



Old Ideas + New Technology = Crash Savings

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Introduction

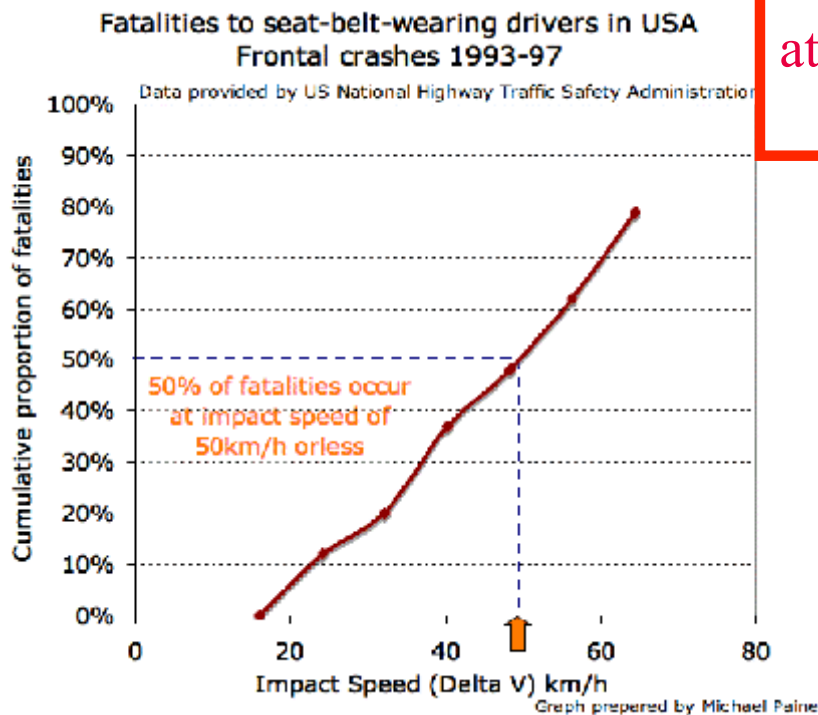
There are two veteran road safety countermeasures that can now be widely implemented at low cost on new and old vehicles

- Not going too fast
- Being seen

I will be talking about recent developments that could lead to remarkable road safety benefits through these countermeasures

Impact Speed & Fatalities

Myth 1
Most fatal
accidents occur
at high speeds!



64km/h - a Severe Crash

NCAP crash tests have shown that a head-on crash at 64km/h is a very severe crash.

The vehicle structure and occupant restraint systems must work very well to prevent serious injuries



29km/h intrusive side impact

Sideways impacts into poles or trees, or being T-boned by a large vehicle can be deadly at quite low speeds.

This crash test is only survivable because of a head-protecting side airbag.

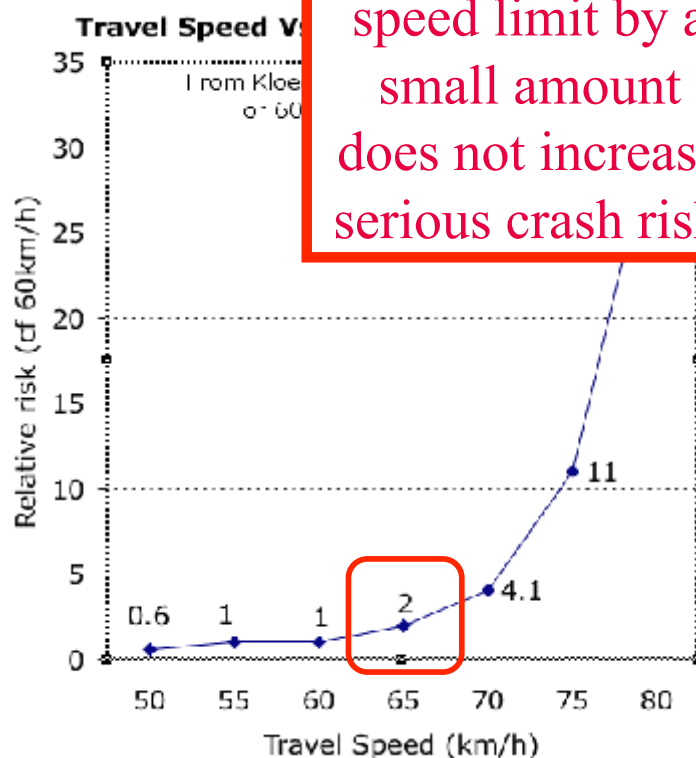


Speeding and Crash

A variety of studies show that the risk of a fatal or casualty crash is highly sensitive to speed.

