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STRIVING FOR EXCELLENCE IN TRANSPORT SAFETY

Vulnerable Road Users – Traffic Safety by a System Approach

Vulnerable Road Users
– Traffic Safety by a System Approach

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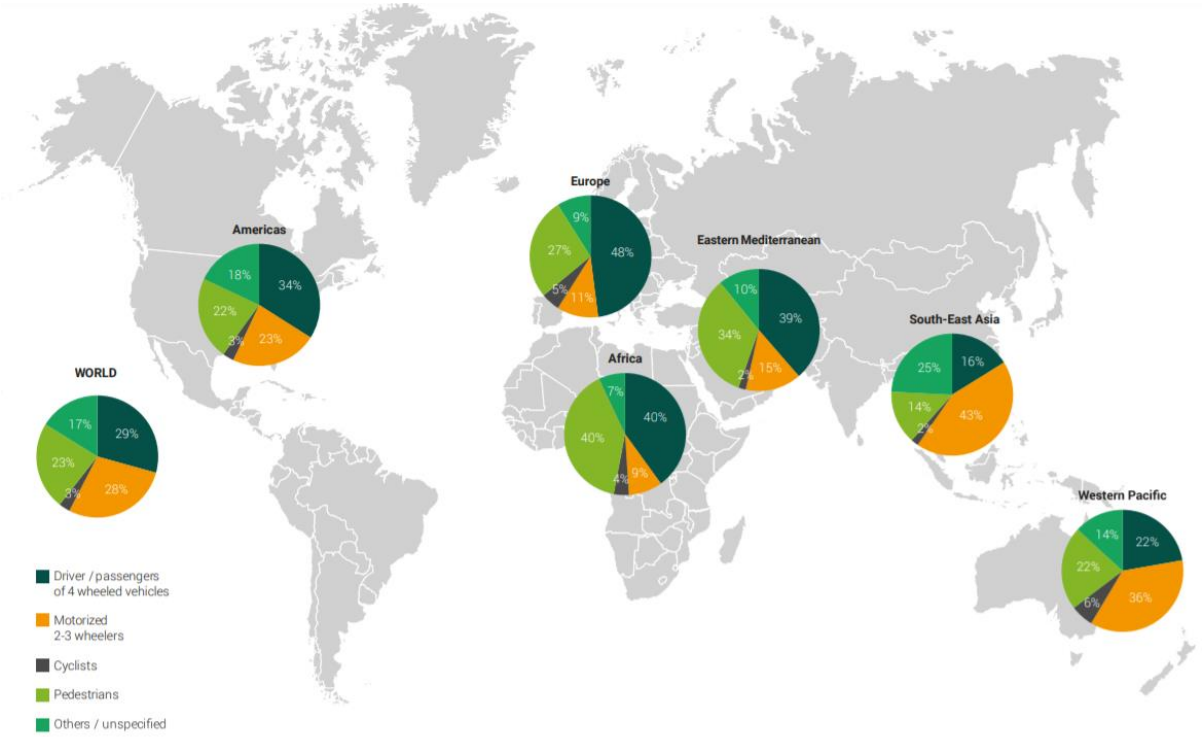


>50%

of all road traffic deaths are among pedestrians, cyclists and motorcyclists

Stockholm Declaration Recommendation #8: 30 km/h

In order to protect vulnerable road users and achieve sustainability goals addressing livable cities, health and security, we recommend that cities mandate a maximum road travel **speed limit of 30 km/h** unless strong evidence exists that higher speeds are safe

