

ISA: The Research Evidence

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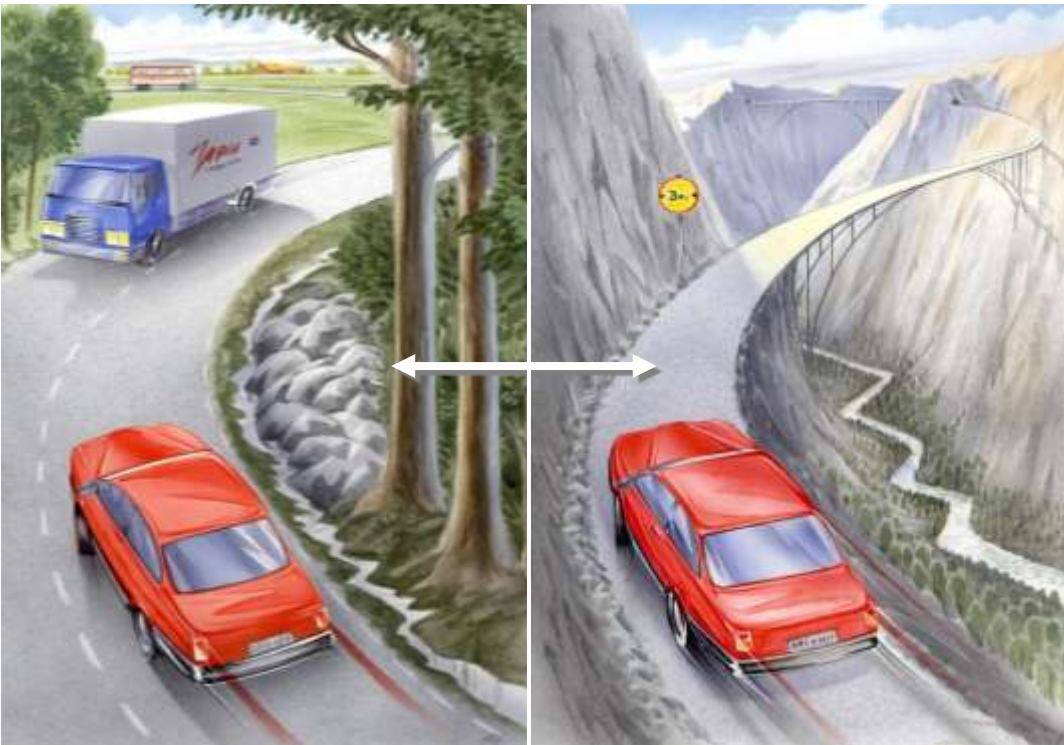
“Speed remains a very important risk factor. It has a greater effect on the number of accidents and injury severity than almost all other known risk factors.”

Rune Elvik, *The Power Model of the relationship between speed and road safety: Update and new analyses* (2009)

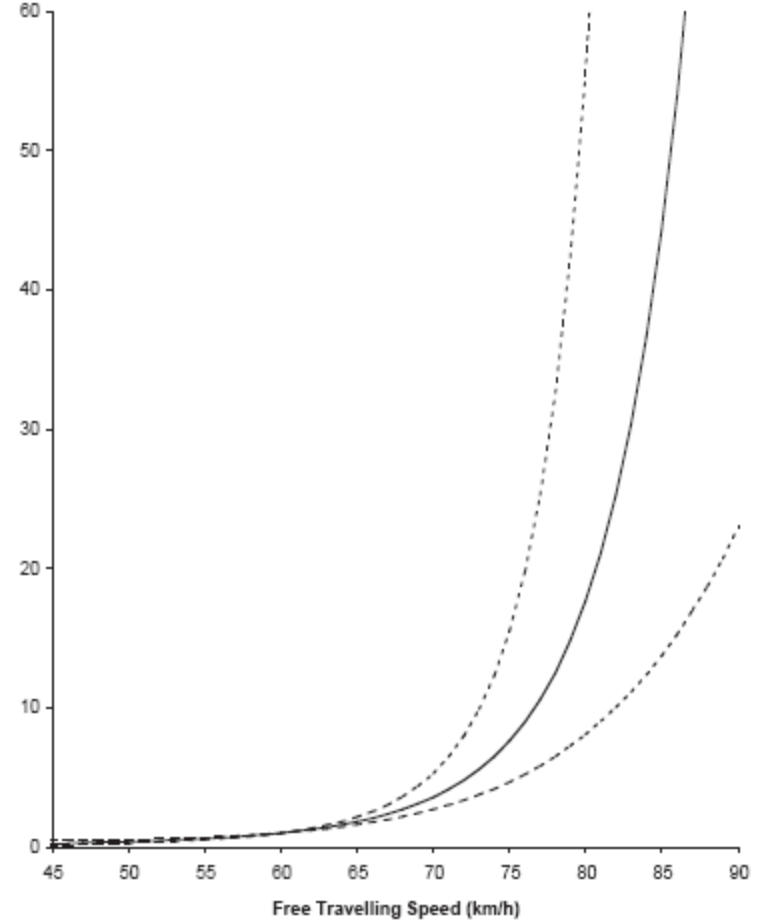
We know a lot about speed and risk



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Relative Risk of Casualty Crash Involvement



