INTERNATIONAL ROAD SAFETY CONFERENCE
"ON THE ROAD TO VISION ZERO"

14MAY, 2025, Hyatt Regency Sofia, Sofia

BULGARIAN BRANCH ASSOCIATION
ROAD SAFETY

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Strategies for Vision Zero

CEDR Conference of European Directors of Roads
MINISTRY OF REGIONAL DEVELOPMENT AND PUBLIC WORKS
ROAD INFRASTRUCTURE AGENCY

Vision Zero and the Safe System

Vision zero comes from a moral viewpoint that death and serious injury on our roads should not be seen as an **unavoidable byproduct** of mobility

A safe system is where we have designed out the **potential** for fatal or serious injury **completely**

Safe System/Vision Zero Key Principles

Shared Responsibility

To err is human - people make '*mistakes*' but death should not be the penalty from normal human behaviour/processing limitations

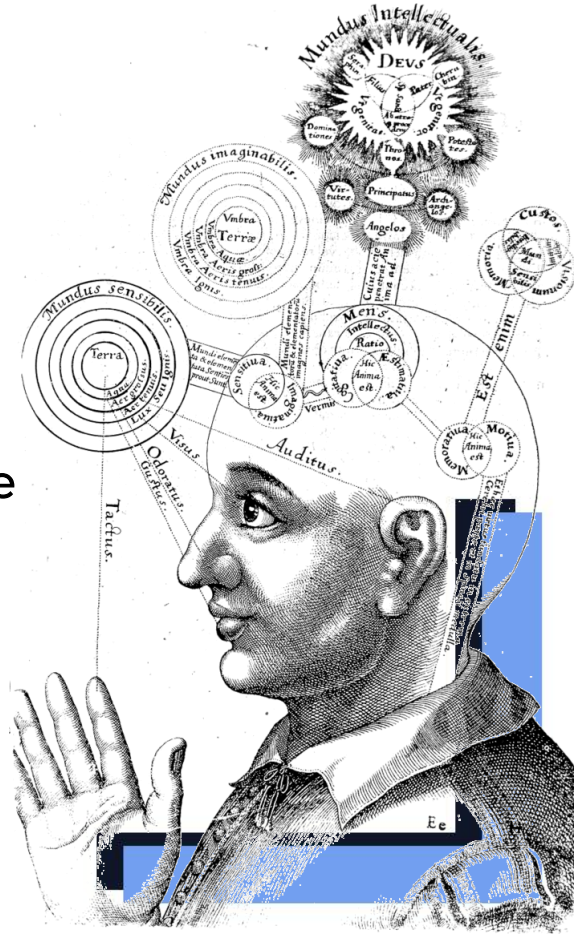
System design that reflects the *fallibility* of humans

The human body has a limited physical ability to tolerate crash forces

System design that reflects the *frailty* of humans

All parts of the road system must be strengthened in combination to multiply the protective effects and if one part fails, the others will still protect people

System design that has *redundancy* built in



A Useful Definition

A safe system is a holistic approach to road safety, managed so the elements of the road transport system combine and interact to guide users to act safely and to prevent crashes – and when crashes occur, ensure that the impact forces do not exceed the limits that result in serious injury or death.

If one part of the system fails, the other components act to prevent serious harm occurring when a crash occurs by keeping the transfer of kinetic energy into the human below levels known to cause serious physical harm.

Zero Road Deaths and Serious Injuries
Leading a Paradigm Shift to a Safe System
OECD 2016

Speed and Vision Zero/Safe System

Higher speeds reduce reaction time and increase crash energy

A Safe System demands that we do not allow travelled speeds to exceed human tolerances to crash forces

Energy is managed so that road users are not overwhelmed by crash forces

Responses for alignment of roads design/character and vehicle speeds

- Manage speeds through enforcement/engineering etc.
- Improve the road environment so you can operate the road at more desirable speeds

A reimagined system, designed around human needs, can ensure collisions remain survivable and increase user confidence and comfort.

