The future of road safety: a worldwide perspective

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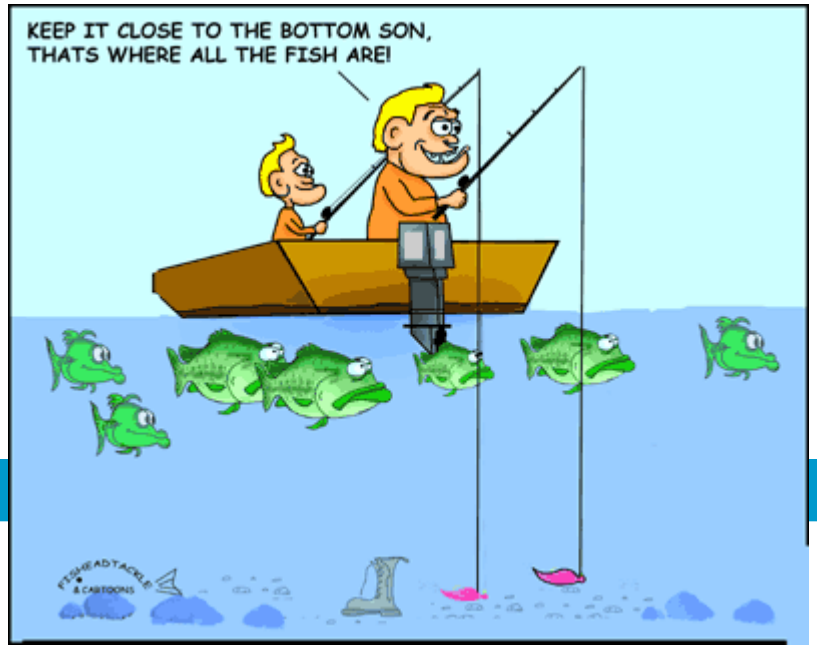
Traditional road safety approach: go fishing where the fish are, ...

- Analyse road safety data
- Look for high risks, high proportions, high increases
