



Reducing speeds

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25 May 2016

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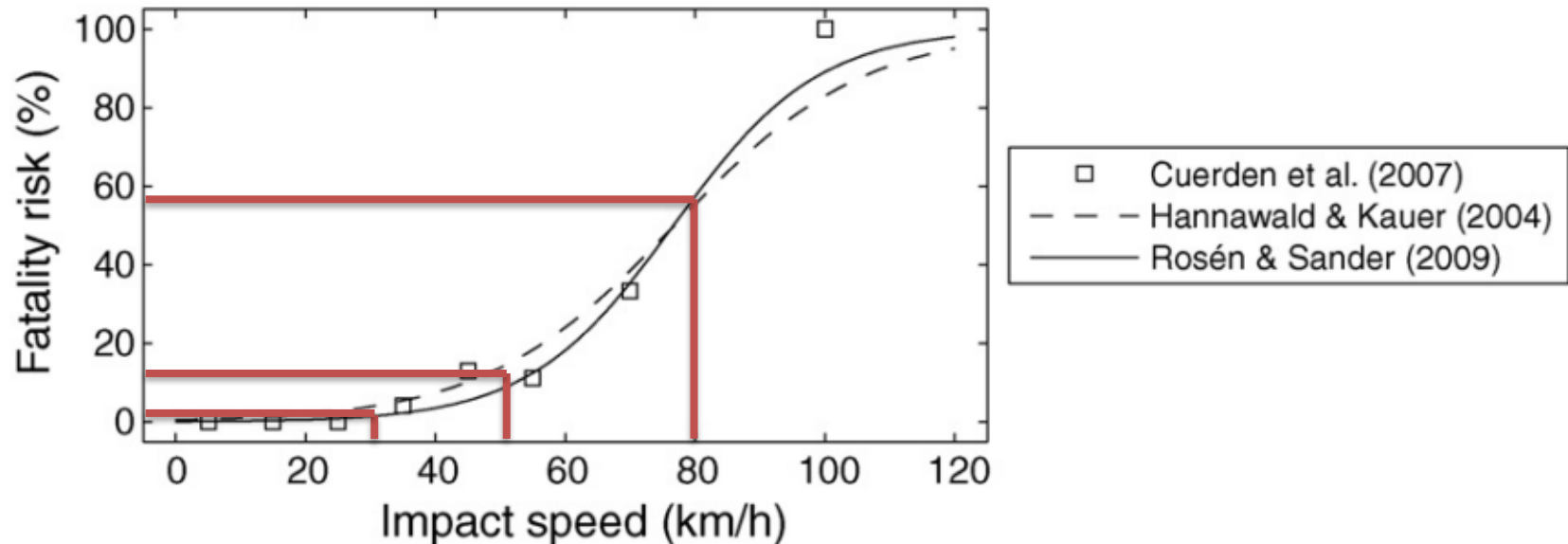
'Speed' as a risk factor in traffic

- Impact on:
 - Severity of the injury
 - Probability of a crash



Speed and severity of injury

- Kinetic energy = $\frac{1}{2}$ mass * speed²



Source: Rosén et al., 2011

Speed and probability of a crash

Source: Aarts & Van Schagen, 2006

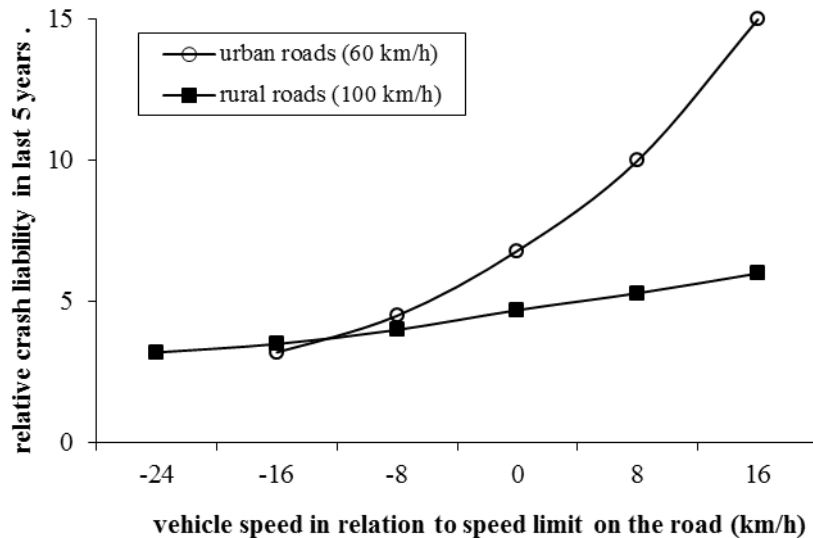
- Absolute speed
 - Individual vehicle speed
 - Average speed at a road section
- Relative speed
 - Speed differences between vehicles
 - Speed differences at a road section



