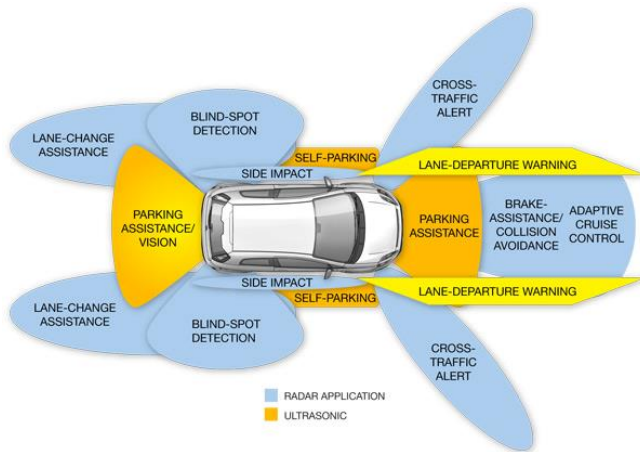




AMBULANCE



Innovations: opportunities (and some threats...)





Check je eerste tripscore!

16-10-2016



Wauw, nice job, je hebt 97 gescoord voor je 1e rit!

Je bent op weg naar 20%

korting op de maandpremie.

Check kroodle.nl/besparen voor tips om je volgende rit hoger te scoren.

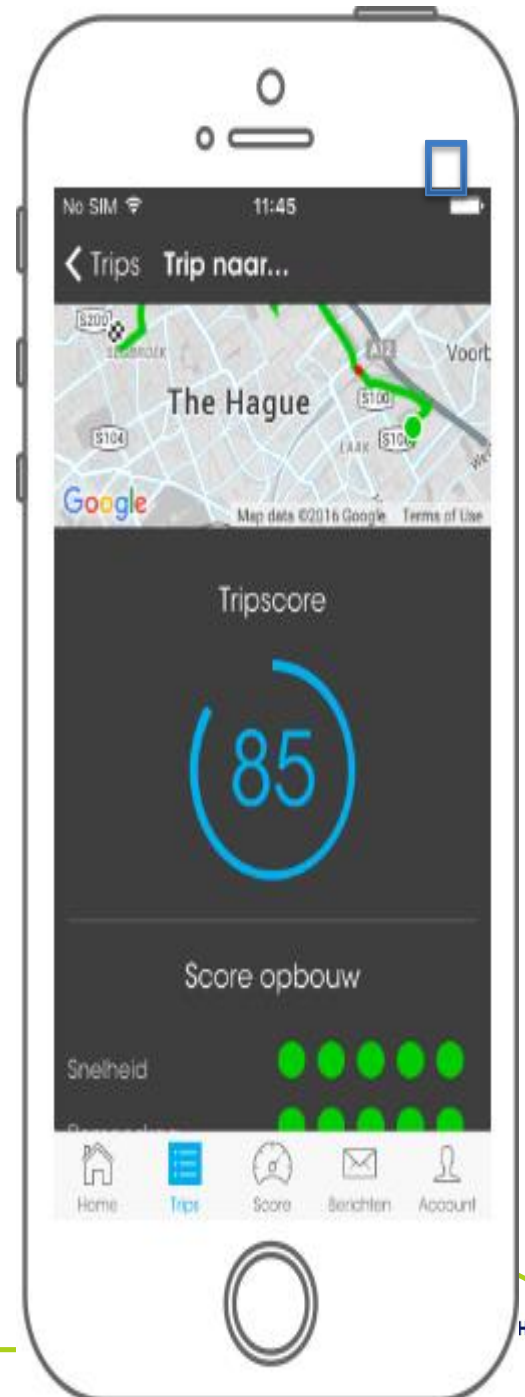
 Delen

< Trips Trip naar Den Ha...