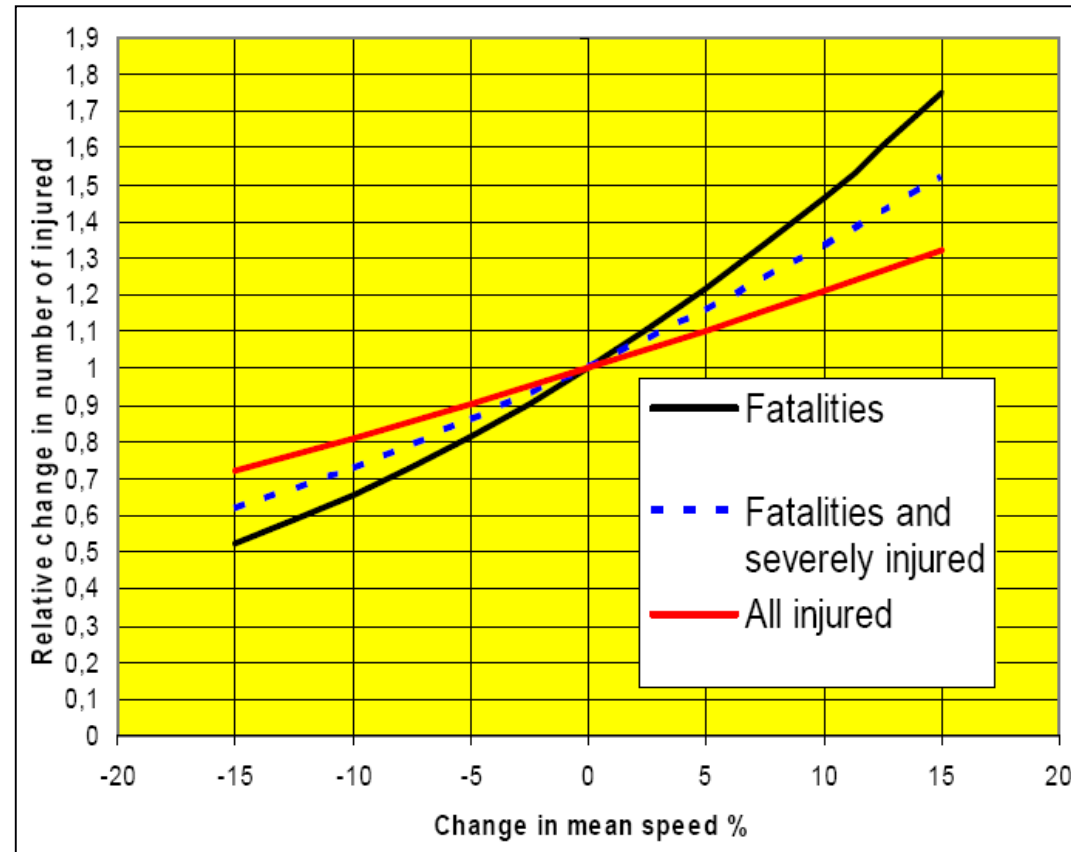
Severity: the power model



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Andersson and Nilsson, 1997;
Nilsson, 2004; Elvik et al., 2004;
Elvik, 2009:

- Injury accidents go up approximately with the proportionate change in speed squared for a length of road
- Serious injury accidents with speed cubed
- Fatal accidents with speed to the fourth power