Traffic Safety by a System Approach
– integrated interventions

Energy

Speed limit

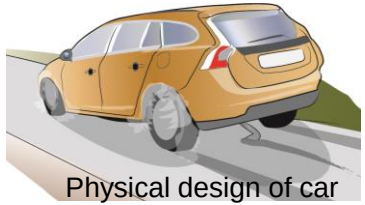
Normal driving

Deviation from normal driving

Emerging situation

Critical situation

Crash unavoidable



Physical design of car

Impact speed

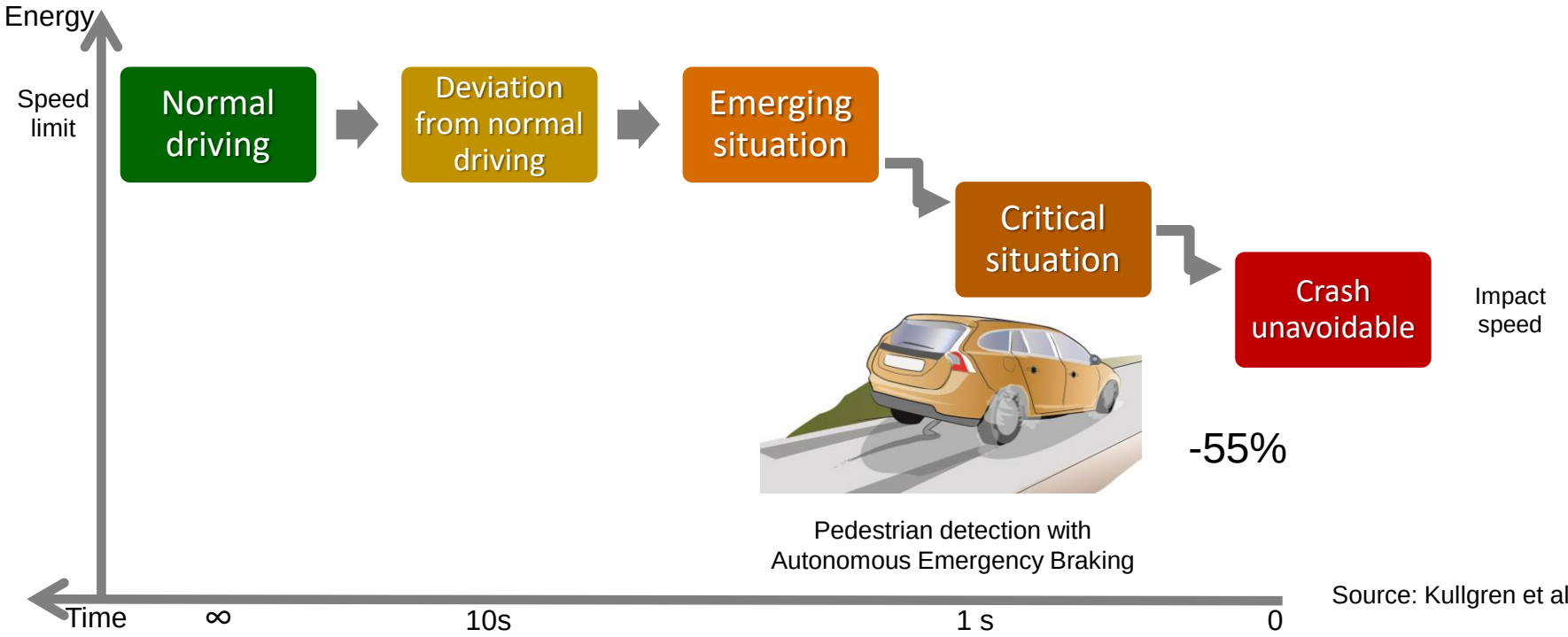
Speed Management through infrastructure design

