# What's hot in road safety?

# Vehicles that obey speed limits

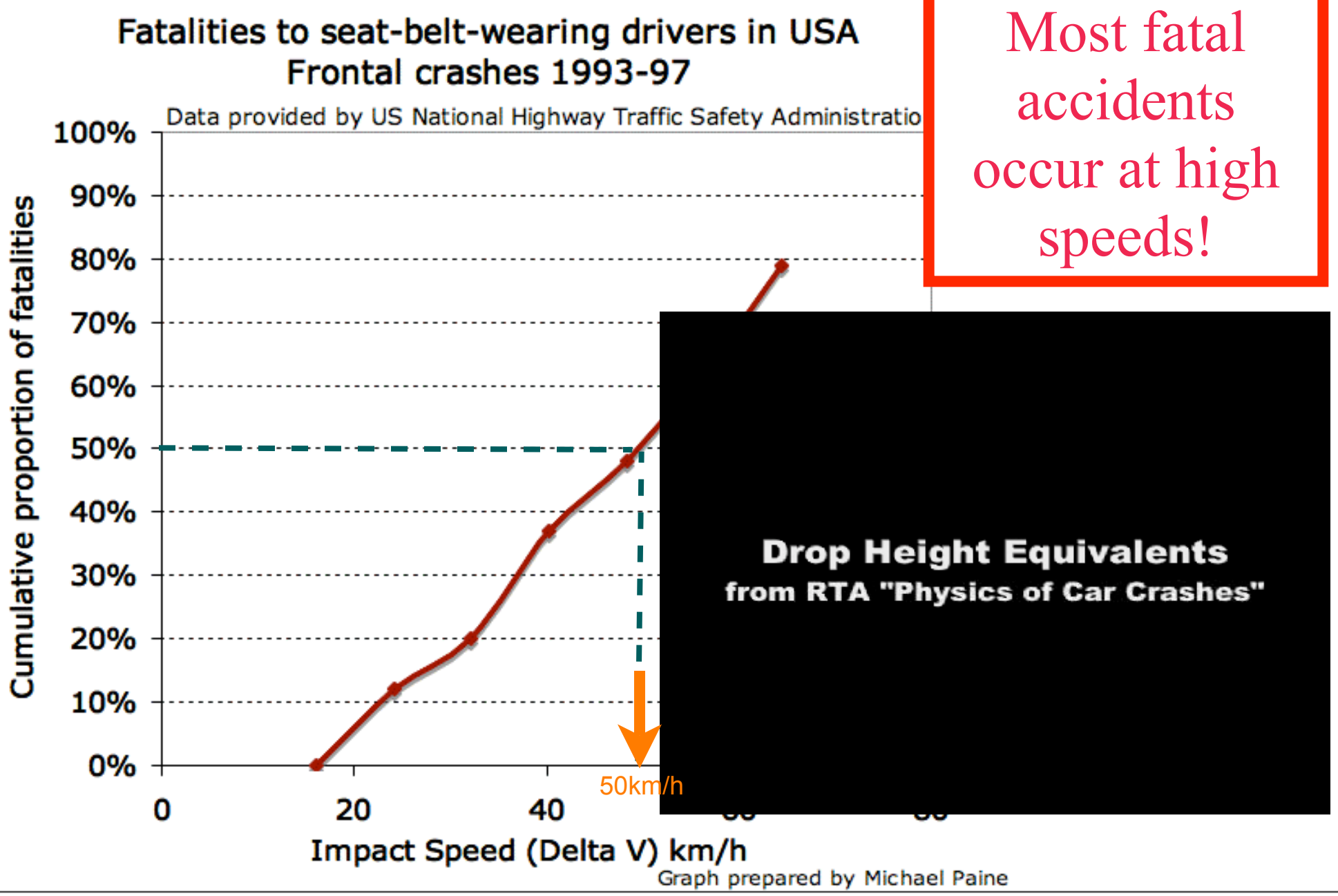

**Michael Paine - Vehicle Design & Research Pty Ltd**

# Myths about speeding

- There is a general view in the community that minor speeding is not a road safety problem
- This view is reinforced by media attention on very severe multi-fatality crashes and promotion of the speed potential of vehicles
- Detailed accident analysis tells us otherwise…

# Impact Speed & Fatalities

**Myth 1**
Most fatal accidents occur at high speeds!




Myth 1 - most fatal accidents occur at high speeds

Contrary to popular belief, most fatal road accidents occur at surprisingly low IMPACT speeds.