This curve is for vehicles in a 60 zone.

Exceeding the speed limit by 5km/h doubles the risk of a casualty crash.

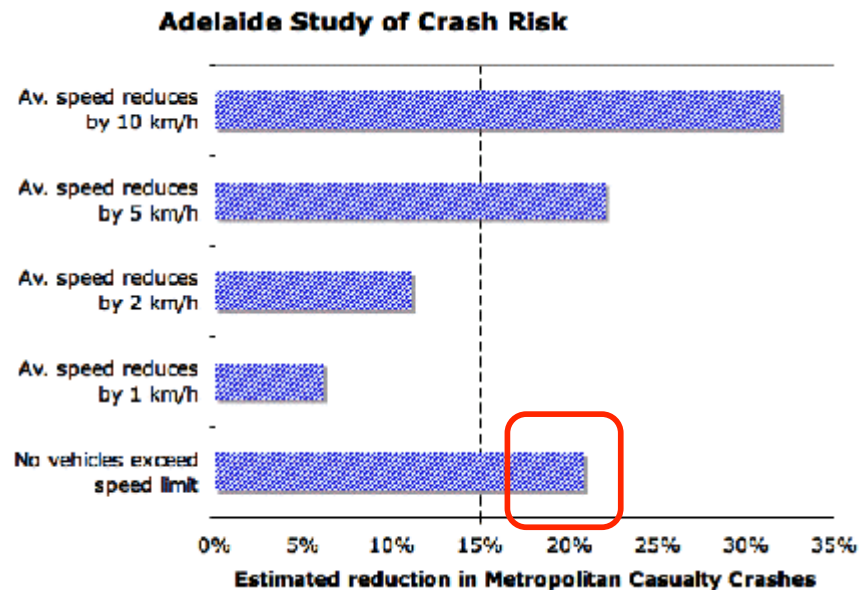


Myth 2
Exceeding the speed limit by a small amount does not increase serious crash risk!

Speeding and Crash Risk

This South Australian study found that 20% of casualty crashes would be prevented if all vehicles obeyed speed limits

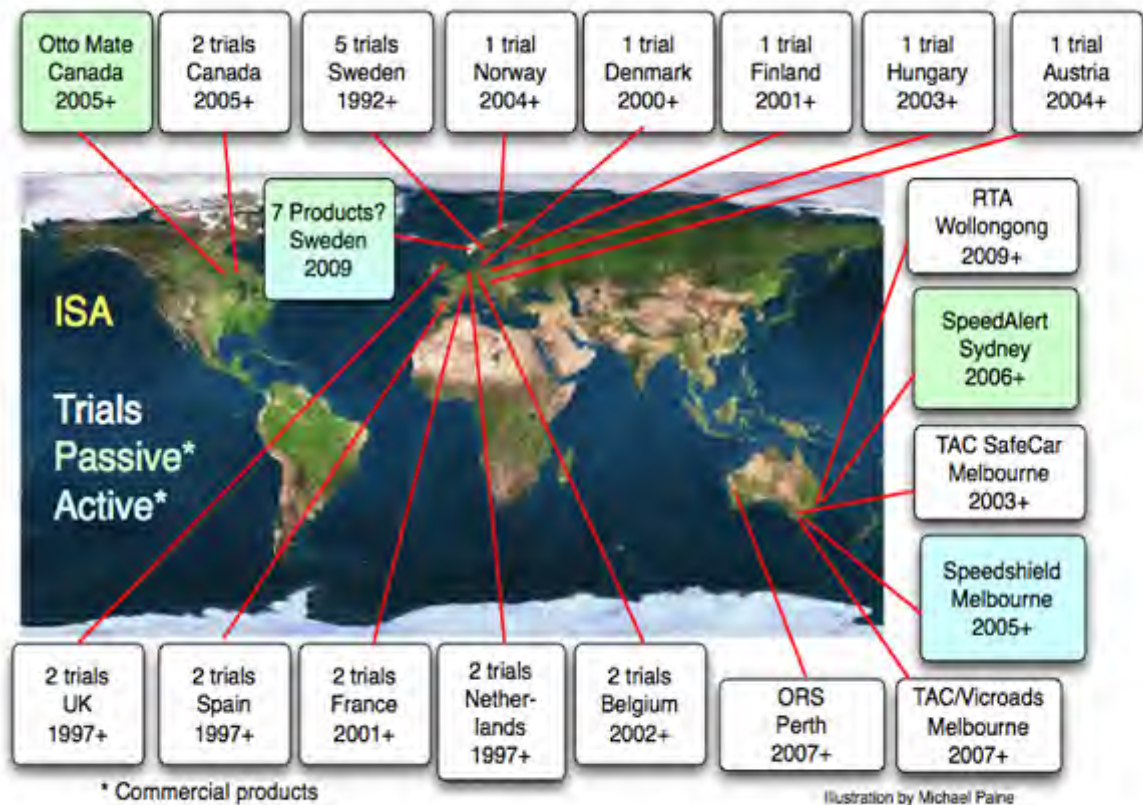
The savings for fatal crashes are higher.