  - e.g. novice drivers, elderly road users, powered two wheelers, high-risk locations



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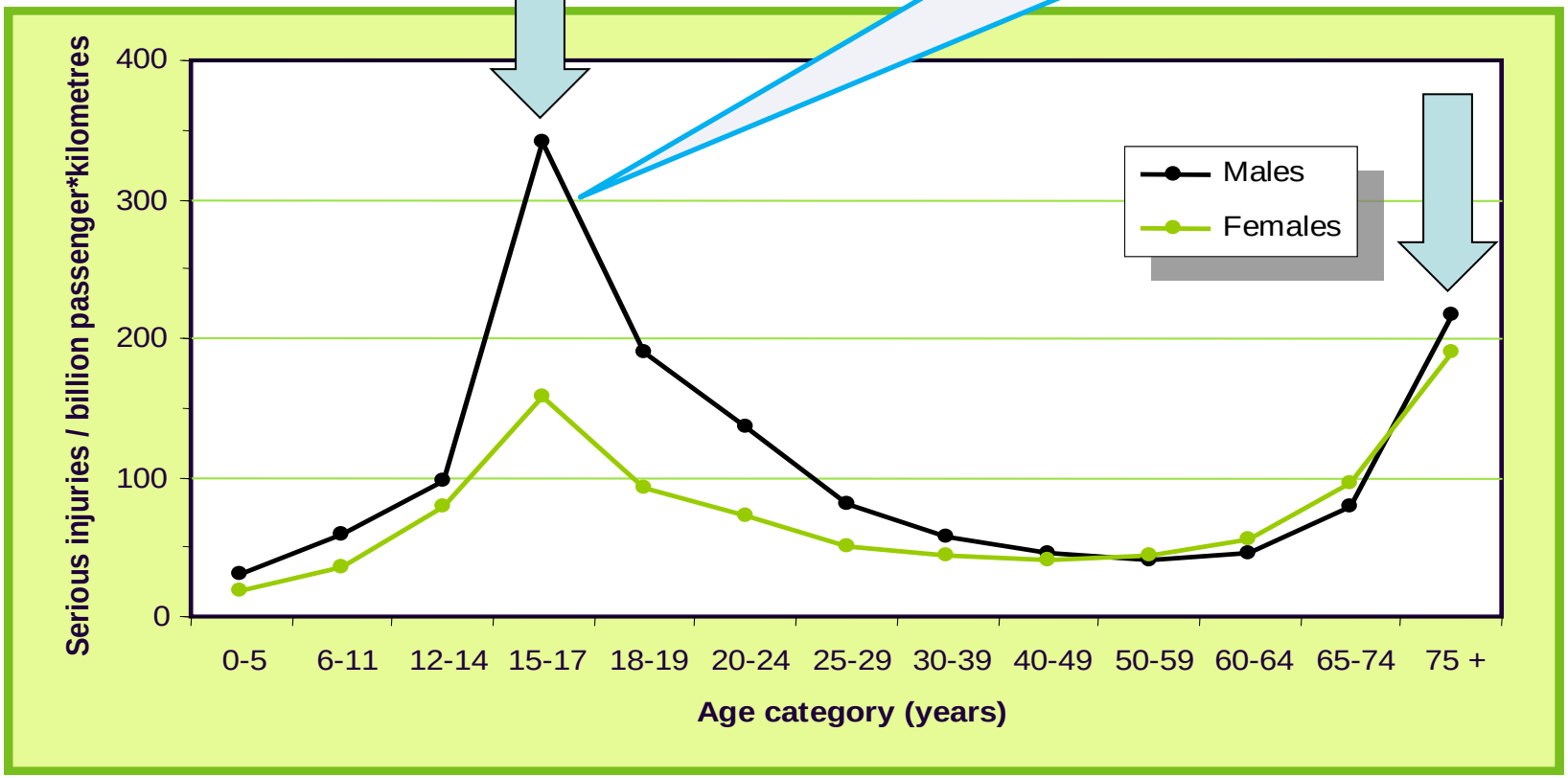
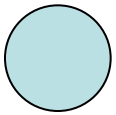
Go fishing where the fish are, ...