97

Score opbouw

- > Snelheid 
- > Remgedrag 
- > Tijdstip 

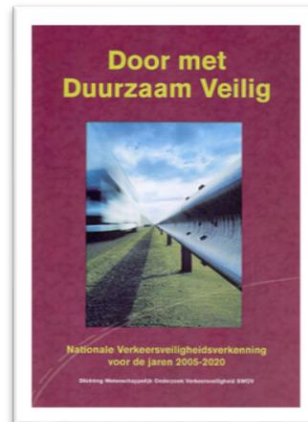


Sustainable Road Safety 3.0

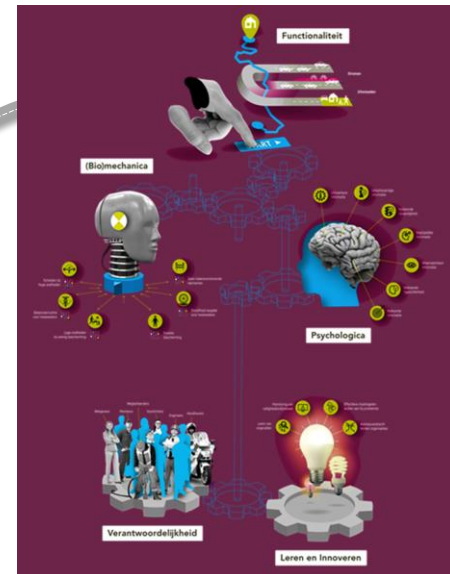
1992: the vision



2005: first actualisation



2018: second actualisation



Sustainable Road Safety 3.0

Meeting challenges from responsibilities, concrete objectives and SPI's

- Clarity: functional roads, clear & understandable lay-out, compatible traffic
- Safe roads and cycle lanes in a safe network: not just highways, but also city streets and rural roads
- Evidence-based interventions (education, campaigns)
- Enforcement: risk-based, 'smart', personal, & 'substantial'
- Seeking optimal benefits from ADAS and autonomous driving vehicles
- Learning through (new) data & research

