SAVING LIVES: THE SUCCESS AND FUTURE OF ROAD SAFETY IN AUSTRALIA

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Towards Zero

- Enforcement of road rules
- Understanding traffic and laws
- Safe speeds
- Human tolerance to physical force
- Education and education
- Enforcement of road rules
- Understanding traffic and laws
- Safe speeds
- Human tolerance to physical force
- Education and education
On the 19th of March 2009 the Western Australian Minister for Road Safety announced to Parliament:

(Today) will mark the point at which we redefined the way we approach road safety in our state. ... Towards Zero is our bold new road safety strategy for Western Australia, and its core theme is that we should never accept road trauma as a fact of life.

OBJECTIVES

• To describe past road safety efforts

• To anticipate what countermeasures we might see under *Towards Zero*

• To apply *Towards Zero* road safety countermeasures to the young driver problem
No. of road fatalities, Australia 1950-2008.

1969 – ADR seat belts in new cars
1973 – compulsory seat belt wearing in all Aus
1976 – random breath testing in Vic
1988 – the first 3 speed cameras in WA
1990 – Black Spot program launched
1990s – joint enforcement/publicity partnerships
Late 1990s - 50 km/h urban speed limit
1990 – Black Spot program launched


No. of fatalities

0 500 1000 1500 2000 2500 3000 3500 4000

years
A systematic approach to road safety ...Haddon’s matrix

<table>
<thead>
<tr>
<th>Phase</th>
<th>Host (human)</th>
<th>Vector (vehicle)</th>
<th>Physical Environment</th>
<th>Sociopolitical Environment</th>
</tr>
</thead>
</table>
| Pre-crash | 1. Introduction of random breath testing in Victoria (1976) - and thereafter in other jurisdictions.  
4. A series of State and Territory Road Safety Strategies, especially from the 1980s onwards |
| Post-crash | | 1. Automated mayday systems | | |

No. of road fatalities, Australia 1950-2006.
The need for a new strategy ...

November 2003: Australasian jurisdictions accepted that the greatest road safety gains would be achieved by adopting a Safe System approach.

- Subsequently reflected in the national strategy and action plans
- ... and in State plans, as evidenced by *Towards Zero*
There is no such thing as THE Safe System ...

But rather, there are varieties:

- The Swedes have *Vision Zero*
- The Dutch have *Sustainable Safety*
- Australia has *Safe System*
- New Zealand has ... something
- The WAussies have *Towards Zero*

A Safe System strategy is ...

A two-fold philosophical statement:

- It is not acceptable for a road user to be killed or maimed for making a mistake
- It is an ethical imperative to pass on the safest possible system to the next generation
The Sanctity of Life??

Consider the changes in speed limits on the US interstate highways:

- **1987-1988, 40 states in the USA raised the speed limit on interstate highways from 55mph to 65mph**

- **Result:**
  - Increased speeds (3mph average)
  - Increased deaths (20-25 percent)

*(TRB, 1998)*

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The Sanctity of Life??

Closer to home: speed limits

<table>
<thead>
<tr>
<th>Road Type</th>
<th>Speed limits (km/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Western Australia</td>
</tr>
<tr>
<td>Local streets</td>
<td>50+</td>
</tr>
<tr>
<td>Other urban streets</td>
<td>60+</td>
</tr>
<tr>
<td>Undivided roads (low quality)</td>
<td>100</td>
</tr>
<tr>
<td>Undivided roads (good quality)</td>
<td>100-110</td>
</tr>
<tr>
<td>Motorways/divided roads</td>
<td>100-110</td>
</tr>
</tbody>
</table>
A Safe System strategy is ...

An operational statement:

• Crashes will always occur

• BUT the system must be designed to ensure that crash energies do not exceed the level at which irrecoverable injury occurs

A Safe System strategy is ...

A recipe for managing the impact speeds/crash energies:

EITHER
Prevent the impact/separate the road user groups

OR

Maximum permissible impact speeds:

• Car/pedestrian 30 km/h
• Car/motorcyclist 30 km/h
• Car/tree or pole 40 km/h
• Car/car (side-impact) 50 km/h
• Car/car (head-on) 70 km/h
A Safe System strategy is ...