- *Why high risks ('spike in distribution')?*
- *How to reduce risks?*





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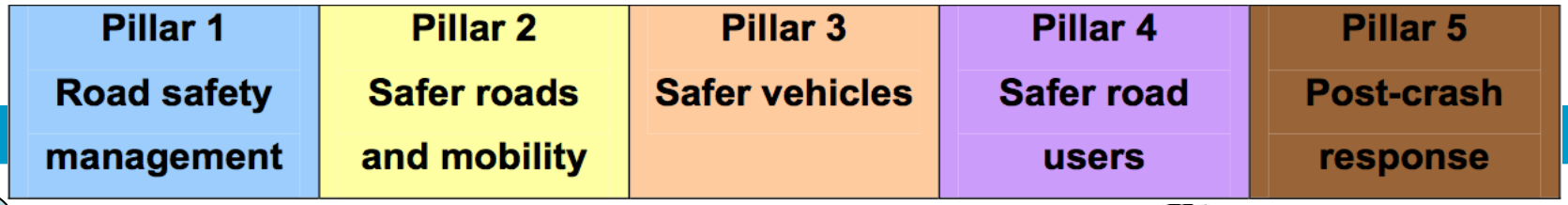
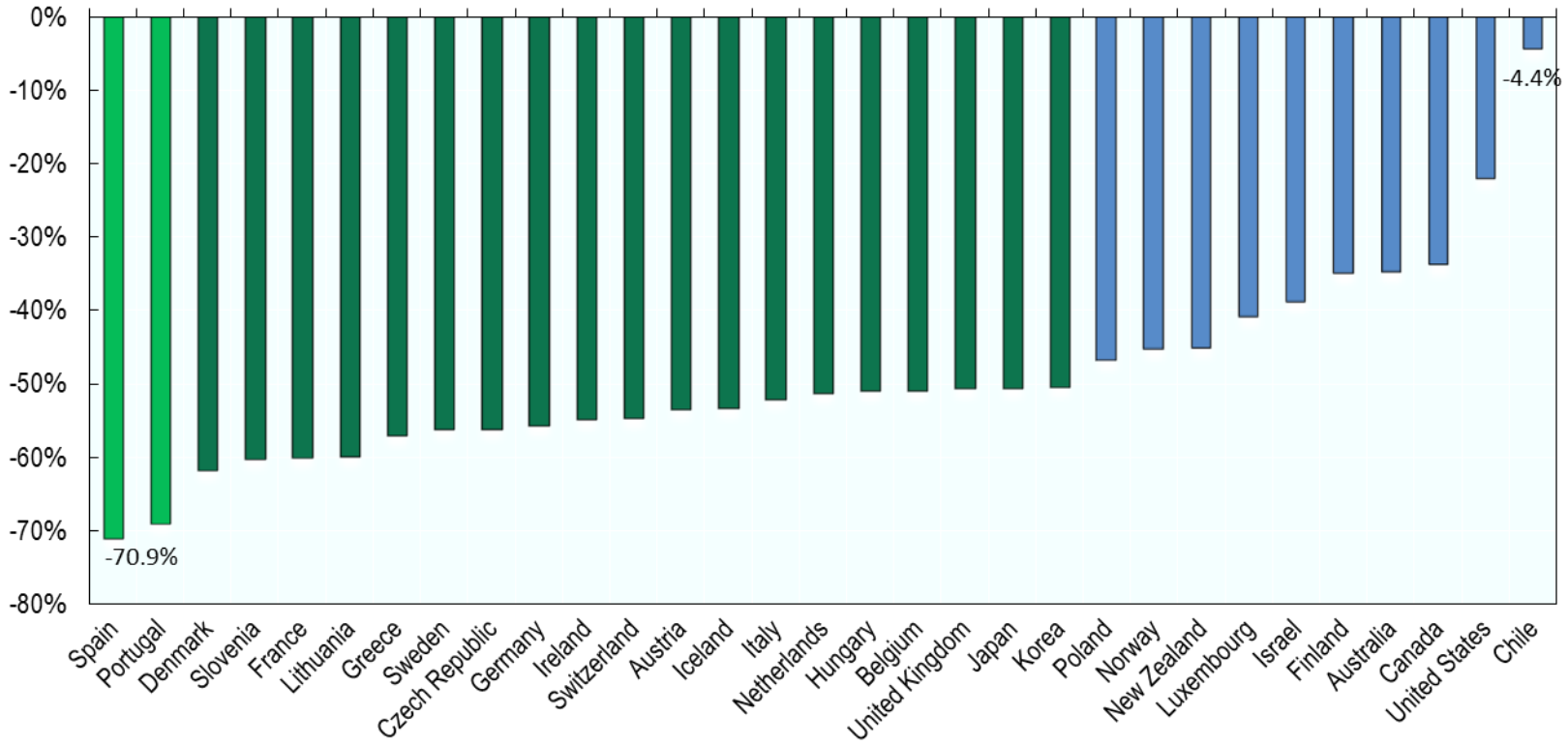
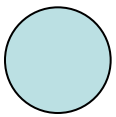
Effective interventions in traditional areas ('evidence based interventions')