Half of all fatalities to seat-belted drivers in frontal crashes occurs at impact speeds of less than 50km/h.

Although the risk of a fatality at high speeds is much greater, the sheer number of low speed impacts means they make up a major proportion of all fatalities.

These data are based on in-depth accident investigations in the USA in the mid-1990s, with the fleet similar to the current Australian fleet regarding airbag fitting rates

This animation shows the severity of a 50km/h impact speed

# Crash Tests Show the Physical Limits

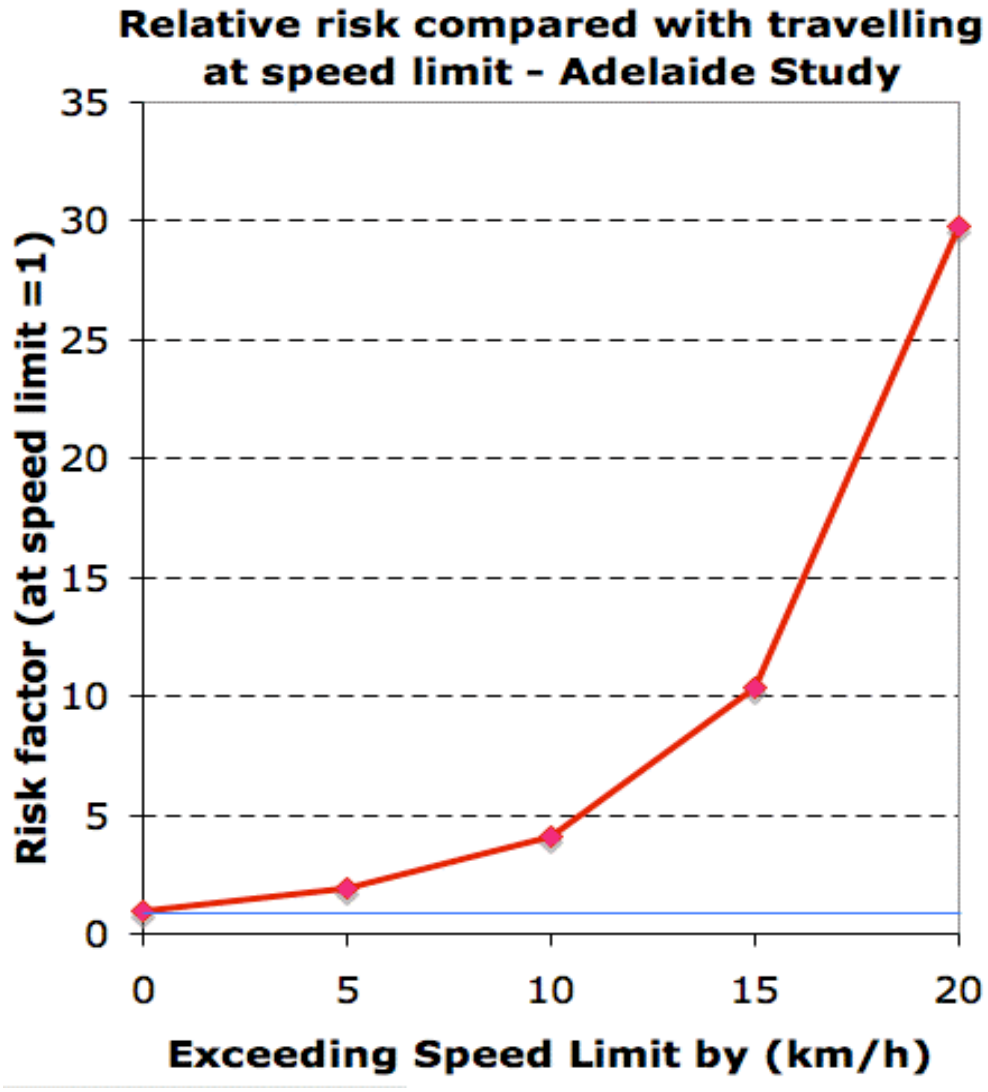
64km/h frontal offset

29km/h pole impact

Crash tests by New Car Assessment Programs clearly show that an impact at 64km/h is a very severe crash. The crash test on the left simulates an offset head-on crash between similar vehicles each travelling at about 60km/h.