A management structure:

- A lead agency that assumes overall responsibility and coordination
- Enlistment of all agencies that have an interest in a safe transport system – and that leads to a pretty comprehensive collection of bedfellows as fellow supporters

The road user in a Safe System approach

Find the road user???
Re-structuring the road user problem

- Scenario – a driver crashes into a telephone pole

- The ‘old’ question: why did that idiot crash into the pole?

- The additional ‘new’ question: what idiot put that pole there to be crashed into?

The Dutch have put it more eloquently:

- the road user is the weakest link in the transport chain: the individual road user is largely unpredictable and cannot be relied upon to behave safely over the long term, education and information efforts notwithstanding.

Most safety efforts that aim to eliminate unsafe behaviours by directly targeting road users, cannot be sustained over the long term.
Re-structuring the road user problem

But:

- road users are expected to comply with road rules, need to demonstrate adequate skills (managed especially through licensing requirements) and can expect sanctions to control unacceptable driving and other behaviours.

An unsafe system

- if all road users complied totally with all road rules, fatalities would fall by around 50 per cent and injuries by 30 per cent;
- under optimum conditions therefore, around one-half of fatalities and 70 per cent of injuries would remain.

An stupid system?

‘A stupid system’ may be unfair but:

- Speeding - but fast cars … and so marketed;
- Vehicle incompatibility – have subsidised the purchase of many 4WDs
- Seatbelts and drink driving – the solutions are there but not implemented. Why?
- etc.

Towards Zero

What can we expect?
Savings from Towards Zero

Up to an estimated 15,000 deaths and serious injuries to be saved in the next twelve years:

- Safe roads, road sides: 25%
- Safe speeds: 29%
- Safe vehicles: 26%
- Safe road use: 20%

Current road toll: c3,000 KSI pa

Overview of some Towards Zero countermeasures

<table>
<thead>
<tr>
<th>Regions</th>
<th>Safe roads and road sides</th>
<th>Safe speeds</th>
<th>Safe vehicles</th>
<th>Safe road use</th>
</tr>
</thead>
<tbody>
<tr>
<td>All of Western Australia</td>
<td>Accident Black Spot and Safer Roads Programs</td>
<td>Enhanced enforcement</td>
<td>Crash avoidance and occupant protection countermeasures</td>
<td>Ongoing behaviour change programs</td>
</tr>
<tr>
<td>Metropolitan Perth</td>
<td>Safe System intersection transformation</td>
<td>Specific speed limit adjustments to match geographic priorities</td>
<td>Specific crash avoidance countermeasures to match geographic priorities</td>
<td>Targeted behaviour change programs</td>
</tr>
<tr>
<td>Regional Western Australia</td>
<td>Safe System transformation on key rural routes</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Remote Western Australia</td>
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</table>

But the specific actions yet to be released…
So what specific changes expected with Towards Zero?

First, expect more of the same!!!

- a continuation of many of the measures shown in the Haddon’s Matrix ... because they work.
- But with them alone, we are pretty much just treading water.

Towards Zero new countermeasures should aim to:

- prevent a crash from occurring OR
- to reduce the severity of that crash

through managing road, vehicle and speed – and their interactions while minimising the possible role of human error
It’s a big shopping trolley ...

Road related:
- flexible wire barriers at centre, sides of roads
- flexible wire barriers to separate vulnerable road users
- roundabouts reduce impact speeds, alter crash types, simplify drivers’ decisions

Vehicle related:
- crash-avoidance technologies, from alcohol and seatbelt ‘locks to crash-warning devices, to automated vehicle control
- other technologies to reduce injuries in the event of a crash (crumple zones, improvements to seat belts and air bags etc)
- you name it – note the Volvo boast for 2020

Speed related:
- reduced speed limits near vulnerable road users, along high-risk road sections.