- Human behaviour (legislation + enforcement/campaigns)
  - Speed, alcohol, seat belts and safety helmets
  - Driver education, schools, mass-media campaigns
- Infrastructure: planning, high risk roads, safe designs
- Vehicles: crashworthiness, vehicle inspection, special attention for trucks/buses and powered two wheelers
- Post-crash response: emergency
- Always new developments: such as drugs, mobile phones, ageing society



Reduction in fatalities in ITF/IRTAD countries (2000-2013)





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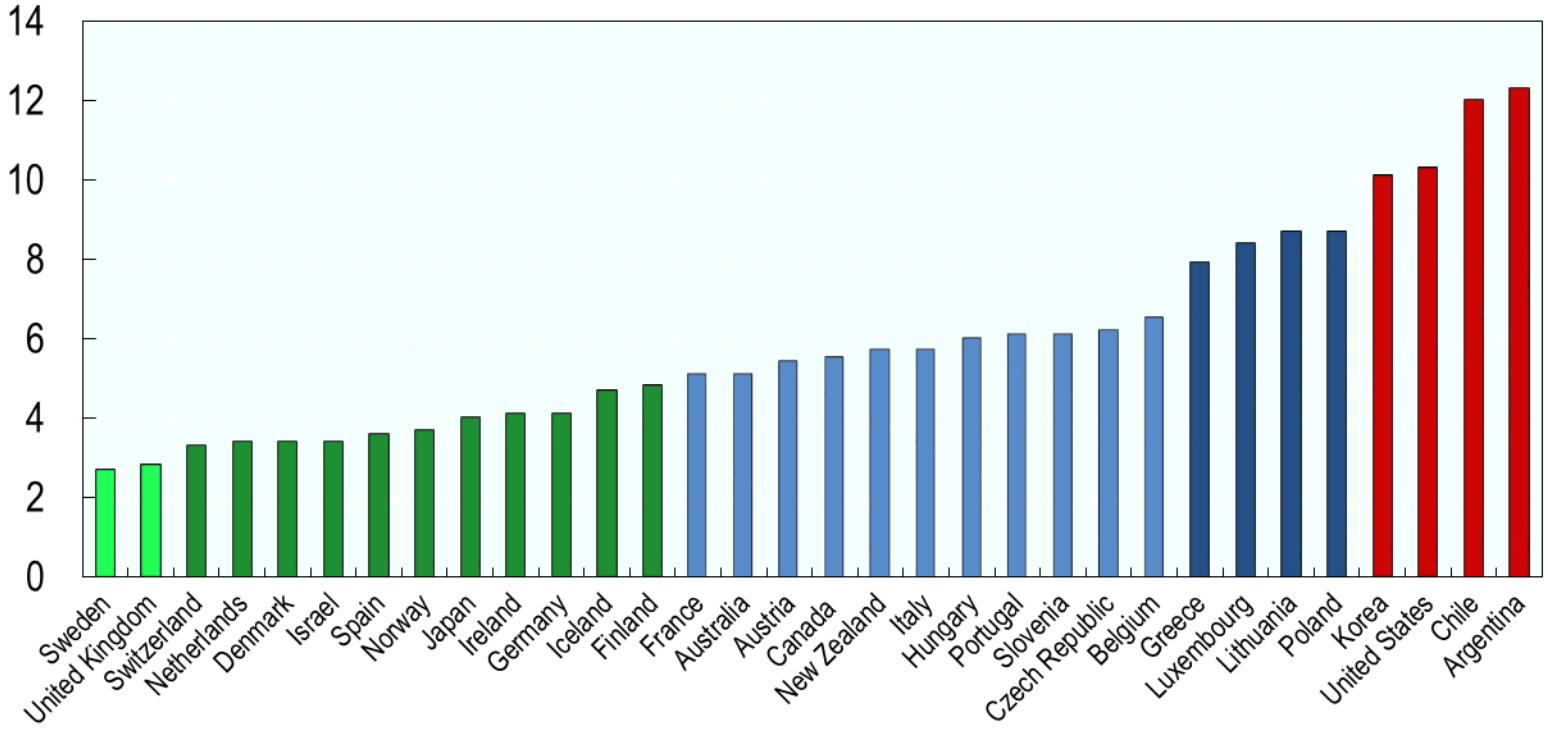
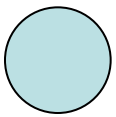
Road fatalities per 100 000 population in ITF/IRTAD countries in 2013





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Why does road safety improve when economic times are hard?

- IRTAD-report (20
  - Clear evidence
  - Statistical anal
  - 'Explanation':
  - Consolidate gc

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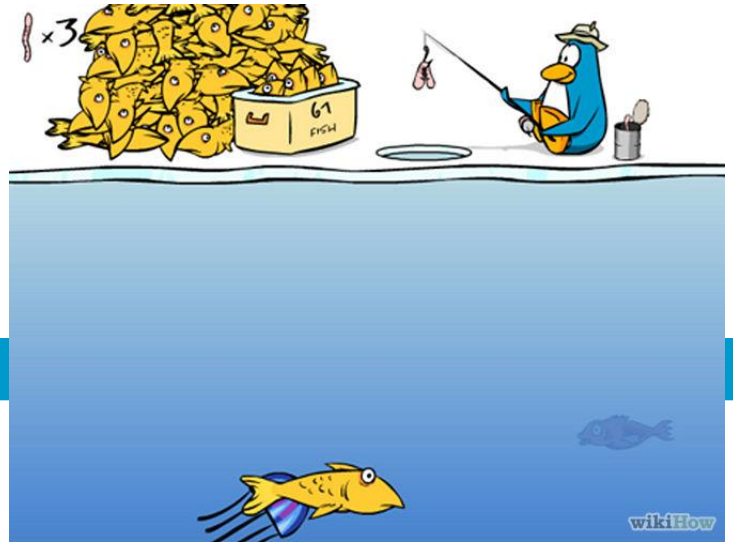
Go fishing where the fish are, but ….