Just 29km/h sideways into a pole is almost certain to be fatal unless the vehicle has side airbags/curtains to protect the head from a direct impact.

# Crash Risk and Speeding

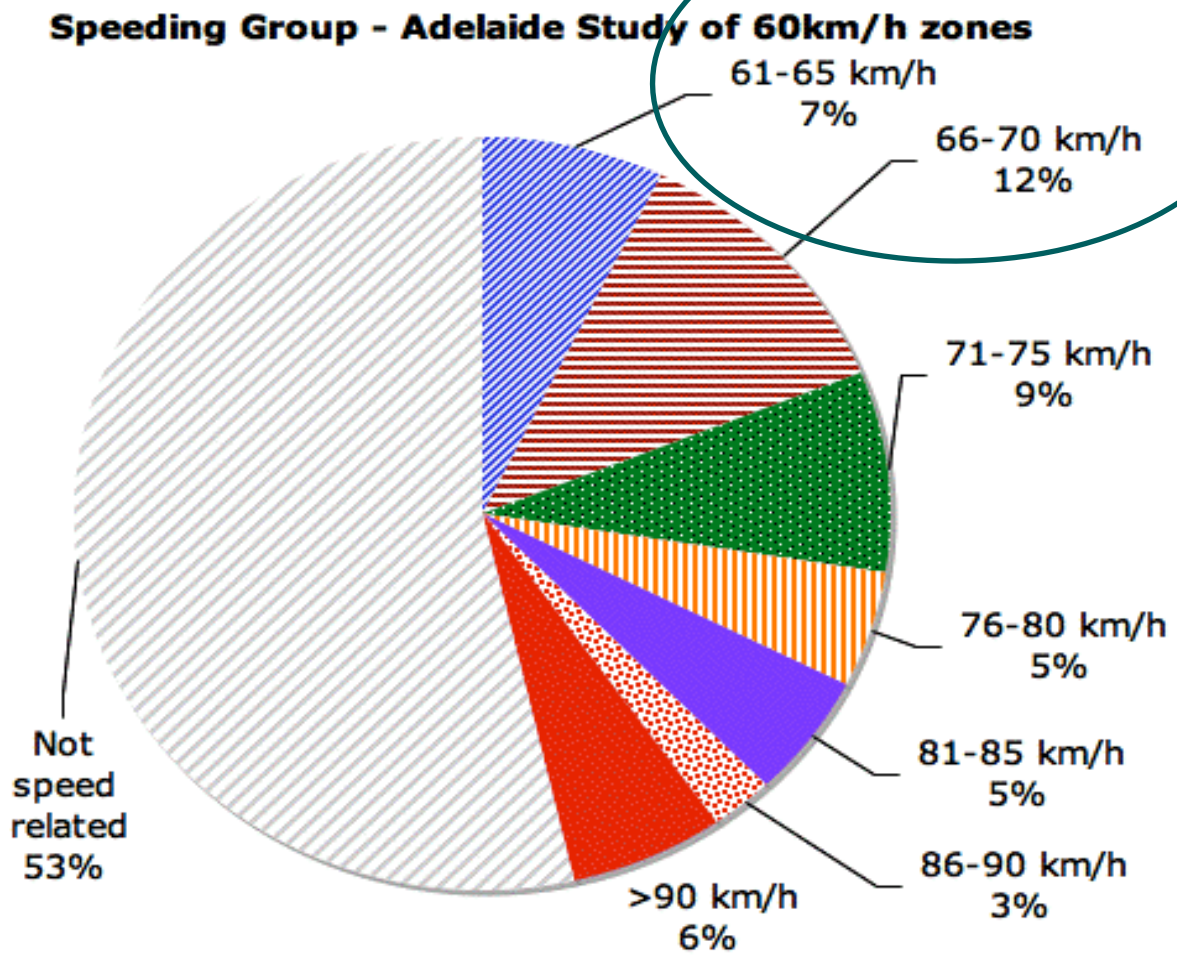



**Myth 2**
Exceeding the speed limit by a small amount does not increase crash risk!

Myth 2 - Exceeding the speed limit by a small amount does not increase crash risk
In urban areas risk of involvement in a casualty crash doubles with each 5km/h increase in travelling speed above the speed limit. Travelling at 15km/h over the limit increases the risk tenfold.
Most drivers think that the risk doubles when travelling 25km/h over the limit in urban areas - clearly this is a gross misunderstanding of the physics involved.