Pedestrian detection with Autonomous Emergency Braking

Pedestrian/bicyclist/motorcyclist Protection
Protective Clothing

Time ∞ 10s 1 s 0

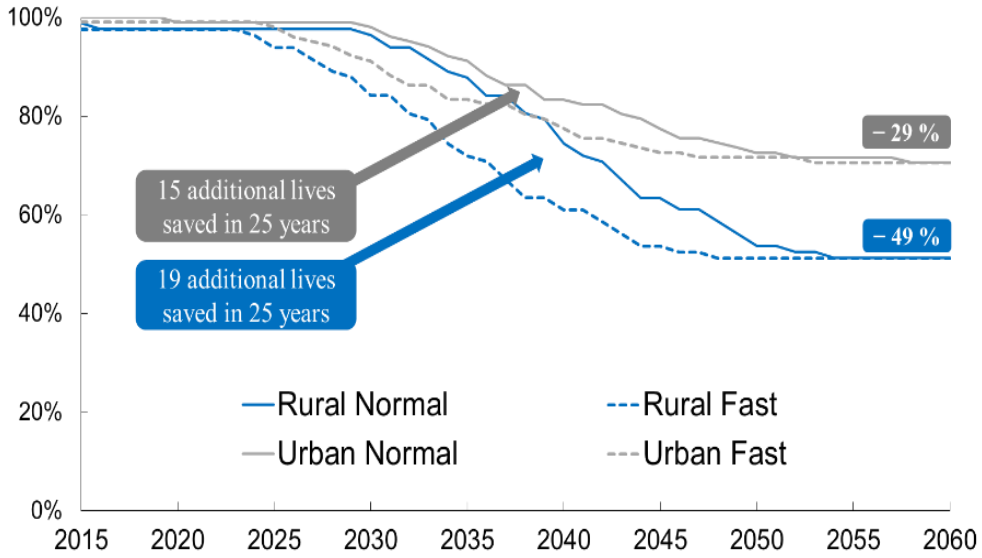
Potentials of vehicle safety technologies