- Look for high risks, high proportions, high increases
  - e.g. novice drivers, elderly road users, powered two wheelers, high-risk locations
- We were (relatively) successful in fishing where the fishes are, but …



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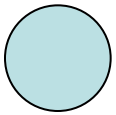
However, road traffic injuries worldwide is still a major problem

Road crashes worldwide

- 1.25 million people killed per year in a road crash
- 90% of road deaths occur in LMICs
- Leading causes of death: 9th in 2004 to 5th in 2030
- Up to 50 million people suffer non-fatal injuries in a road crash; prevention of injuries deserves to be an integrated part of every road safety strategy
- If we do nothing, we may expect an increase, especially in LMICs, up to 1.9 million road fatalities in 2020

- Sources: World Health Organization and the World Bank



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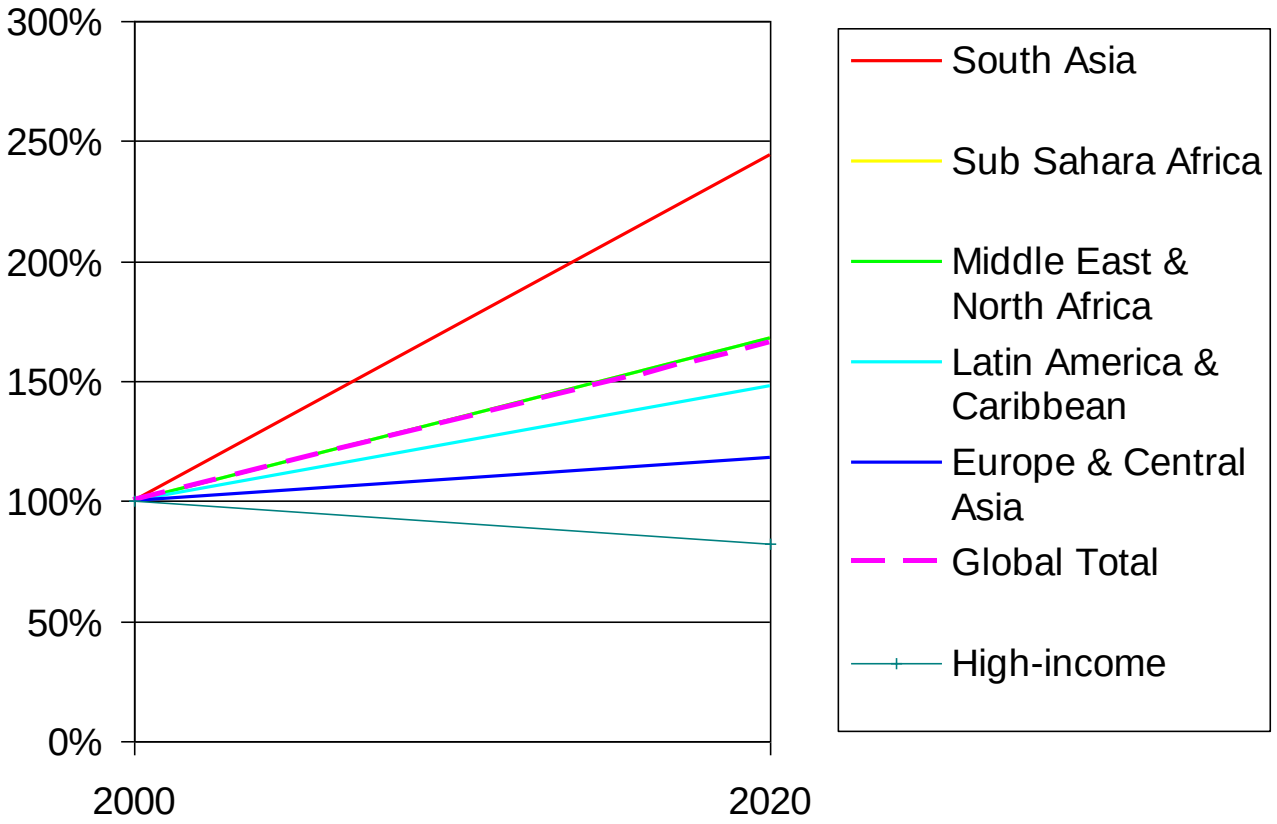
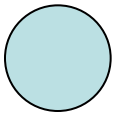
Prediction on road traffic fatalities: from 1.2 million in 2010 to 1.9 in 2020