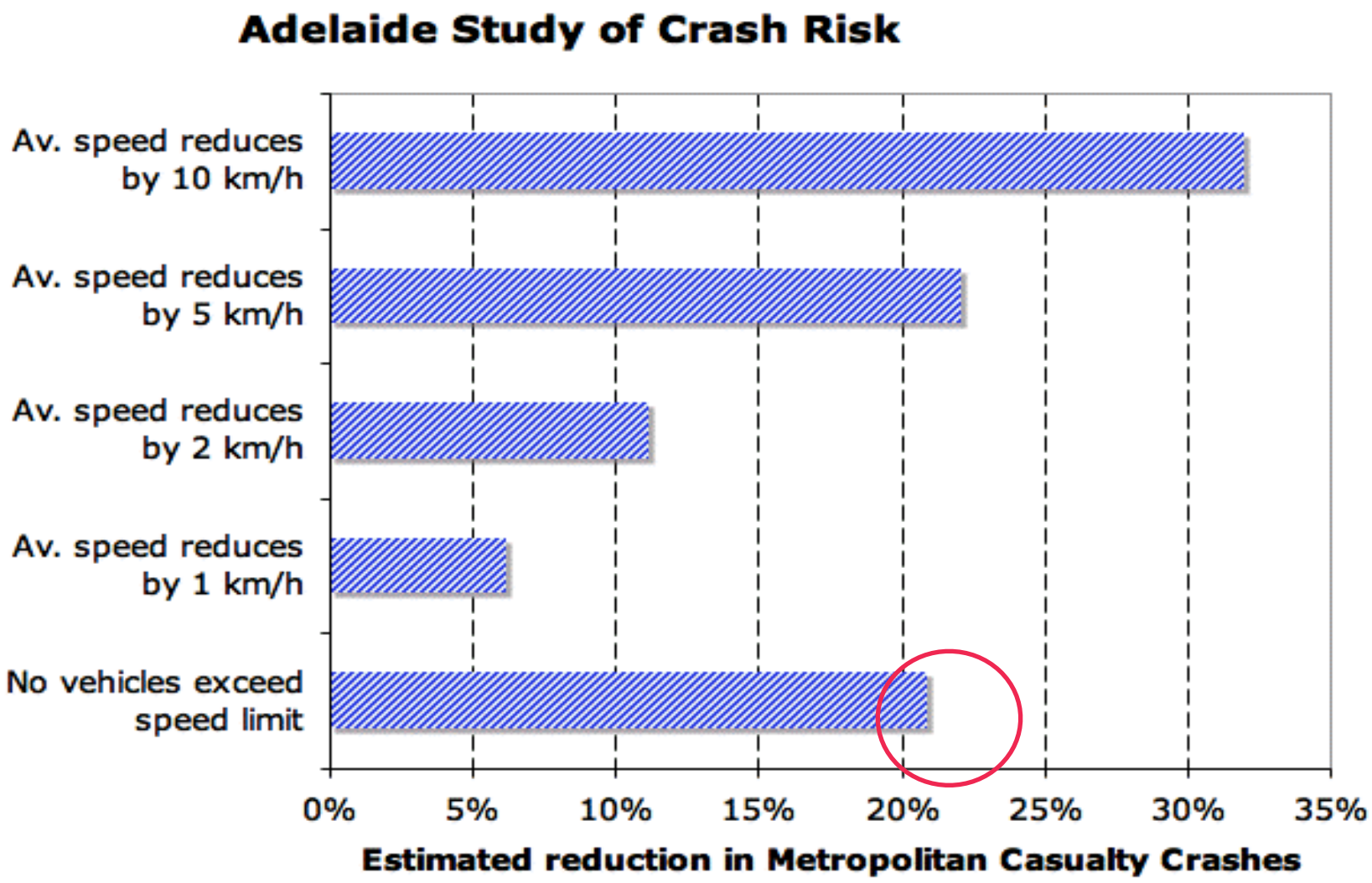
# Speeding and Crashes

**19% of Casualties**
**Less than 10Km/h**
**Over the Speed Limit**



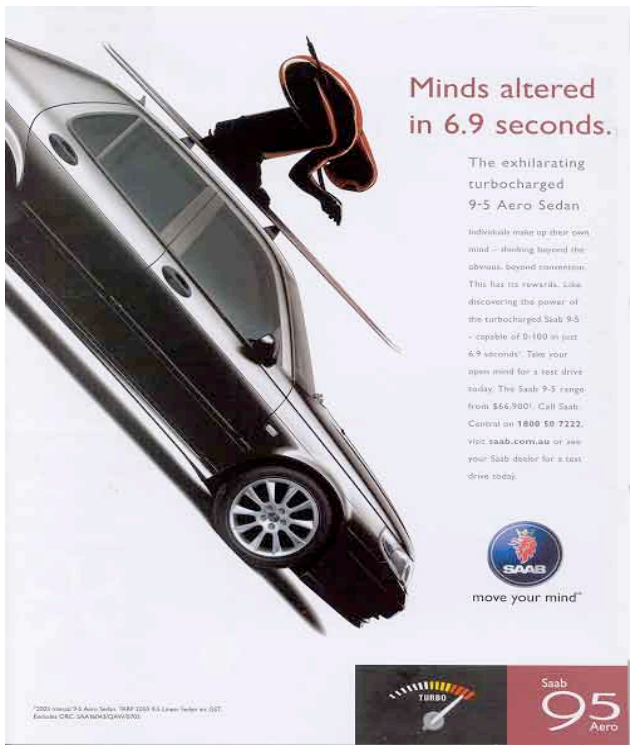

The problem of “minor” speeding is confirmed in accident studies. In this study of suburban crashes, 19% of all casualty crashes involved cars exceeding the speed limit by up to 10km/h.

# Speeding and Crashes




Estimated that at least 21% of all casualty crashes could be saved if all vehicles obeyed the speed limits. This also applies to fleets that take action to encourage compliance with speed limits.