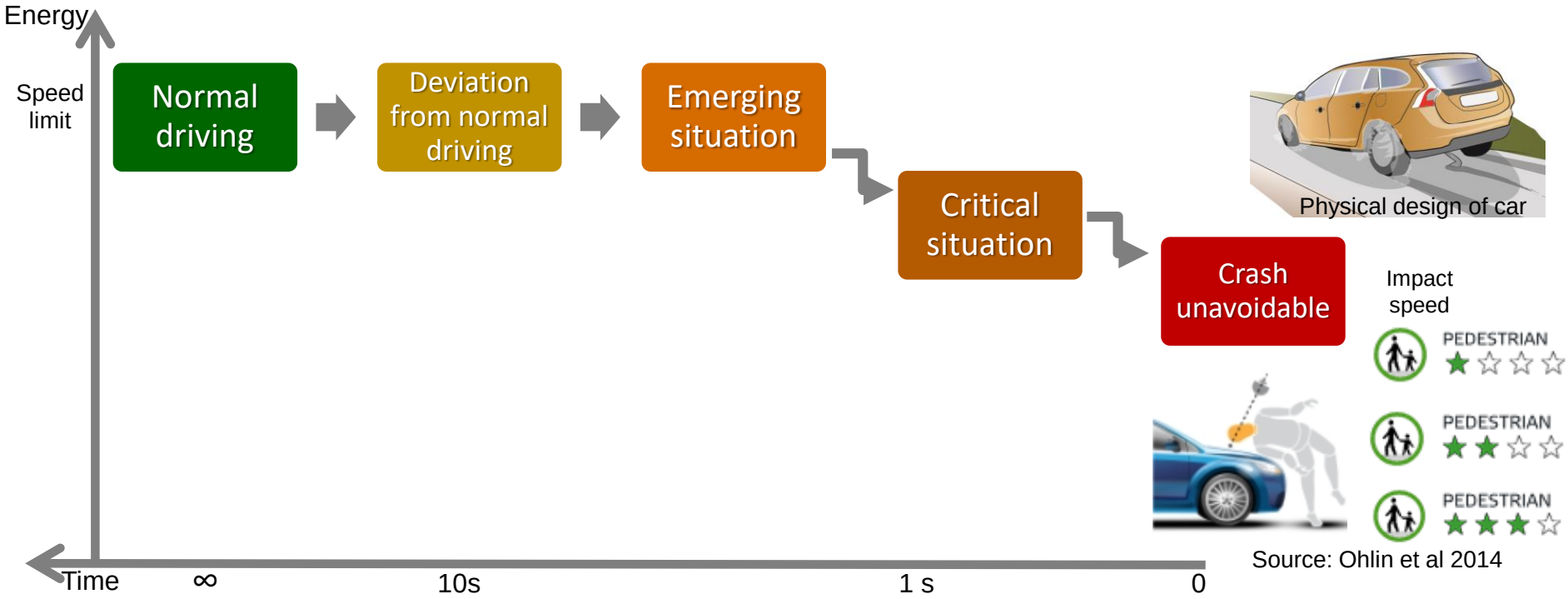
Source: Kullgren et al 2019

Future Estimate of Fatally Injured Bicyclists
– lives saved by vehicle technology

- Maximum effect regarding saved lives is expected year 2050
- Majority of fatalities would still remain in 2030
- Important to speed up the implementation



Well-designed car fronts can reduce injuries

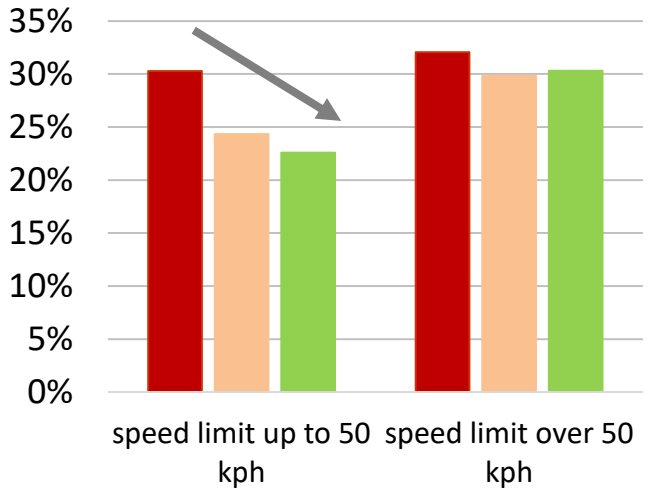


Impact speed

Source: Ohlin et al 2014

Well-designed car fronts can reduce injuries

- A ”high scoring car” in Euro NCAP can reduce the injury severity



Source: Ohlin et al 2014

Traffic Safety by a System Approach
– integrated interventions

Energy

~ 95 % injury reduction

Speed limit

Normal driving

Deviation from normal driving

Emerging situation

Critical situation

Crash unavoidable

Impact speed

Helmet use

Speed Management through infrastructure design

Pedestrian detection with Autonomous Emergency Braking

Time ∞ 10s 1 s 0

Source: Ohlin et al 2014


50
Pb
Cyklist
N

Effective interventions

Lowering of speed limit combined with road design

Autonomous Emergency Braking (AEB) reduces collision speed to survivable level

Most Important Road Infrastructure Interventions to Reduce Fatal Crashes

Intervention	Proportion
1. Separate path for bicyclists outside the road	**50%**
2. Bicyclist crossing with speed calming measures	25%
3. Roundabout	14%
4. Other speed calming measures	14%
5. Changed speed limit	14%

Source: Kullgren et al 2019

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Source: Kullgren et al 2019

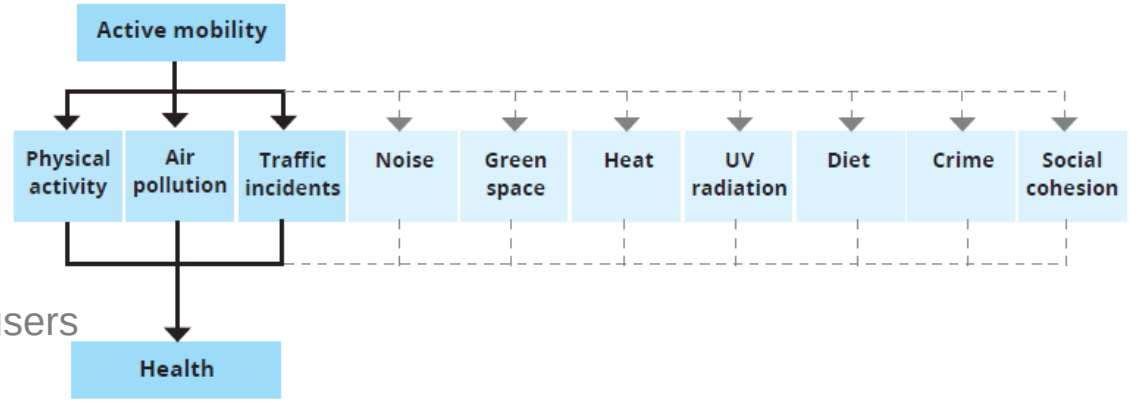
Stockholm Declaration Recommendation #3: Modal Shift