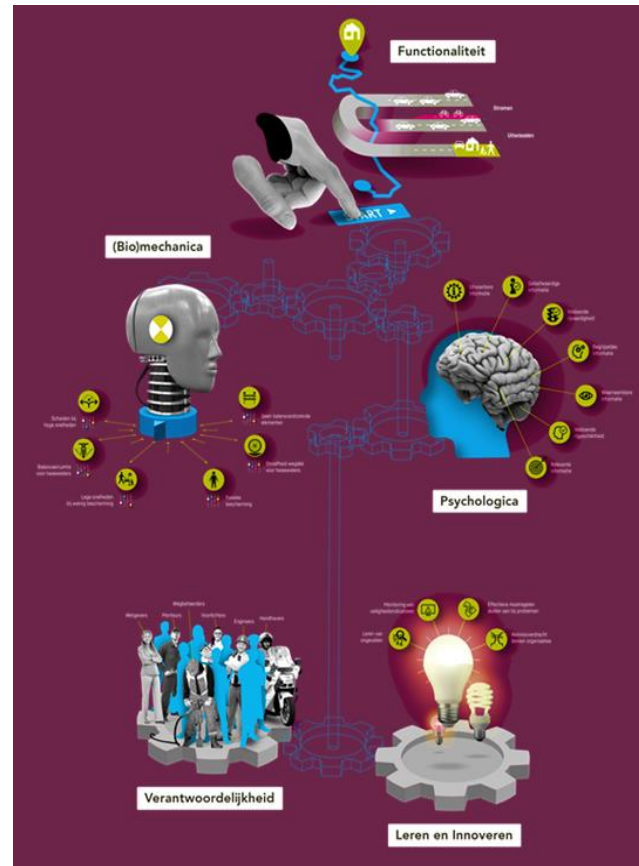
S U S T A I N A B L E

S A F E T Y

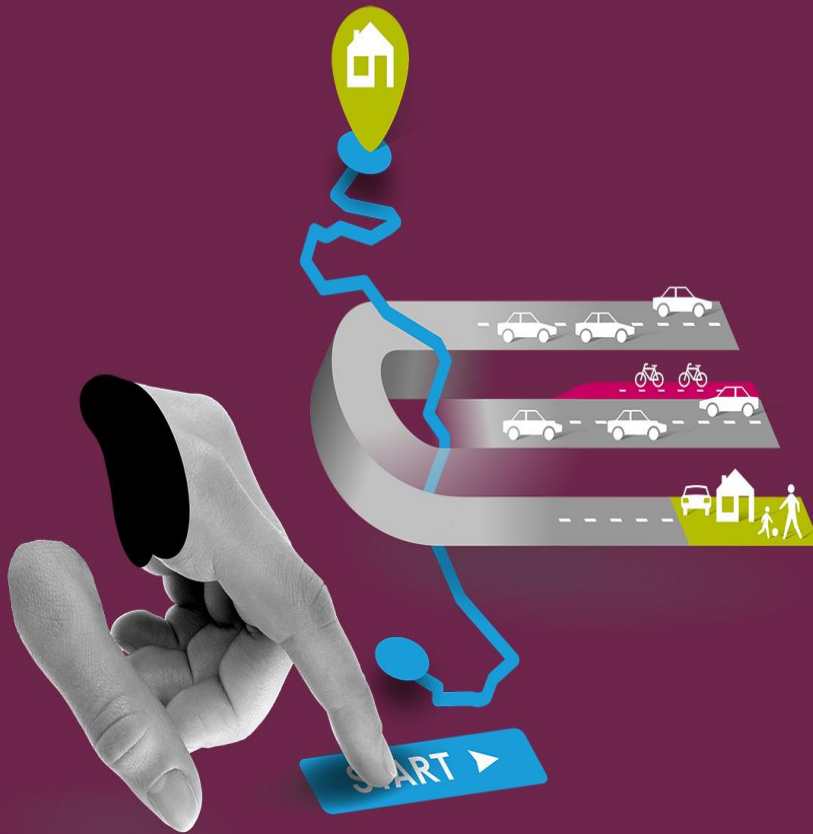
3 R D E D I T I O N

Road safety principles in 2018

Design principles →

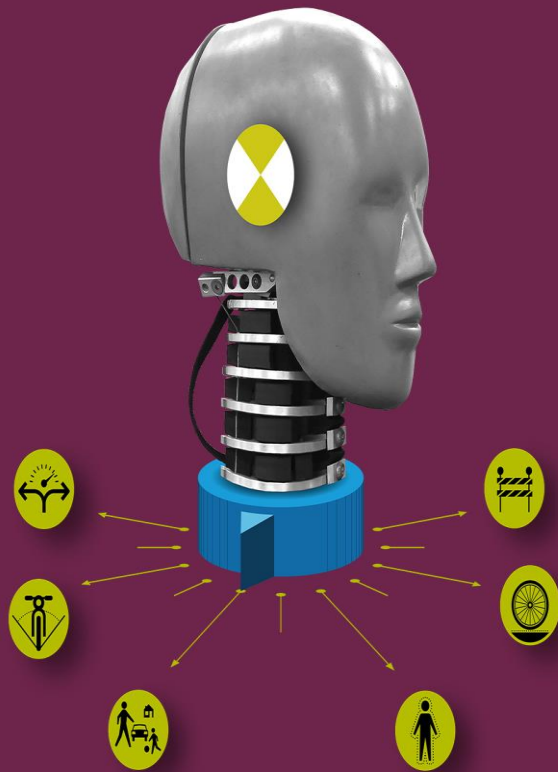


←
Organisation principles



Functional roads

- One function per road section/junction
 - Flow function
 - Exchange function
- Road network: based on these functions in an appropriate and hierarchical way



- Traffic flow and road transport modes are compatible in
 - Speed
 - Driving direction
 - Mass
 - Seize
 - Protection of the road user
- Supported by the road design, the vehicle and protective devices
- Two-wheelers: road design and environment support the balance of the rider

(Bio)mechanic protection



- Design of the road traffic system is compatible with the competences of the elderly.
- Information is:
 - Perceptable
 - Comprehensible
 - Credible
 - Relevant
 - Feasible
- Road users are: capable for performance of the task and for tuning their behaviour on task requirements (capable to drive & fitness to drive)

DUURZAAM

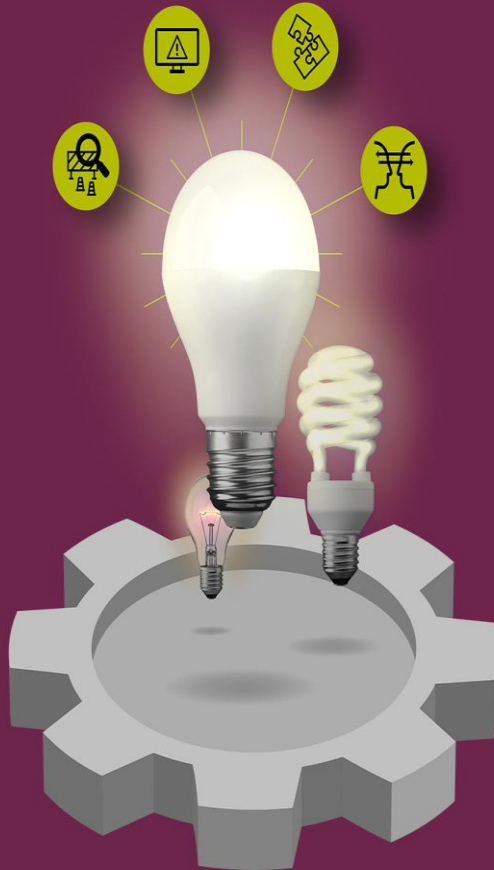
VEILIG

WEGVERKEER



Responsibility

- Responsibility among road traffic professionals
 - Effective and institutionally 'anchored' to achieve maximal safety results
 - Connected to the core business of professionals and organizations
- Road users
 - In principle, they know their responsibilities and they obey rules...
 - However: they are not punished with severe injury for their imperfections!



- Investigation of (causes of) crashes (= learning!)
- Find and implement effective solutions (= innovation)
 - Plan
 - Do
 - Check / Evaluate
 - Act
- *Beware of the Curse of Success!*

Learning and Innovation



New Government: “Road Safety is a National Priority”



To sum up: lessons learned in Holland

- Paradigm shift to a Safe System is feasible
- SRS's approach is effective & cost-effective

However:

- Consistency *plus* sharp Monitoring & Evaluation are key for results and learning
- SPI's: making responsibilities concrete and tangible
- Beware of 'The Curse of Success'
- SWOV: in-depth research, simulations, naturalistic driving & cycling, big data

شُكْرًا (Merci! Thank you!)



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