# Compliance with Speed Limits

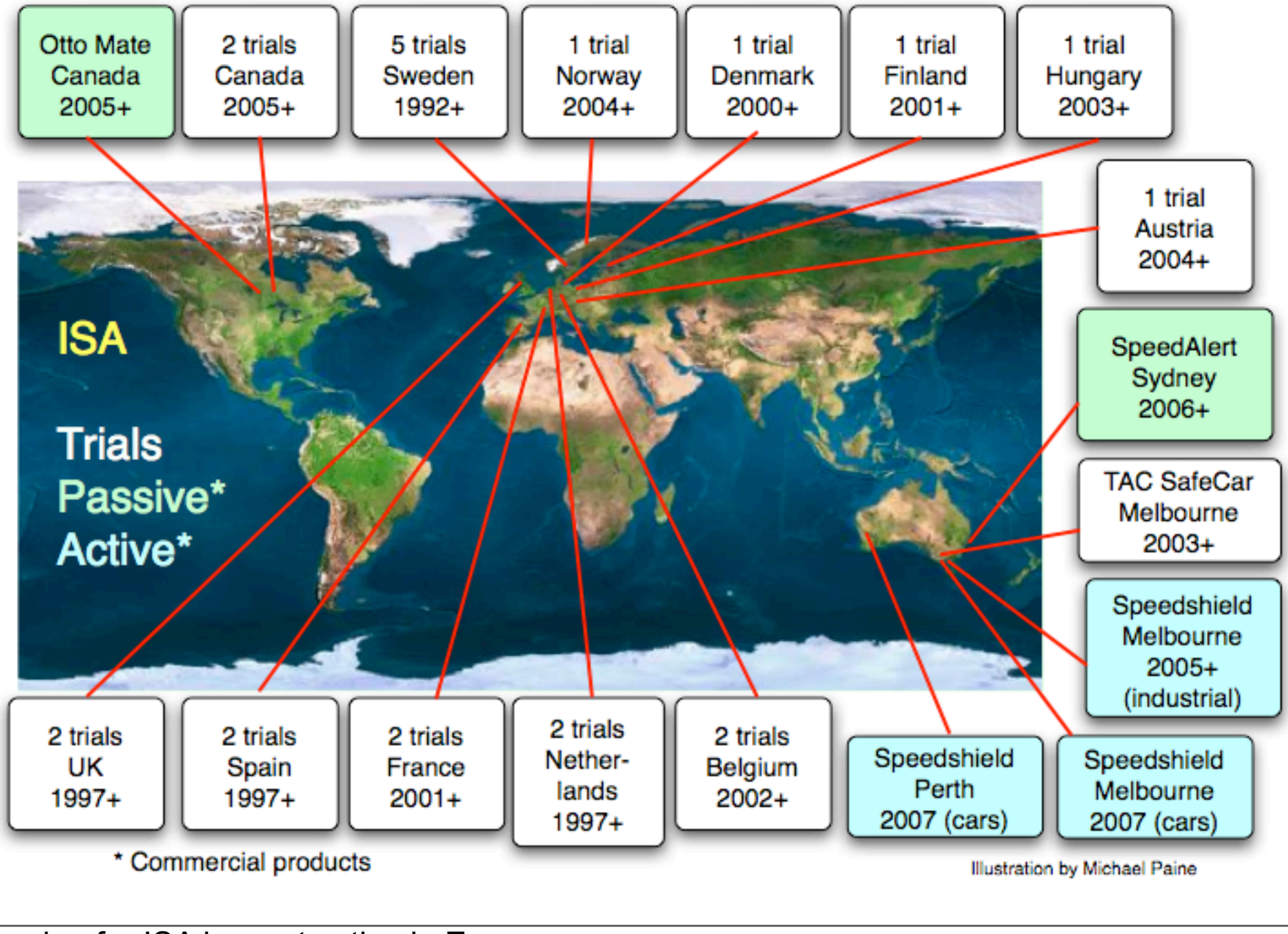




- Likely that **unintentional** speeding makes up a large proportion of the speeding problem
- These days cars are smoother and quieter - it is easy for **speed to creep up!**
- In urban areas speed limits frequently change
- Car advertising does not help!
- **Drivers could do with some technical assistance in keeping to the speed limit**

Car advertising

# What is ISA?

- **Intelligent Speed Adaptation** (ISA) is the global term for advanced systems in which the vehicle "knows" the speed limit and is capable of using that information to give feedback to the driver or limit maximum speed.
- Highly successful trials of automatic speed limiters/alarms have been underway for more than 10 years - including the TAC Safe-Car project in Melbourne




Planning for ISA is most active in Europe

About 20 trials have been conducted or are underway

ISA experts met in Denmark in June to discuss progress

Commercial systems will soon be released in Europe

ISA trial underway in Ottawa, Canada

# GPS and Speed Control

- A breakthrough with ISA has been improvement to Global Positioning Satellite systems (GPS)
- GPS can determine the location *and* speed of the vehicle. Speed accuracy is better than 1%.
- A database of speed zones enables the ISA system to alert driver to speeding ("**Passive ISA**") or to prevent the vehicle from exceeding the speed limit ("**Active ISA**")