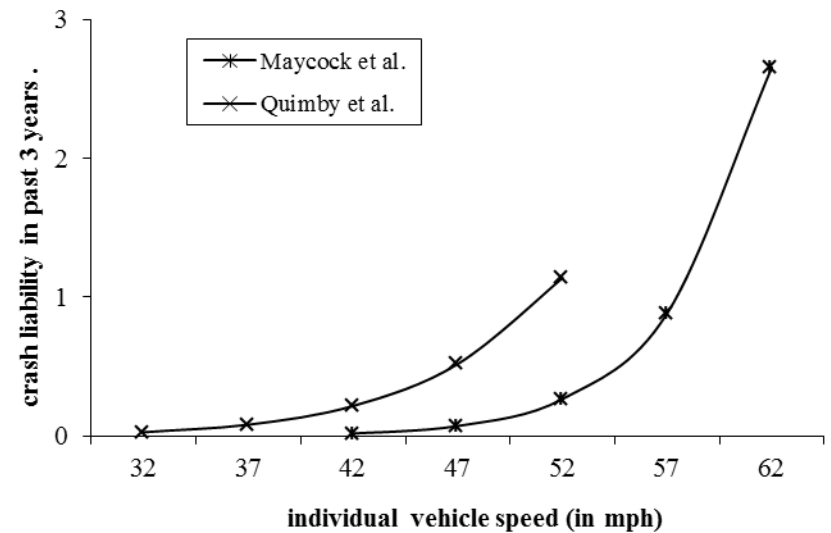
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Absolute speed and crash risk: Individual vehicle speed

- Higher speed → larger crash risk



Source: Fildes et al., 1991

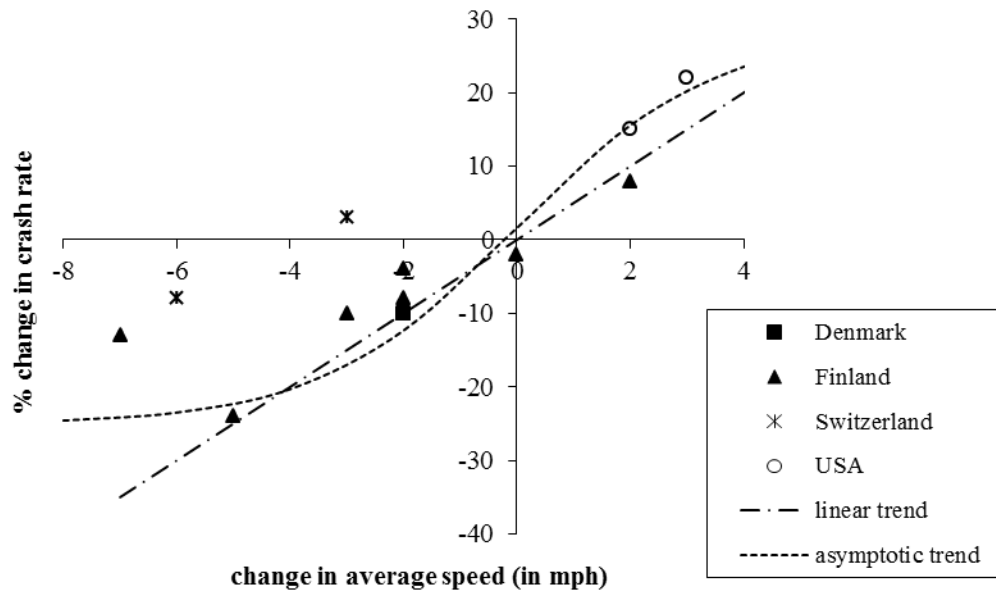


Sources: Maycock et al (1998); Quimby et al., 1999)