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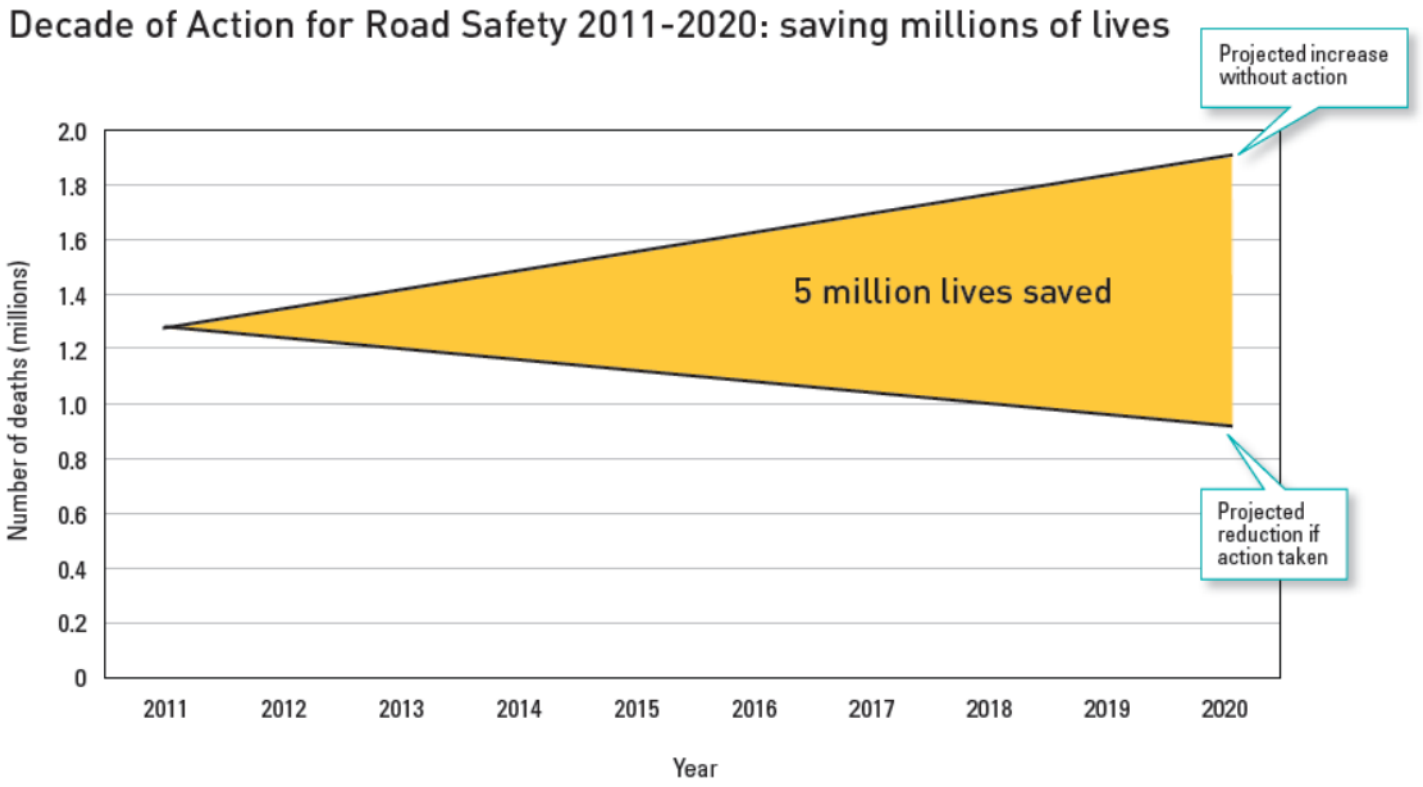
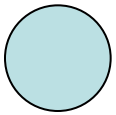
Target: 'halving number of fatalities worldwide in 10/5 years time'





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SUSTAINABLE DEVELOPMENT GOALS

UNITED NATIONS SUSTAINABLE DEVELOPMENT SUMMIT 2015
25 - 27 SEPTEMBER

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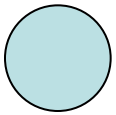
SDG's including improving road safety

- Goal 3: Ensure healthy lives and promote well-being for all at all ages
  - 3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents



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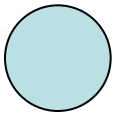
SDG's including improving road safety

- Make cities inclusive, safe, resilient and sustainable
  - 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons

Improving road safety in high-income, and in low- and middle-income countries

- Which are next steps in HICs?
- Which are first/next steps in LMICs?