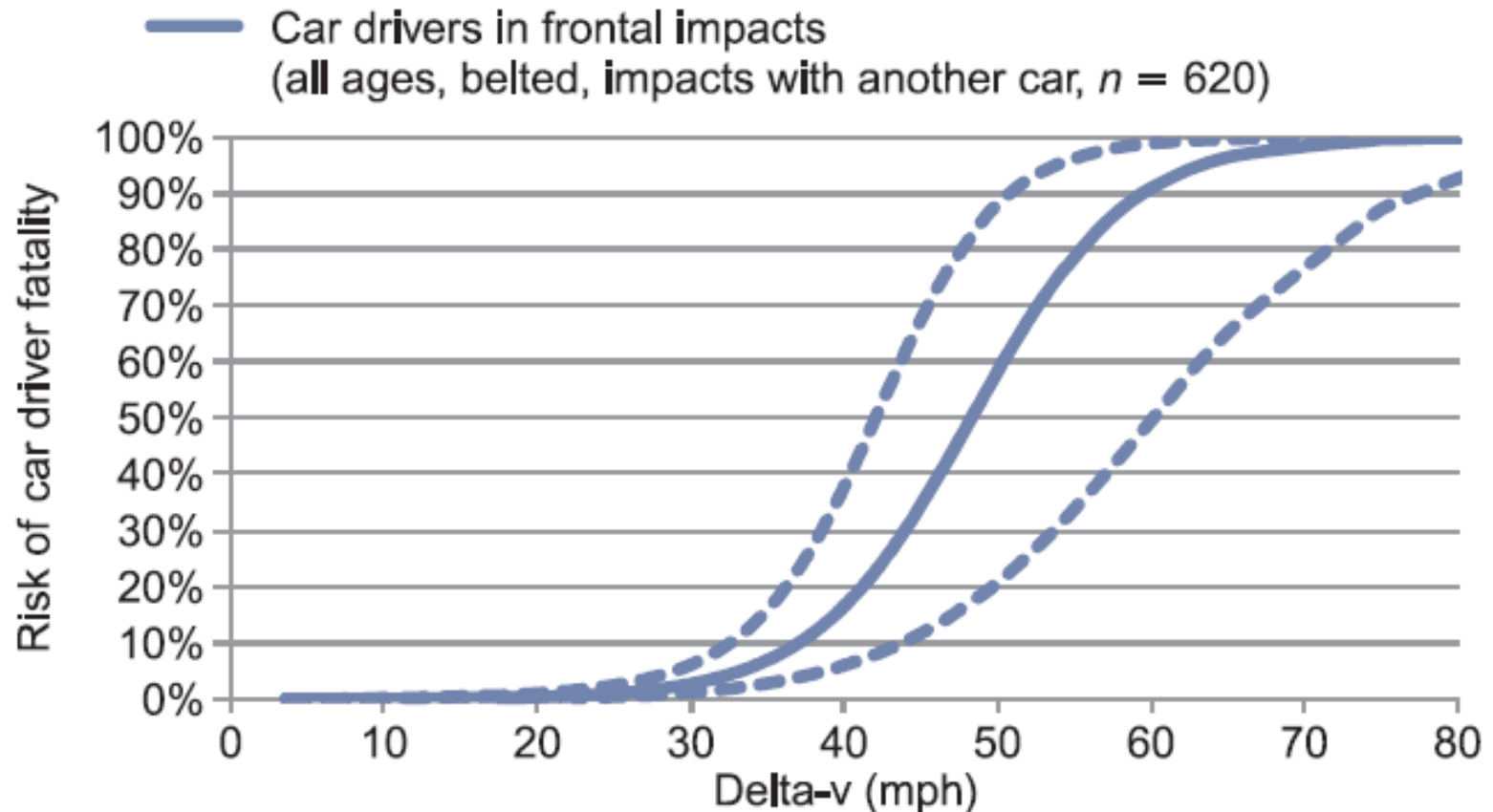


Source: Nilsson, 2004

Collision speed and the risk of car driver death in frontal collisions



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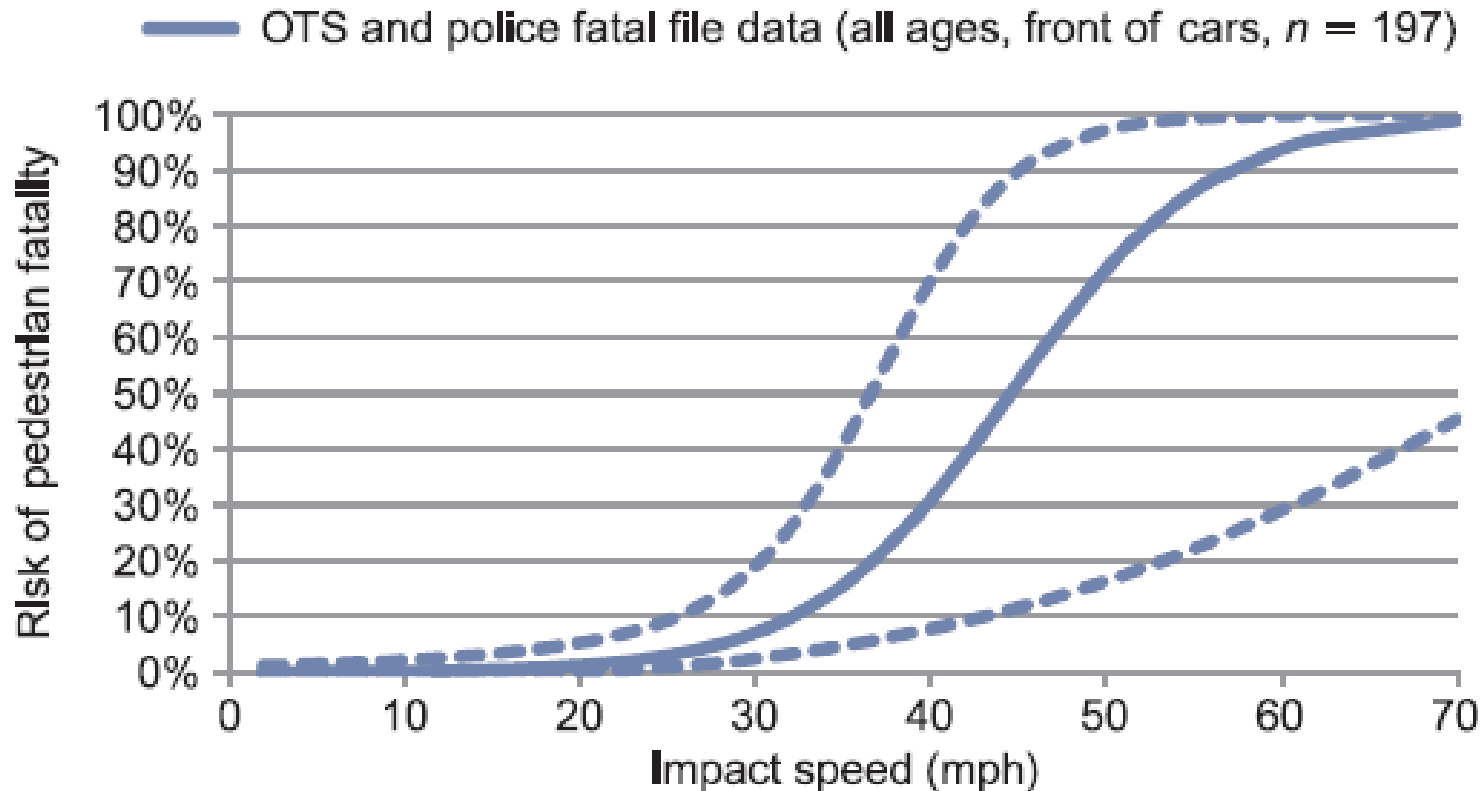
Source: DfT, 2010

(dashed lines show 95% confidence interval)

Impact speed and the risk of pedestrian death



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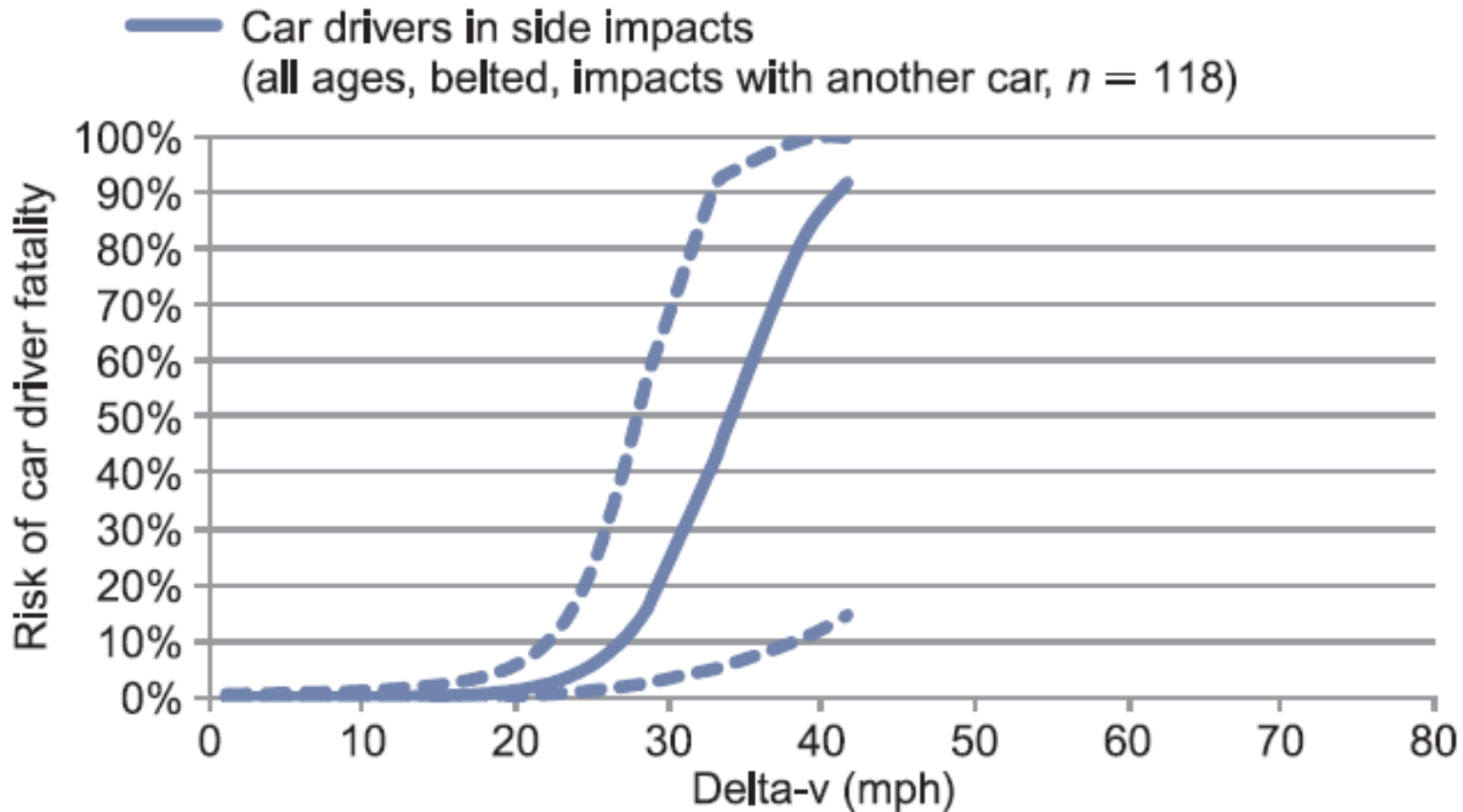