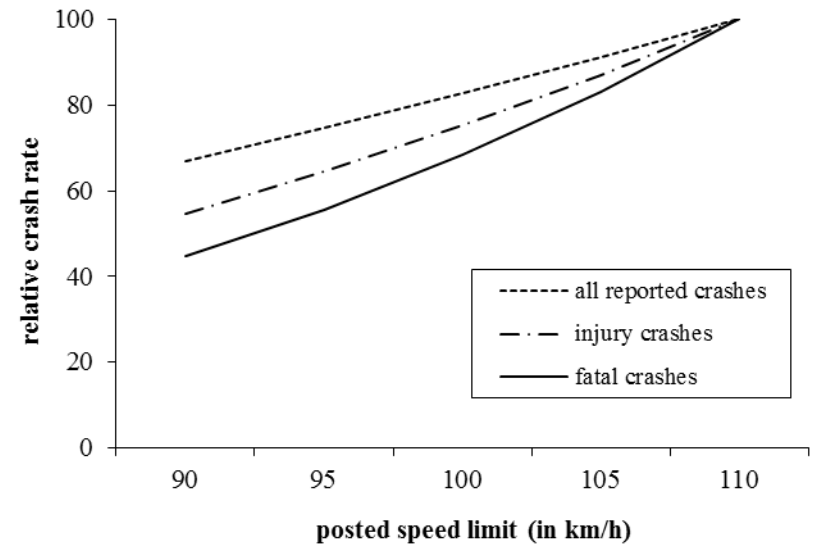
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Absolute speed and crash risk: Average speed at road section level

- Higher speed → larger crash risk
- Impact depends on road type



Source: Finch et al, 1994

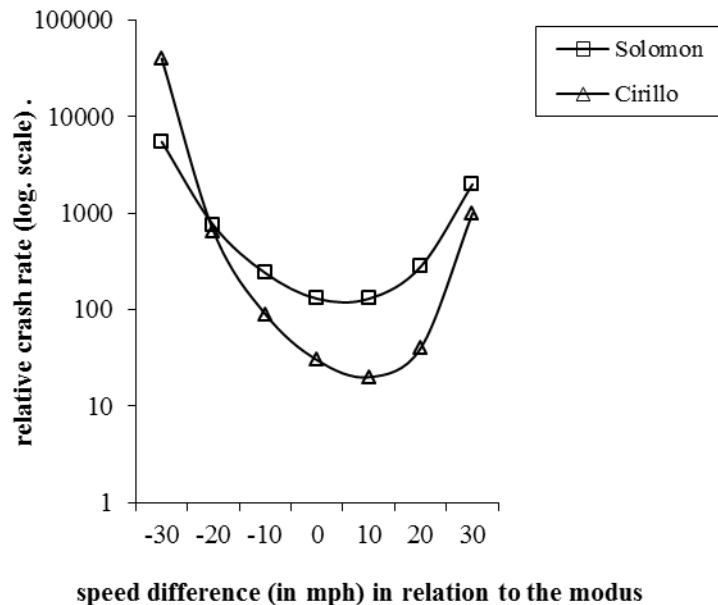


Source: Nilsson, 1982

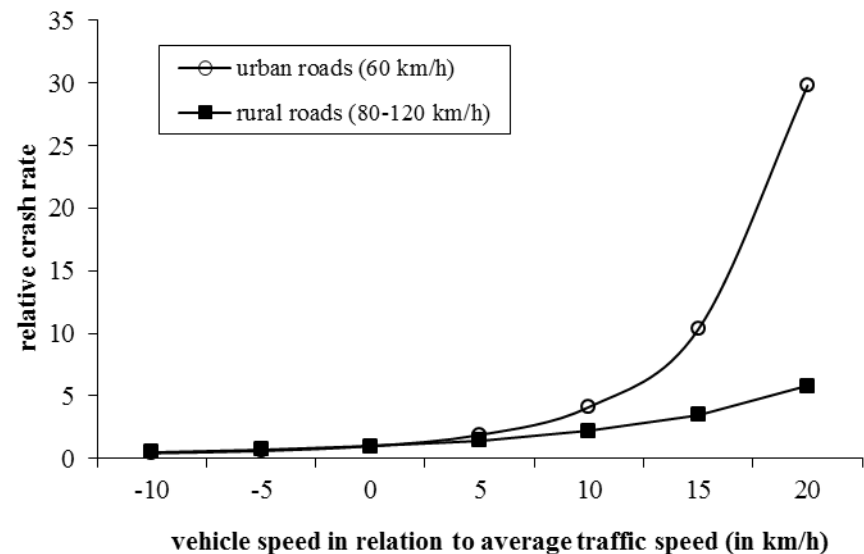
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Relative speed and crash risk: Speed differences between vehicles