- HICs: quality improvements of traditional approach + start of Safe System approach, e.g. in Japan
- LMICs: Analyse road safety problems, learn from HICs (if appropriate) and speed up improvements, but adapt HIC-solutions to own problems and conditions



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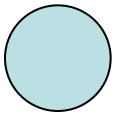
Results after implementing 50 years of road safety policies in HICs

- Dutch (traditional) approach was very successful: 1972 3264 road deaths, 2014 564; ~ 80% reduction
- Our traditional approach is becoming less and less effective and less and less efficient (80-20 rule)
- The nature of our problems is different than in the past
- Our understanding of causes of crashes improved
- A paradigm shift was/is needed: towards Safe System (Dutch: Sustainable Safety; Sweden: Vision Zero; Australia: Safe System)



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Our road traffic today is still *inherently* dangerous

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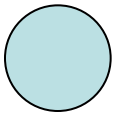
Our fundamental road safety problem

- Today's road traffic is *inherently* unsafe
- The road system of today has not been designed with safety in mind, as is the case with air/rail transport
- Which means we are almost fully dependent on how good a road user is in preventing a crash; however human beings are making mistakes or errors
- Reduce kinetic energy in a crash under tolerable levels

- Another approach is needed: *Safe System approach*



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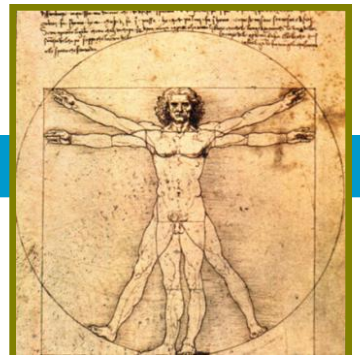
Safe System thinking: 'People are the measure of all things'

1. The road system should be designed to expect and accomodate *human error*, because it is inevitable that road users make mistakes and sometimes violate the law (and crashes occur); this concept has been accepted and implemented in other sectors of transportation
2. In a crash, interaction between vehicle – roadway – human body must be managed so that serious injury likelihood is minimized, if not eliminated



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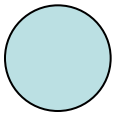
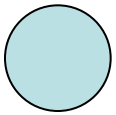
Design of a Safe System

- Deals with the 'environment' of the driver: road, vehicle, rules/legislation, ITS, etc.
- Its aim is to eliminate or at least substantially reduce dangerous behaviour, resulting in crashes, by safe system architecture
- Basically tries to retrofit the existing environment, and to design new, inherently safe environments
- This is an integral, system-wide approach (not just 'spikes in distributions')



Vision on road safety from a Safe System perspective (I)

- Ethical
  - We don't want to hand over a traffic system to the next generation with current casualty levels, but considerably less: *Towards zero*
- A proactive approach
  - There is no need to wait for crashes before to act; 'we' have enough knowledge to be applied; adapt knowledge to local conditions
- People are the measure of all things
  - Human capacities and limitations are the guiding factors
  - Don't blame the victim



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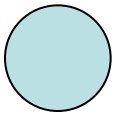
Vision on road safety from a Safe System perspective (II)

- An integral/holistic approach
  - Integrate man, vehicle and road into a safe system
  - Covers the whole network, all vehicles, all road users
  - Align with other policy areas: infrastructure, planning, health, environment, etc.
- Reduce 'system gaps' of the system
  - Which means we will not be fully dependent on whether a road user makes a mistake or an error in preventing a crash
- Use criterion of preventable injuries
  - If we know the causes, if we know how to cure, if interventions are cost-beneficial