Source: DfT, 2010
(dashed lines show 95% confidence interval)

Collision speed and the risk of car driver death in side collisions



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Source: DfT, 2010

(dashed lines show 95% confidence interval)

Real-world trials



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Denmark (2000-2001 and 2005-2008)

Finland (2001-)

ISA-UK (2001-2006)

Two projects in Belgium (2001-2002)

LAVIA in France (2002-2006)

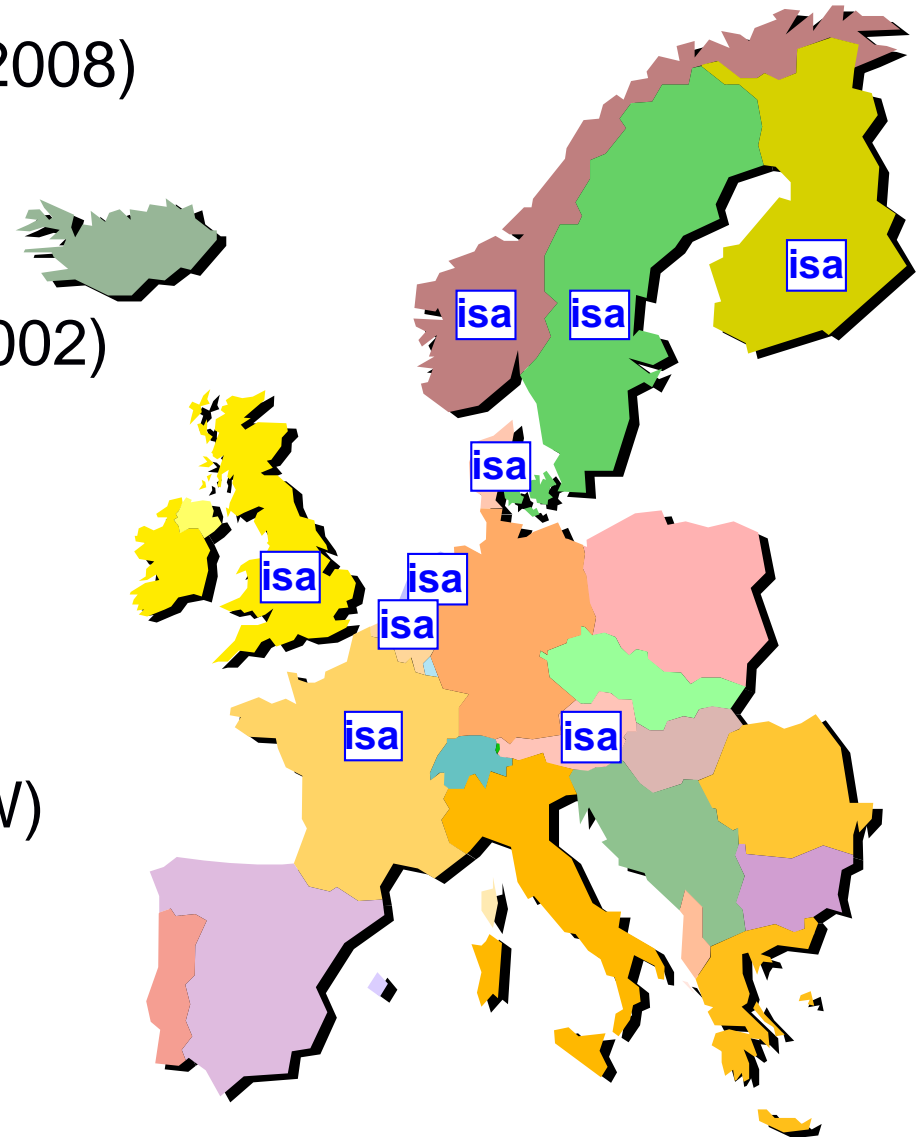
Austria (2003-2004)

Norway (2005-)

+

Australia (TAC SafeCar and NSW)

Japan (Soft Car)





Assisting ISA: effect on behaviour and attitudes

The ISA-UK trials



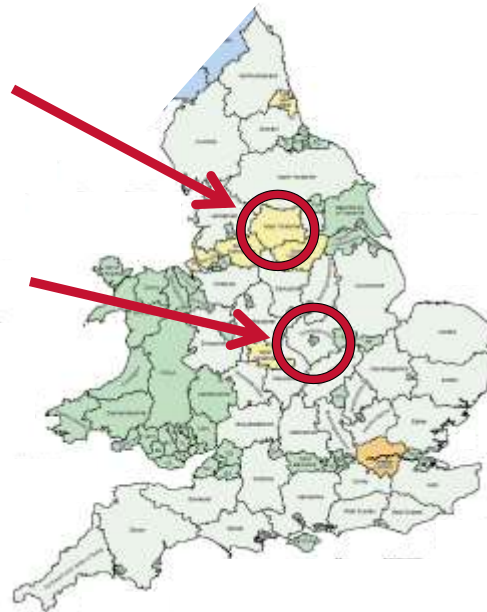
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2 urban trials

(1 private motorists, 1
fleet)

2 rural trials

(1 private motorists, 1
fleet)



79 drivers with a mix of:

Younger / older

Male / female

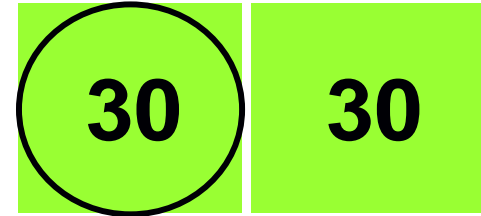
Speeding intenders / non-intenders

An overridable assisting system



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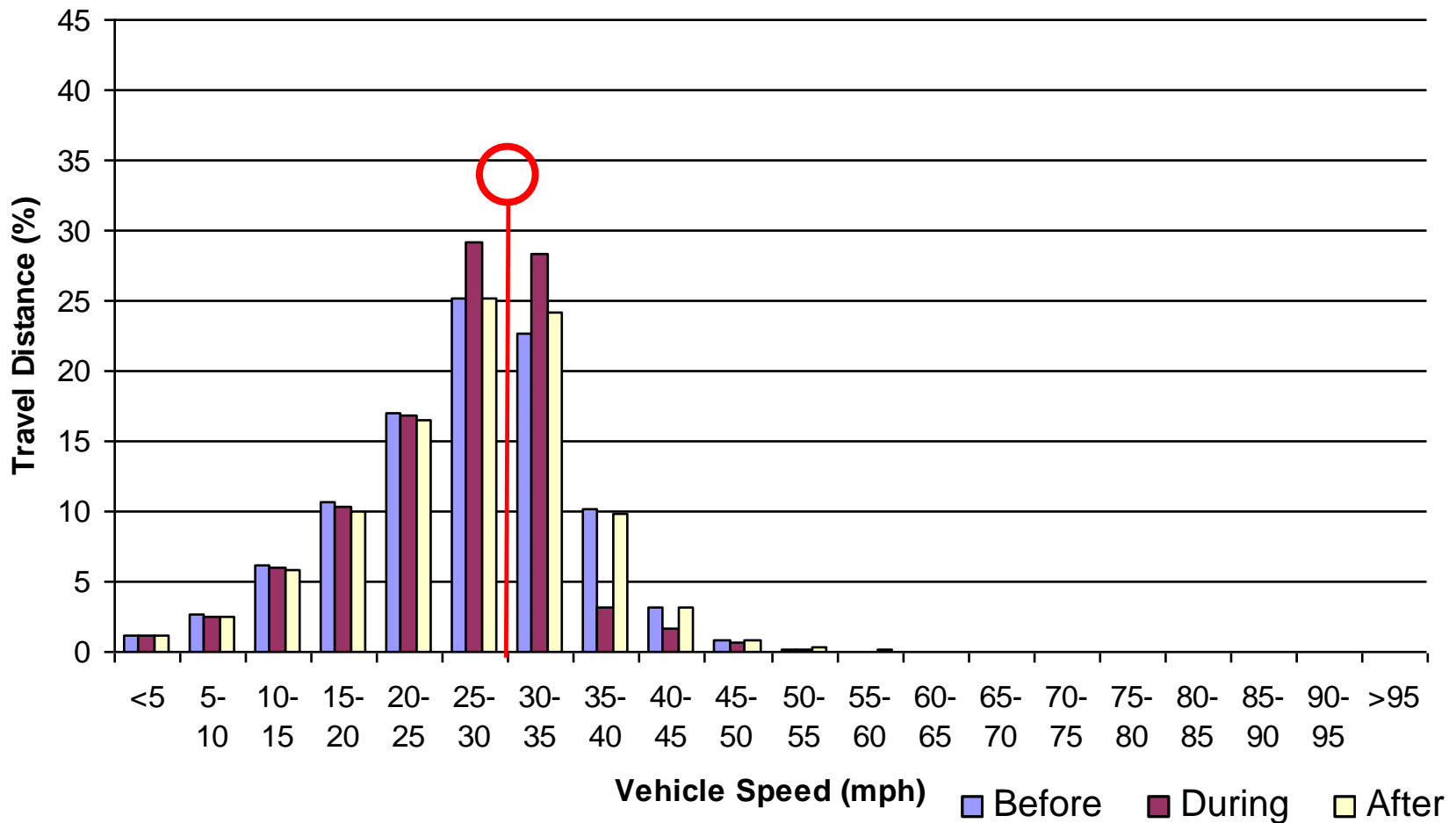
- System that limited speed to the prevailing limit (no acceleration beyond limit)
- Drivers could override at will
- Vibration on throttle pedal to prevent over-throttling



Speed distribution on 30 mph (50 km/h) urban roads



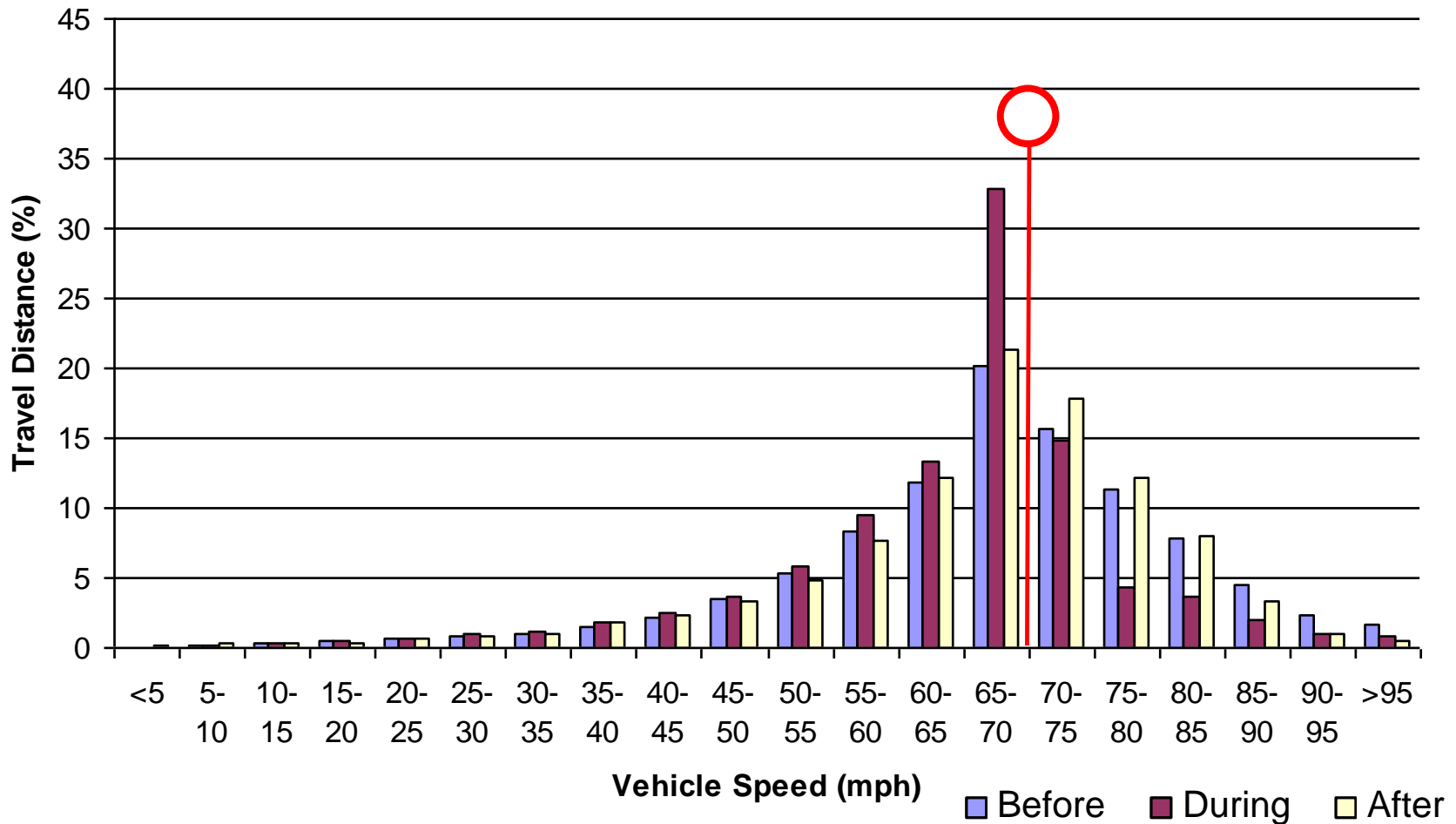
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Speed distribution on 70 mph (110 km/h) roads