Safe Speed Research

To make sense of in-depth survivability research (so practitioners do not have to)

To reach a consensus view with experts:

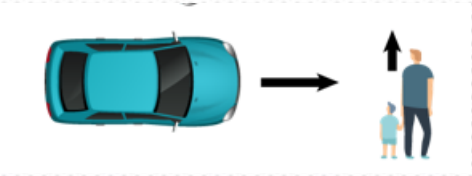
- What 'safe' means
- Evidence-based 'safe' speed definitions for different collision types/road types

Steven Reed

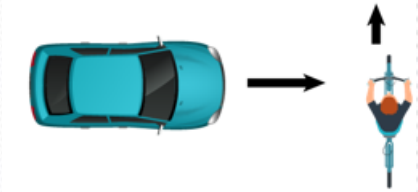
Safe Speeds

Experts agreed that 10% serious or fatal injury would be a reasonable ambition on a road to delivery of a Safe System

20mph/30kph

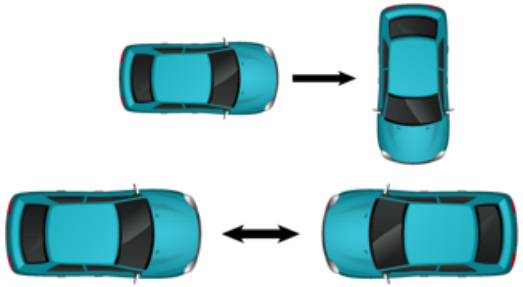


10mph/20kmh where high concentrations of pedestrians or those that are vulnerable



10mph/20kmh where high concentrations of cyclists

30mph/50kph



Safe Speed Conclusions

Safe speeds are **VERY** low – if we are operating roads at higher speeds, we are tolerating higher risk

Translating these findings into policy and practice is complex: improve infrastructure safety or manage speeds

Emerging vehicle technologies, including passive safety improvements and active collision-avoidance systems, are expected to help but will not fix our gap!

In the meantime, prioritising speed management will substantially reduce fatalities and serious injuries, bringing road systems closer to achieving Vision Zero goals - any reduction in operating speeds toward the identified 'safe' speeds will have a meaningful impact on road safety

How Much Risk are we Tolerating Now (in GB)?

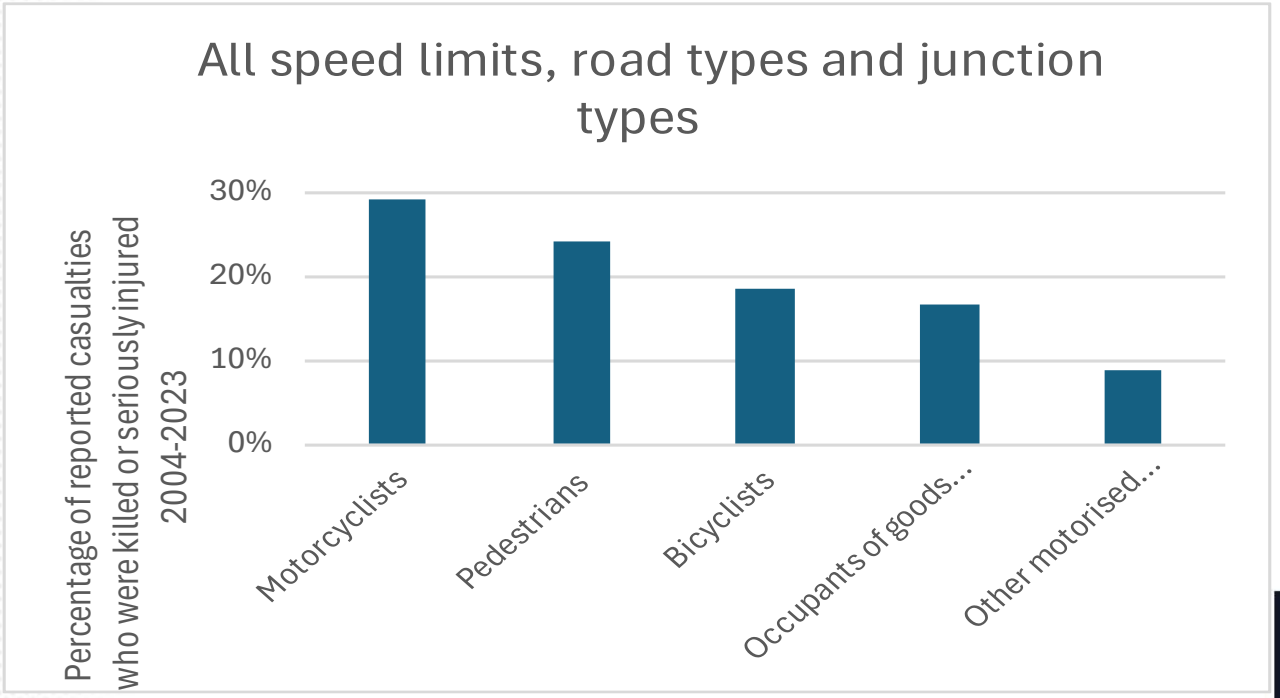
On average, 26% of reported injury collisions are fatal or serious
(some evidence this may be increasing)