In order to achieve sustainability in global safety, health and environment, we recommend that nations and cities use urban and transport planning along with mobility policies to **shift travel** toward cleaner, safer and affordable modes incorporating higher levels of physical activity such as walking, bicycling and use of public transit.

Modal Shift

– Health effects when changing mode of transportation

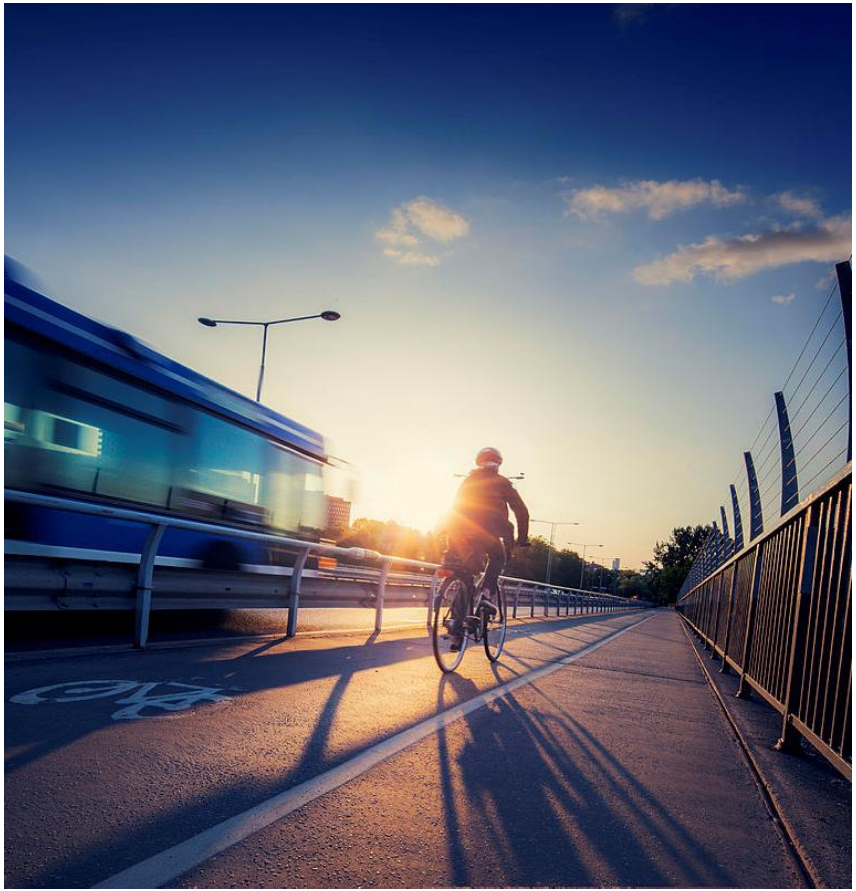
- Physical activity
  - 30 % lower fatality risk
- Air pollution
  - Inhale 4.5 times
  - Reduced exposure
- Health loss will increase as road users shift from cars to bicycles
  - 29 times higher injury rate
  - 10 times higher fatality rate



Source: Nilsson et al 2017

Most important safety interventions

- Reduce relative velocity between road users groups
- Physical separation and safe crossings
- Speed up implementation of effective vehicle safety systems



Thank you for your attention!

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