Compliance with Speed Limits



- A reduction in low-range speeding would have substantial road safety benefits
- Widespread and effective enforcement of low-range speeding is unlikely
- **Other countermeasures are needed to reduce low-range speeding**
- **Intelligent Speed Assistance (ISA) would assist those motorists who want to obey speed limits - to keep their life, licence or livelihood.**



ISA now on sale in Australia!

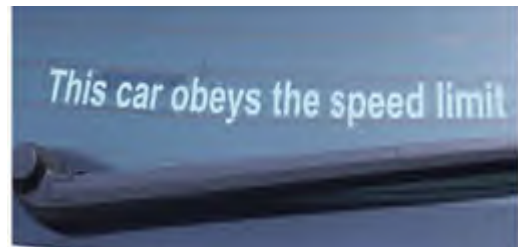
- **SpeedAlert** - software for PDA or Smart Phone
 - Sydney Metropolitan area released 2006
 - Most major cities and highways in Australia now covered. Has time-based school zone alerts.
 - A low-cost Sat-Nav is now available with SpeedAlert
 - \$20 iPhone app!
- **Speedshield** is a passive/active ISA that has been developed by a Melbourne company



Myth 3
ISA technology
is still
experimental

- **“There is no single vehicle technology remaining to be implemented - neither on the market nor in development - that offers the same safety potential as ISA”** European Transport Safety Council, 2006
- **ISA is an important component of the latest Australian National Road Safety Strategy**

Sign used on vehicle in Leeds trials



Being Seen



- 50% of *daytime* road accidents involve one road user failing to see another road user.
- Well designed daytime running lights (DRLs) can greatly improve the chances of being seen by other road users.
- LED technology has revolutionised lamp design and gives new opportunities for DRLs.