Pedestrians, bicyclists and motorcyclists very high %s

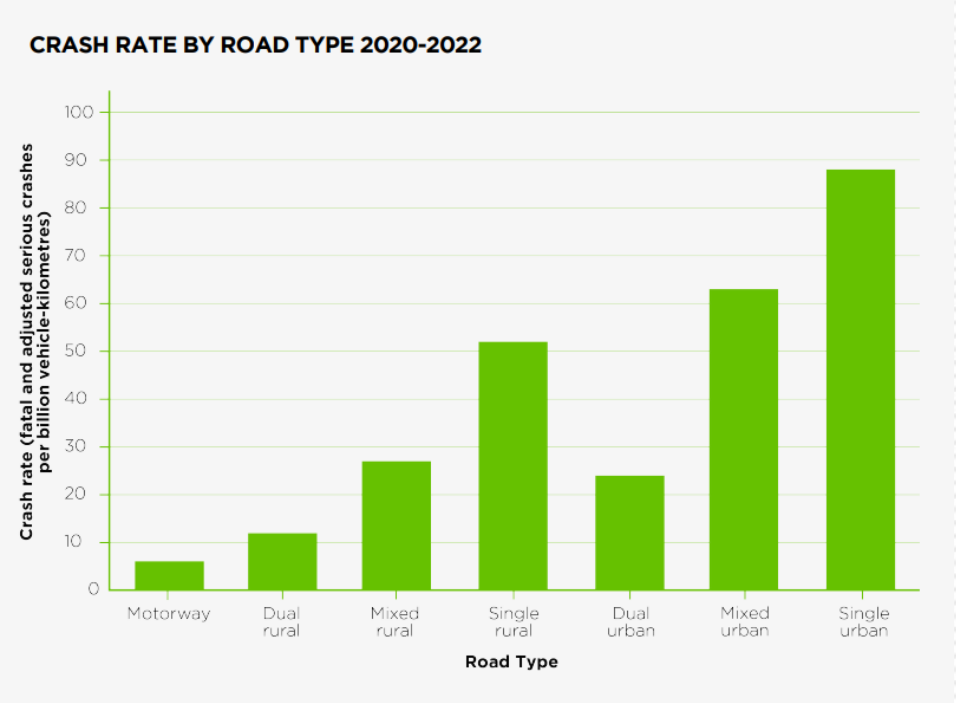
Goods vehicle occupants – surprisingly high

Increasing severity with increasing speed limits (except for 70mph and excluding motorways)
(note operating speeds not available)

Motorways perform well; single carriageways perform worse



GB Single Carriageway Roads



In GB our motorway speed limit 70mph (113kph) is better aligned to the road infrastructure layouts

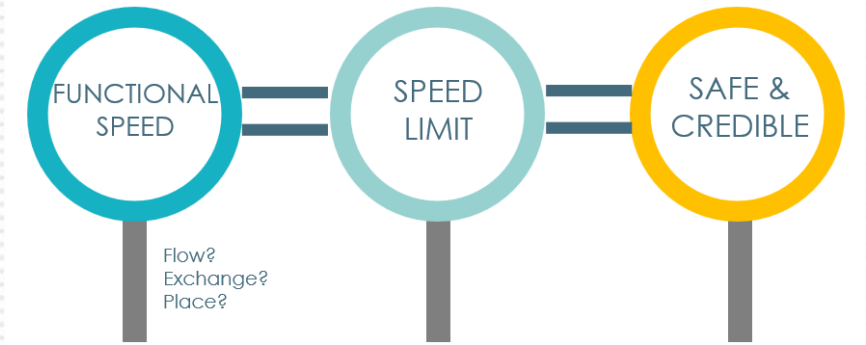
In GB the default national rural single carriageway speed limit is 60mph – only 10mph less for all that additional risk