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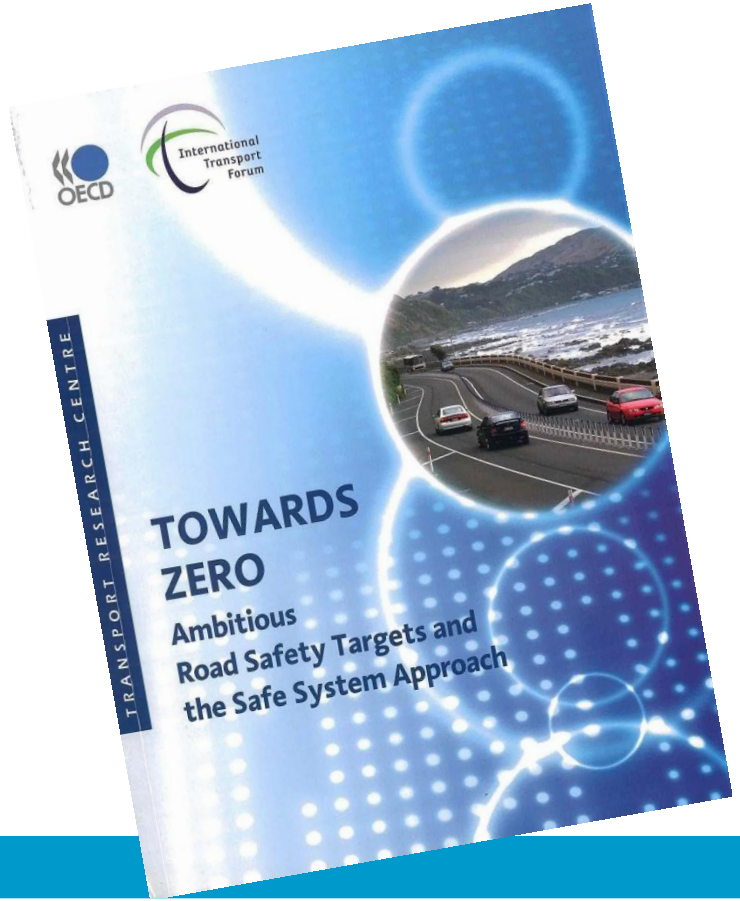
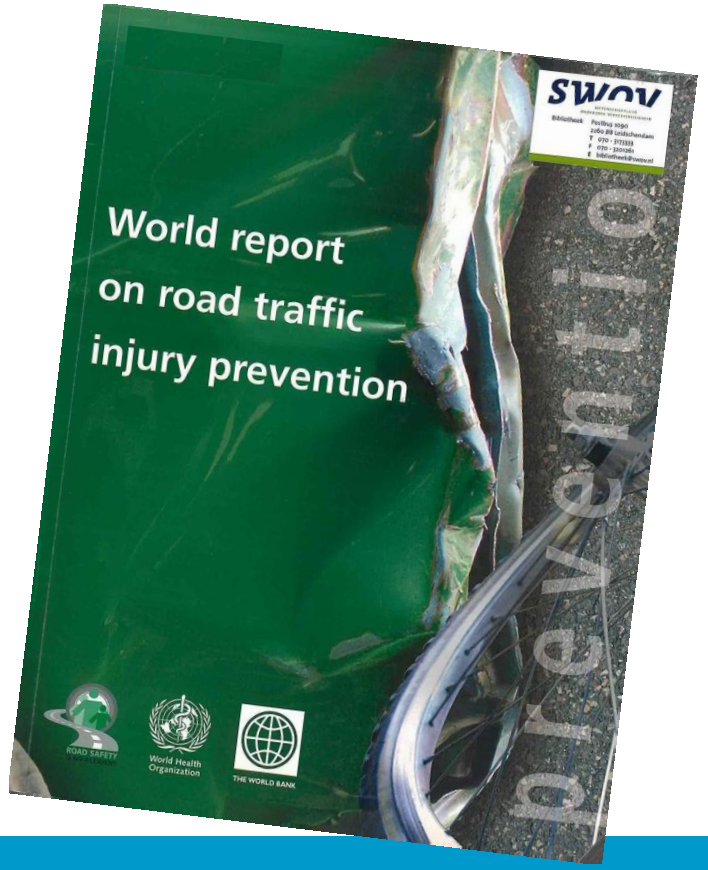
Safe System approach: an example in the Netherlands: Sustainable Safety





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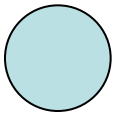
More integral approach: roads, vehicles, behaviour and … ITS

- Safe System requires an integral approach: legislators, road authorities, car manufacturers, police enforcement, ..?

Safe System approach and potential ITS contributions: promising but ..

- Preventing risky road use
  - Interlocks for drinking and driving, driving licence, seat belts, other smart-card applications
  - Influencing mobility choice
- Preventing dangerous actions during traffic participation
  - Vehicle control support
  - Support for perception, interpretation, anticipation
  - Recognition of reduced task capability
  - Preventing unintentional and intentional rule violations



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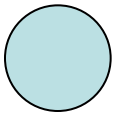
Next steps for high-income countries

- High-income countries (with mature road safety policies and an ambition to make further progress) will move in the direction of a Safe System approach (a traditional approach will come to the end of its lifecycle)
- Safe System deals with human behaviour and creates an environment to make traffic considerably safer
- New technologies will contribute more and more to improve road safety, but it is not THE (only) solution
- A strong leadership and active public sector with sustained efforts will make a difference



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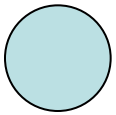
Road safety policy 'fabric' for low- and middle-income countries

- Political interest (national and local)
- Road Safety Strategy incl. road safety targets + targeted programmes/action plans
- Road safety community: dedicated and well-trained
- Key stakeholders' commitment orchestrated by a 'lead agency'
- Road safety research capacity
- Advocacy work by many, such as ngo's
- Active and effective international community



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