DRL History

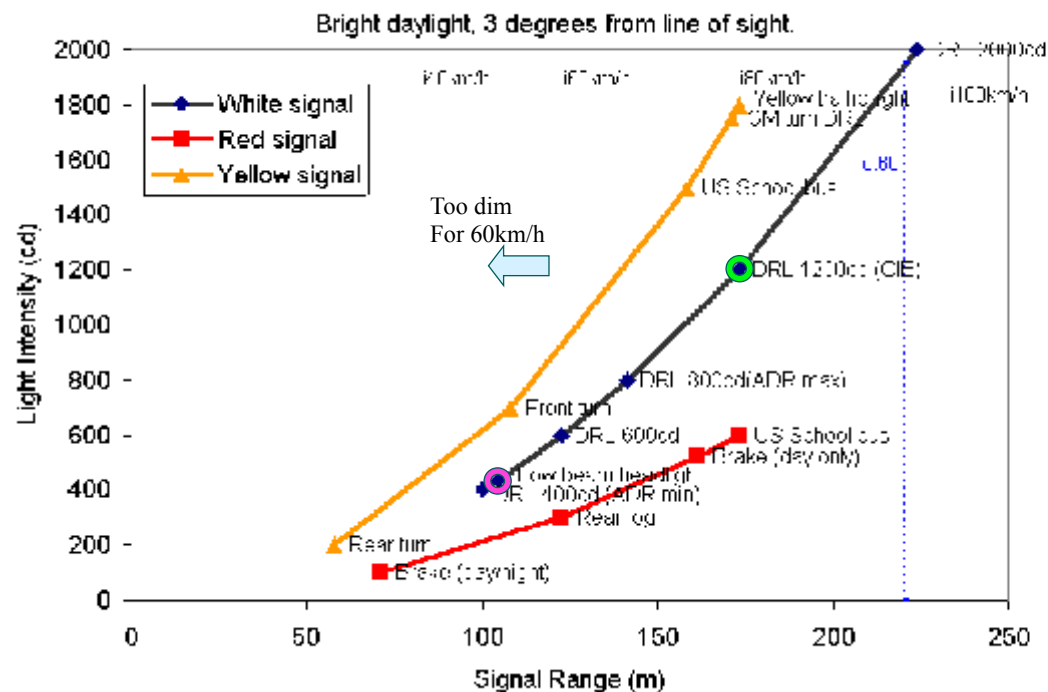
- A major shortcoming of DRL effectiveness studies is that they all involved use of headlights as DRLs. As I will show, *headlights make poor DRLs* (marginal effectiveness may be the reason for the "latitude effect").
- In 1991 an international committee (CIE) recommended white dedicated DRLs with a maximum luminous intensity of 1200 candela. They also criticised headlight DRLs.
- In 2008 the European Commission regulated to require all cars to have bright, dedicated DRLs – that is why most new European models have them in Asia and Australia

Road Design Sight Distances

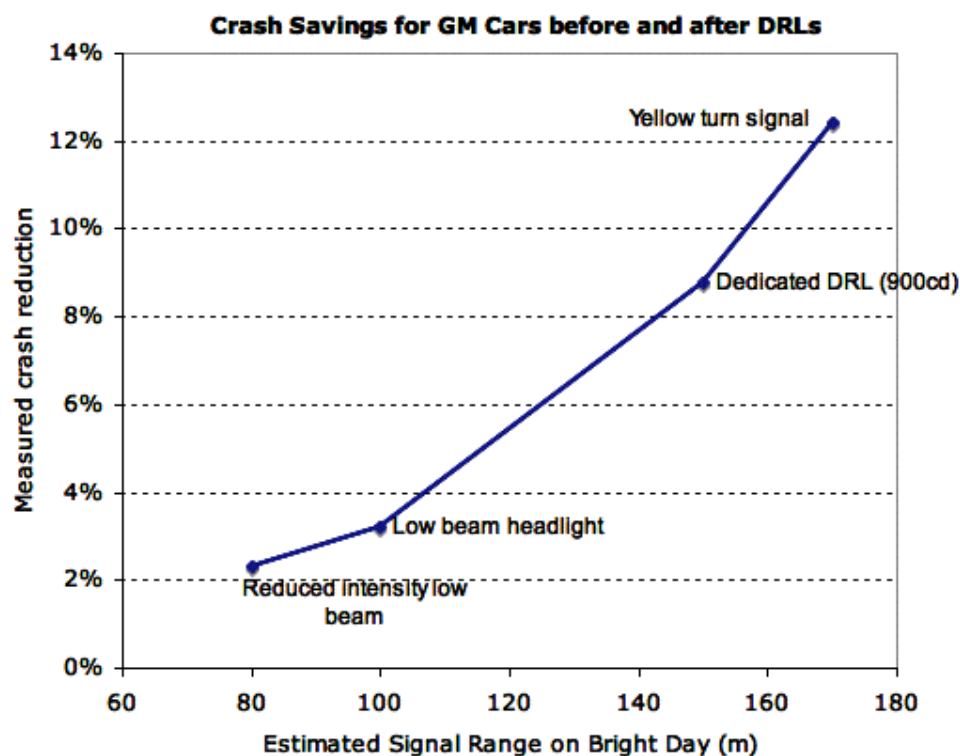


Design Speed	Intersection Sight Distance	Overtaking Sight Distance
40km/h	80m	160m
60km/h	120m	220m
80km/h	170m	340m
100km/h	230m	480m