- Larger difference in speed → larger crash risk



Sources: Solomon (1964); Cirillo (1968)

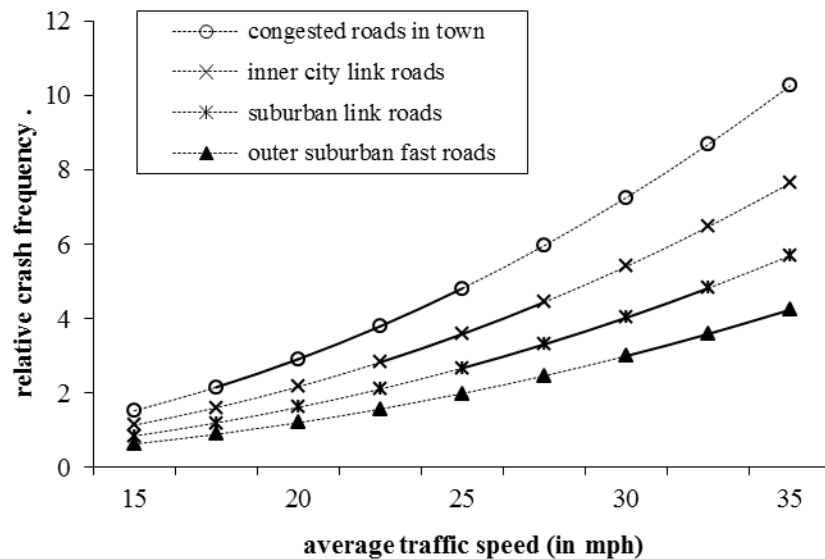


Sources: Kloeden et al. (1997; 2001)

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Relative speed and crash risk: Speed differences at road section level

- Larger speed dispersion \rightarrow larger crash risk

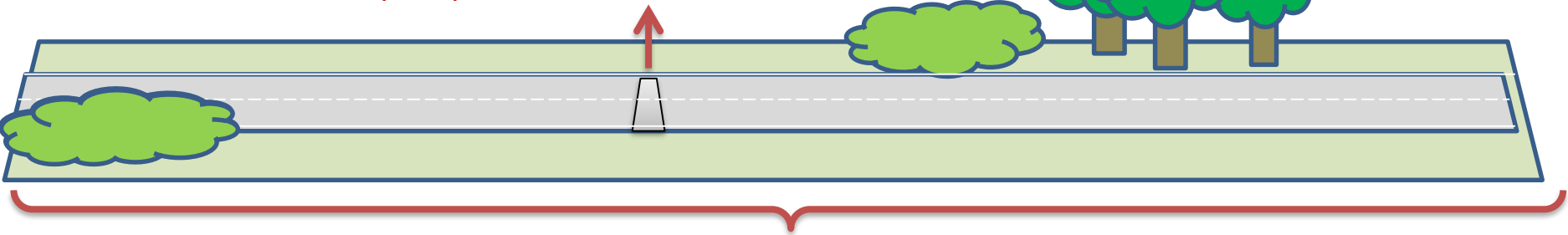


Source: Taylor et al. (2000)

Speed as Safety Performance Indicator

- V85 or 90
- Speed dispersion
- (Average speed)

Traditional method: spot speed measurement



FCD: speed measurement on road section

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Reasons for speeding

Nature of behaviour	Cause of rule violation	Possibilities for correction
Conscious behaviour	Subjective costs < benefits <ul style="list-style-type: none"> • Subjective safety • Credibility of rules • Unconcerned environment 	Normative perspective
		Subjective costs > benefits
		Fear for punishment
Unconscious behaviour	Behaviour provoked by the environment <ul style="list-style-type: none"> • Credibility of rules • Imitation of others 	System elicits proper behaviour: <ul style="list-style-type: none"> • Road environment • Vehicles • Behaviour of others
	Habits	
	Mistakes	



Safe System Approach

1. Safe speeds and safe speed limits
2. Credible speed limits
3. Informing drivers
4. Enforcement
5. Dynamic speed limits & ISA



**Both 50 kph
Both safe?
Both credible?**



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Thank you!

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