# ISA Now On Sale in Australia!

**Myth 3**
ISA technology is still experimental

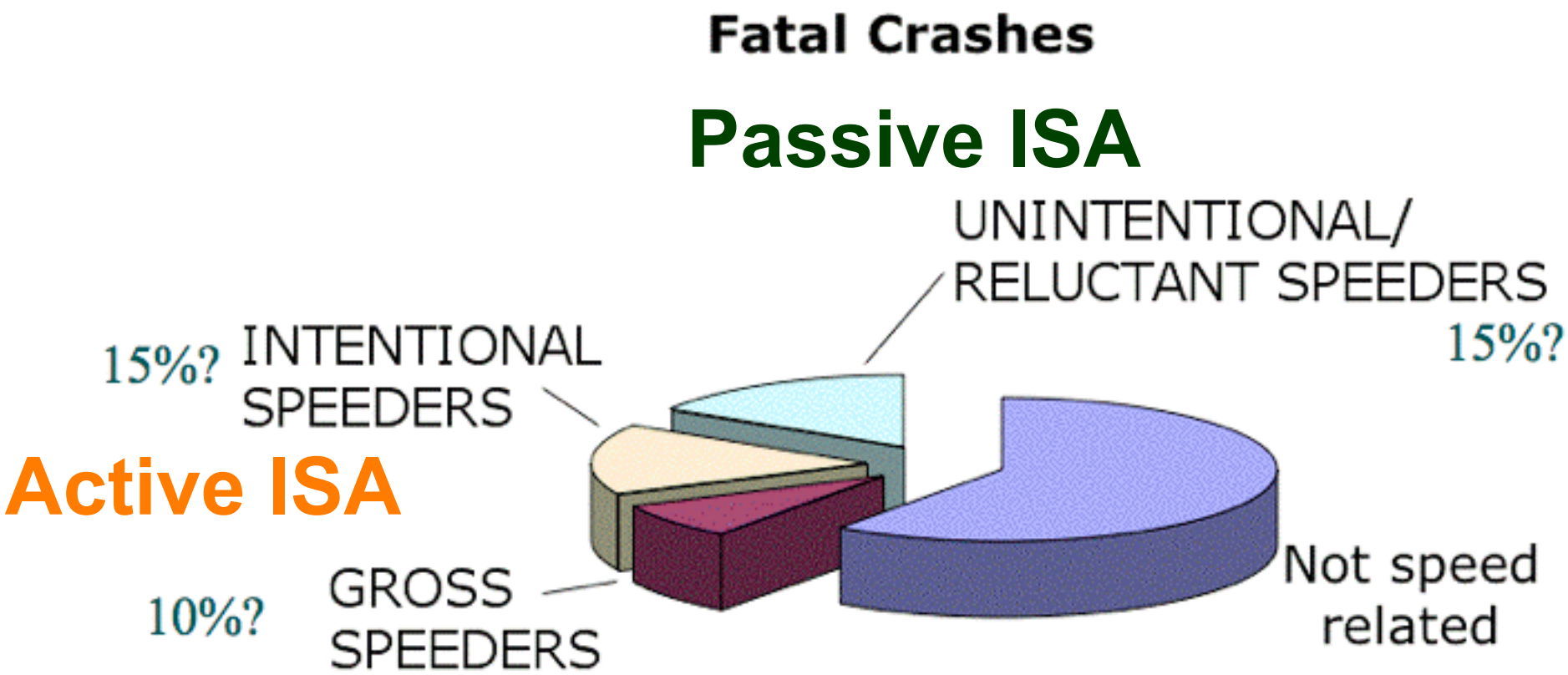
- **SpeedAlert** - software for PDA or Smart Phone
  - Sydney Metropolitan area (released in August 2006)
  - Other cities available soon
- **Speedshield** is a passive/active ISA that has been developed by a Melbourne company



While ISA trials continue in Europe and Canada,, Australia has taken the next step - Passive and Active ISA can now be purchased in Australia. SpeedAlert is a passive ISA. Speedshield is an active ISA that can also operate as a passive system.

You will hear more about these innovative, world-leading products from other speakers

# Speeding and Fatal Crashes




40% are speed-related

Estimated effectiveness of 80% (Regan 2003) gives 30% saving

Returning to the potential accident savings, it is estimated that 40% of fatal road accidents in NSW are speed-related. An informed guess is that about 15% of these are unintentional or eleuctant speeders who would be assisted by a Passive ISA. The remainder intentionally speed and the best countermeasure would be Active ISA (which includes top-speed limiting and can include some monitoring functions. Based on MUARC research there is potential for a 30% reduction in fatal accidents through ISA technologies.

**“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