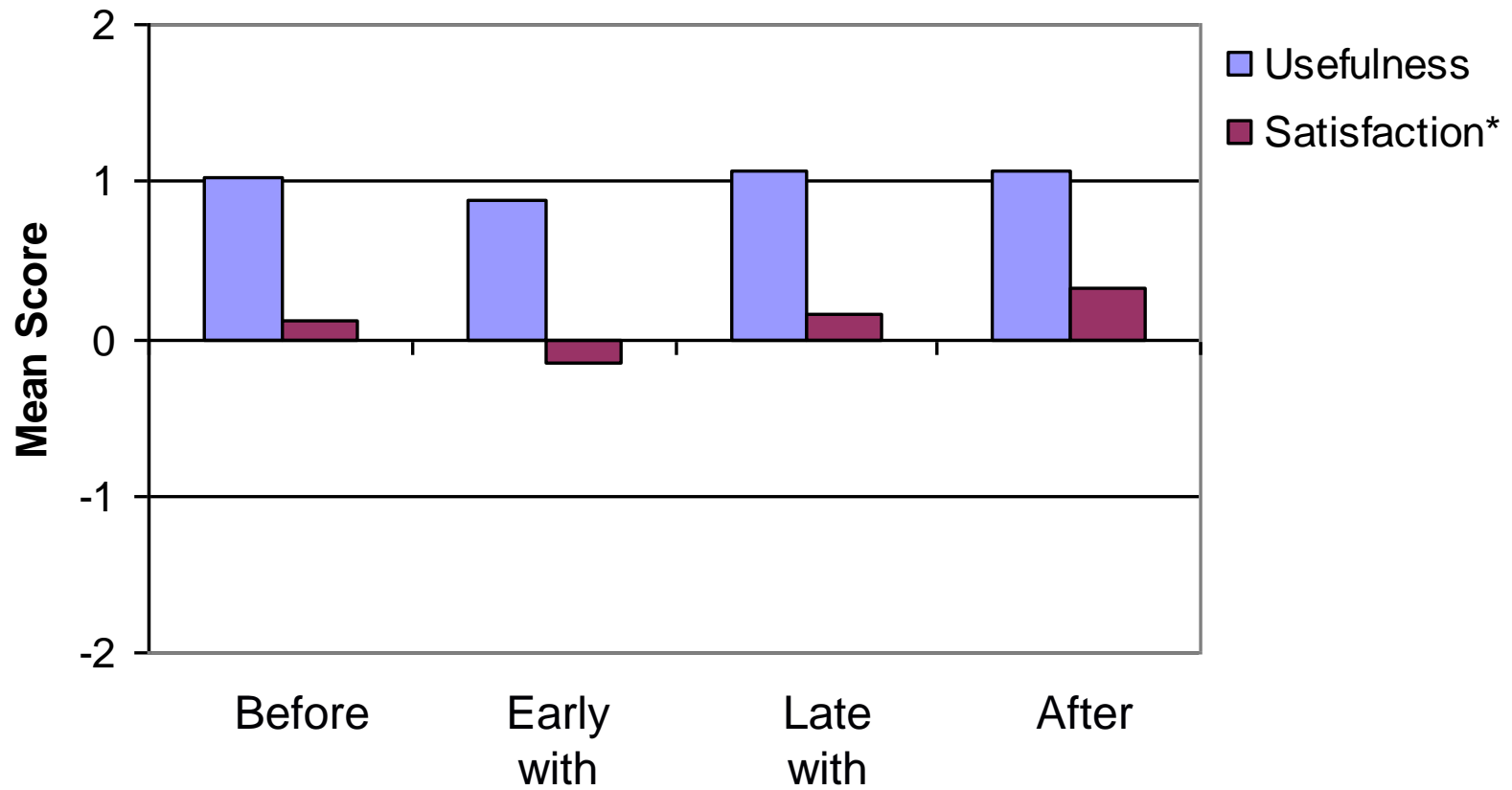
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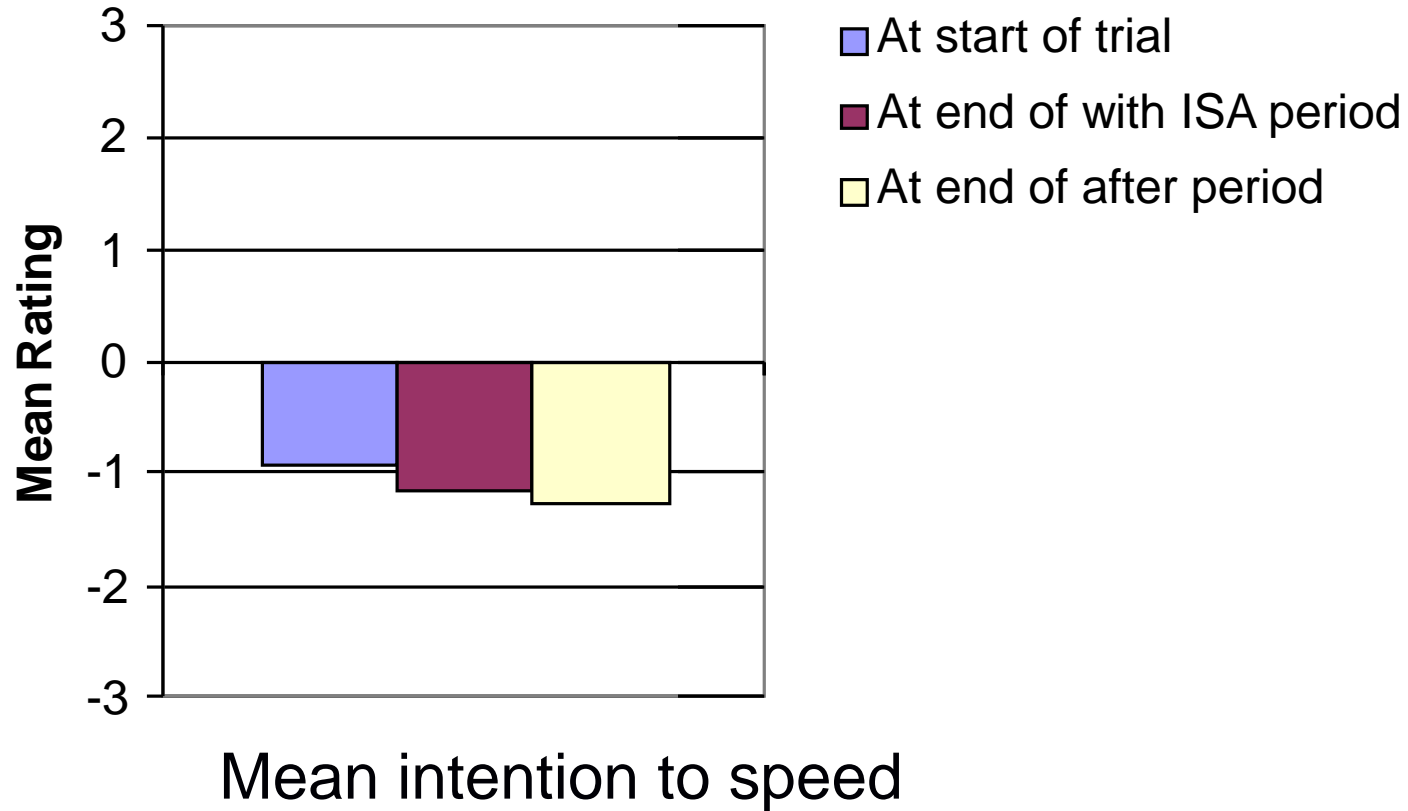
Acceptability