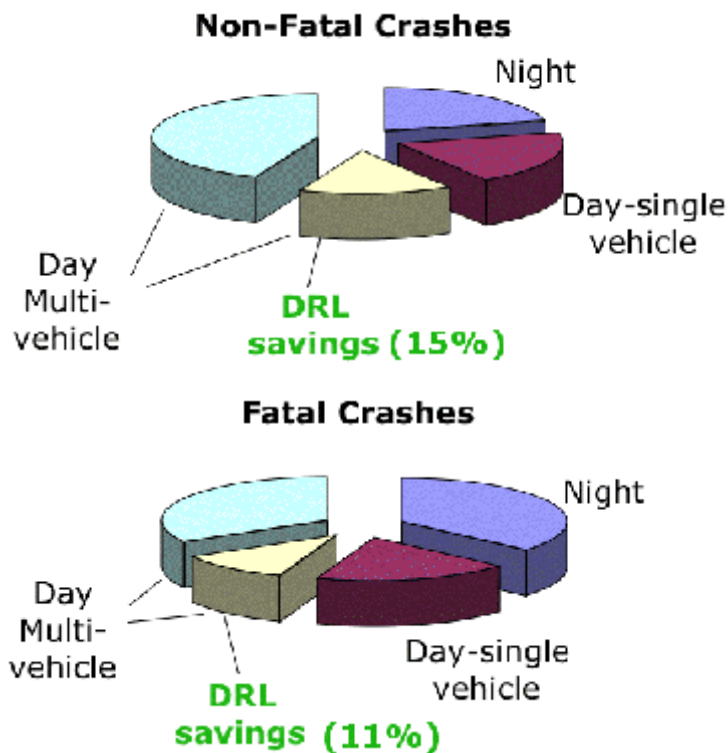
Signal Range of Vehicle Lights



Effectiveness of DRLs

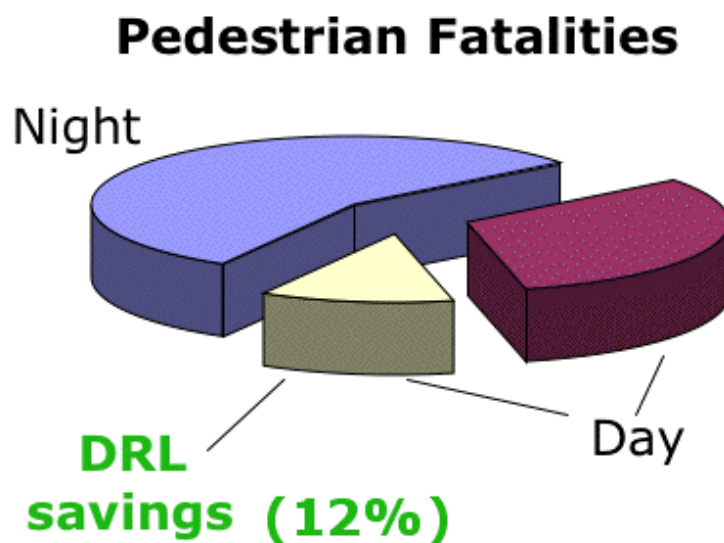


Potential Savings with good DRLs



- 25% of multi-vehicle daytime fatal accidents
- 20% of multi-vehicle daytime injury accidents (SWOV 1997)

Potential Savings with good DRLs



Concerns about DRLs

There are many myths and misunderstandings

- Increased fuel consumption is not an issue with energy-efficient dedicated DRLs using LEDs
- Concern about “masking” of vulnerable road users has been shown to be unfounded - in any case they benefit most from being able to see approaching vehicles.
- Glare could be a problem at dawn and dusk - this is easily overcome by automatic headlights with an ambient light sensor
- Premature failure of headlights - not an issue with dedicated DRLs

Motorcycle DRLs



- Daytime use of headlights has had mixed success - at best, they can be expected to perform marginally on bright days.
- Most M/C turn signals are barely adequate on bright days
- Proposed that M/C front turn signals be **much brighter** and operate as DRLs

Recommendations



- Support and encourage the implementation of ISA – digital mapping of speed limits and integration with sat-nav systems
- Address the myths about speeding through public education
- Encourage European-style daytime running lights on cars
- Look at introducing bright yellow turn signal DRLs for motorcycles (and reserve this colour for motorcycles)
- Encourage retrofitting ISA and DRLs to older vehicles