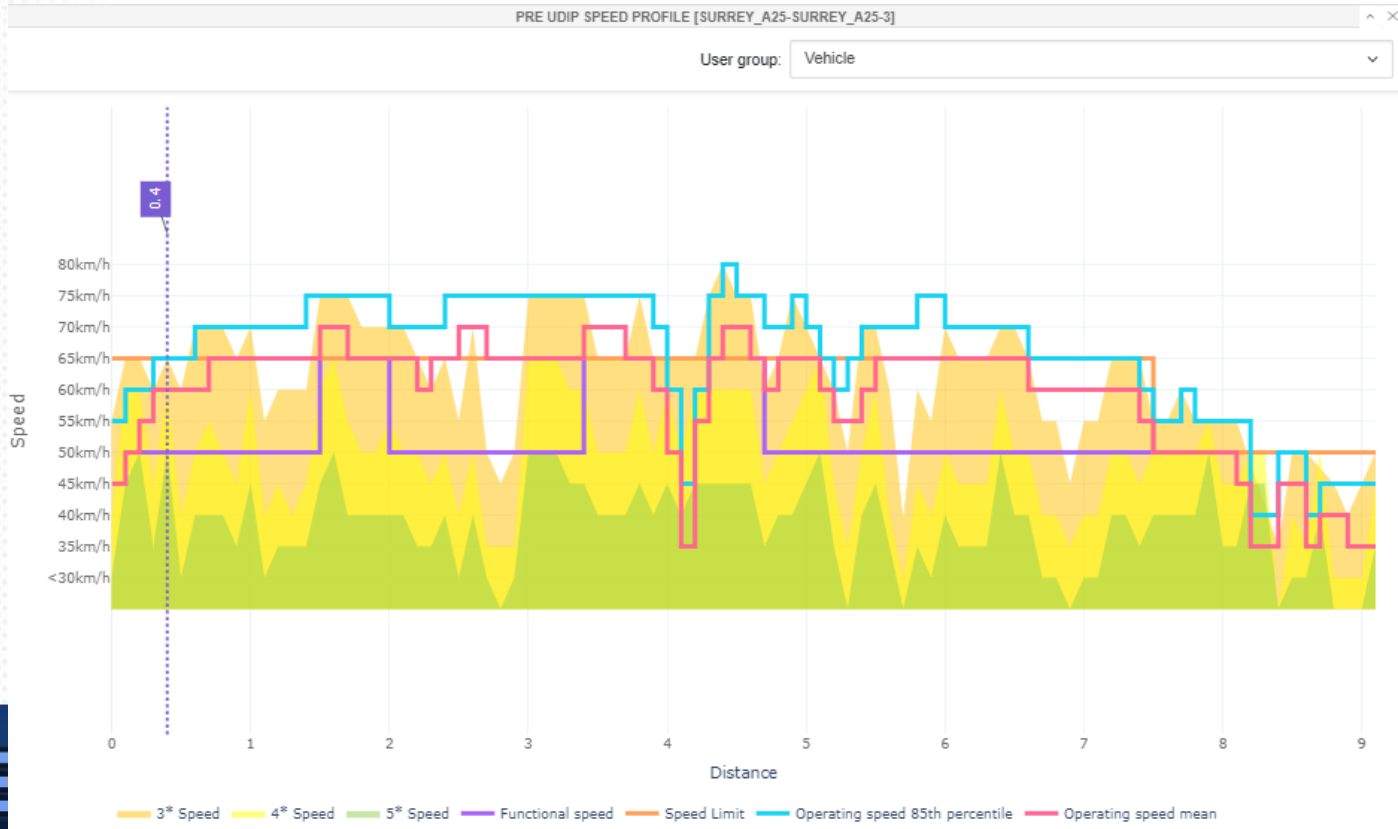
Large misalignment with the road infrastructure layout/character and operational speeds

Single carriageways can rarely achieve 4 or 5 stars for all users at operating speeds of 55/60mph even if you implement all measures you can typically bring to a road!

What can we do?

- Revision of default national speed limit for rural roads (start low, exception upward)
- Or revision of setting local speed limits which allow localised variations of national speed limits
- New tools for alignment …





Conclusions

Safe speeds are very low, but moving towards safer speeds will bring strong benefits

The risk we tolerate on our roads is greater than experts would agree is required under a safe system/vision zero. Do you know what level of risk you are currently tolerating?

Engineer up, manage speeds down

Focus on locations where pedestrians, cyclists and motorcyclists are present (motorcycling presenting a significant challenge)

For vehicle occupants, focus on single carriageway roads where there is the opportunity for head on/right angle collisions

We now have some great safe system aligned tools in the route review toolkit to support decision making/modelling