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Intention





Impact Prediction

- Based on models from the literature relating speed to crash risk (e.g. Kloeden et al., 2001, 2002)
- These models have been calculated from real-world data
- *They are not drawn from the police reported contributory factors for accidents*

Estimated risk reduction by type of ISA



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Estimated Reduction in Injury Accidents for Vehicles with ISA

ISA Variant	Reduction
Advisory ISA	-2.7%
Assisting (Overridable) ISA	-12.0%
Assisting (Non-Overridable) ISA	-28.9%

→ = -50% for fatal crashes

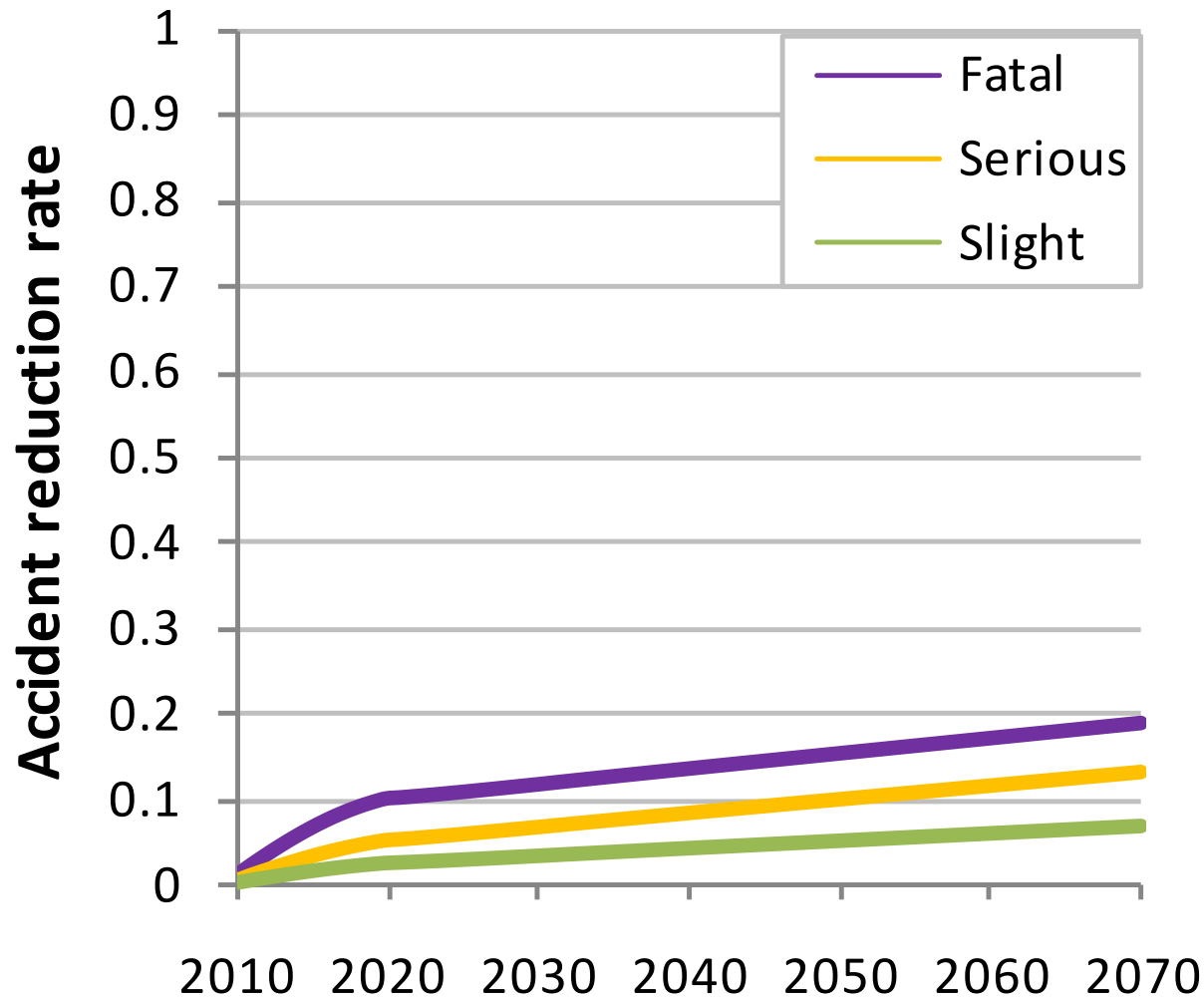


What is the importance of regulation?

GB accidents saved over time for under the Market Driven scenario



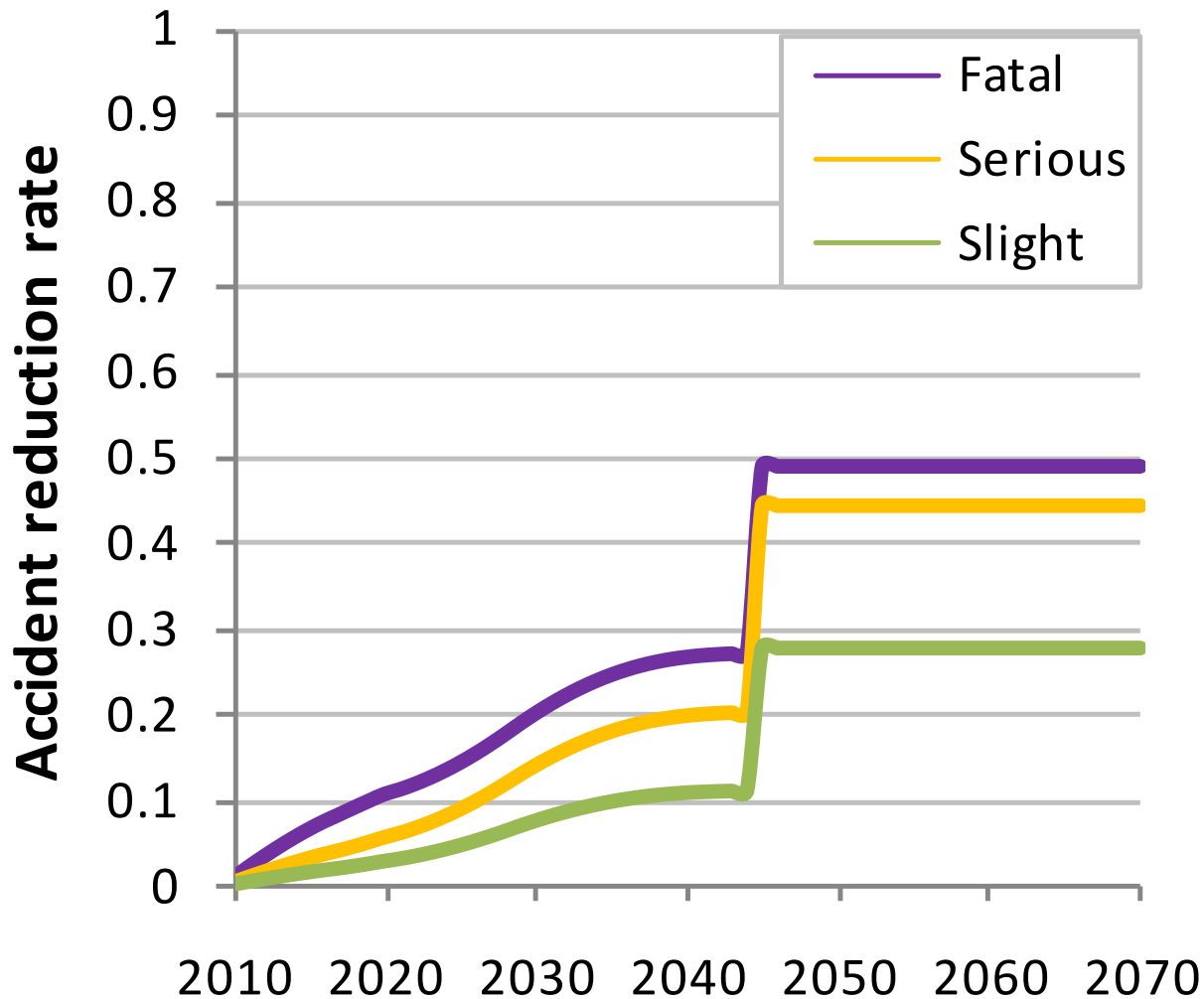
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GB accidents saved over time for the Authority Driven scenario



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GB Crashes Saved from, 2010 to 2070

	Slight Crashes	Serious Crashes	Fatal Crashes
Market Driven	4%	8%	13%
Authority Driven	15%	25%	30%

- Benefit to cost ratios (accidents + fuel + CO₂):
 - Market Driven scenario 3.4
 - Authority Driven scenario 7.4



- Both scenarios are winners
- The harder the push for ISA and the “stronger” the system, the greater the benefits
- Shows the importance of regulation
- Much of the potential of ISA, e.g. to replace traditional and costly traffic calming, was not counted



Confirmation from Norway

Vaa et al. (2014) examined the safety potential for Norway of a number of driver assistance systems, including Adaptive Cruise Control, alcolocks, seatbelt reminders, Electronic Stability Control and fatigue warning.

Their conclusion was:

“The most effective driver support system is ISA.”

- ISA is a well-proven technology with very significant safety benefits
- Regulation is necessary to maximise the impact of ISA on European traffic injuries and deaths
- It is therefore logical to:
 1. Adopt legislation for fitting of all new commercial vehicles with assisting ISA systems in line with the recommendations of the evaluation study conducted on behalf of the European Commission
 2. Adopt European legislation for fitting of all new passenger cars with an overridable assisting ISA system



Thank you for your attention!

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FITTING SAFETY AS STANDARD

European Parliament, Brussels
3 November 2014

Philippe Jean, European Commission, DG
Enterprise and Industry



FITTING SAFETY AS STANDARD

European Parliament, Brussels
3 November 2014

Szabolcs Schmidt, European Commission, DG
Mobility and Transport