Technology will have a major role...

eg Electronic stability control:
- Compares the driver’s intentions (steering and braking) to the vehicle’s actual response. If needed, it will intervene to correct the vehicle’s path by applying brakes to individual wheels and/or reducing excess engine power.

IIHS study in the US
- ESC reduces fatal multiple-vehicle and single-vehicle crash risks by 32 percent and 56 percent
- if all vehicles had ESC, as many as 10,000 fatal crashes saved in US yearly – equivalent to almost one-third of all fatal crashes

Early supportive from Aus/NZ.
What might be achieved:

Volvo have promised an injury-proof car by 2020!!!

... and on that optimistic note: Peter!

The Young Driver problem

v’s

The problem young driver

Who is at risk?
The Young Driver Problem...

Deaths per 100,000 population in individual age groups for drivers; Australia 1980-2008
(Source: Road Deaths Australia 2006 and 2008 Statistical Summary, DITRDLG)

Young Drivers in Western Australia...

- Drivers aged 17-24 represent ~14% of licensed motor car drivers but in 2002-2007 accounted for:
  - 30% of drivers killed
  - 31% of drivers admitted to hospital
  - 29% of drivers requiring medical attention
Young driver crashes are highest in the earliest period of licensing...

Police recorded crash involvement rate for drivers (pre-GDTL) first licensed at 17 years of age; by month of licensure 60 months post licensing

Predominant young driver traffic offences....

- Speeding
- Failure to wear seat belts
- Failure to give way/Traffic light offence
- Drink driving
- Unlicensed driving
Predominant young driver crash types

- Single vehicle, run off road, loss of control crashes
- Higher speed crashes
- Failure to give way
- Night-time crashes
- With peer passengers
- With alcohol

Young driver risk factors for traffic offences, crashes and injury

- Inexperience
- Biological and developmental immaturity
- Personality or behavioural dispositions
- High level of exposure to environmental and driving conditions of higher risk
- Use of ‘low tech’ vehicles
How can we address these risk factors using the cornerstones of the Western Australian Toward Zero strategy?

The cornerstones of the Toward Zero strategy for young driver countermeasures:

- Safe road use
- Safe vehicles
- Safe speeds
- Safe roads and roadsides
SAFE ROAD USE (1)
Increasing experience and skill
- Early entrance to L’s [16 yrs]
- Minimum L periods [6 months]
- Extended L-permits [3 yrs]
- Increased hours of supervised L driving. Minimum v’s ideal hours? 25 v’s 120 hrs

SAFE ROAD USE (2)
Increasing experience and skill
- Insight-oriented training
- Valid and reliable assessments prior to solo driving
- Raising the licensing age and increasing maturity? But to what age and down to what risk?
SAFE ROAD USE (3)

‘Graduating’ exposure to risk when ‘solo’

- Zero alcohol level
- Night-time driving restriction
- Peer passenger restriction?
- Legislation to restrict access to high performance vehicles or sensible self-regulation?

SAFE ROAD USE (4)

Managing on-road behaviour

- Reduced demerit points
  - Max. 4 point in 1st year, 8 points 2nd year
- ‘Vehicle confiscation
  - Hoon legislation
  - Unlicensed driving
- Mandatory carrying of licence?
- Total ban on mobile phone use to reduce distraction?
Safe Vehicles (1)
Promoting the ‘uptake’ of safer vehicles to reduce crashes
- Crashes resulting from speeding, loss of control, distraction, alcohol, and close following
- Intelligent Speed Adaptation; stability control; traction control; following distance warning; forward crash warning; ABS; driver distraction warning; alcohol interlocks; Ford’s ‘MyKey’ system

Safe Vehicles (2)
Promoting the ‘uptake’ of safer vehicles to reduce injury
- Improved occupant protection
- Seat belt pre-tensioners; seat belt interlocks; multiple front, side, curtain airbags
Safe Vehicles (3)

How do we move the most at risk drivers into the safest cars?

- Continue the education re safe cars
- Trickle down of new technology through to the affordable used car market via government purchasing
- Insurance and licensing incentives
- Is there a role for legislation as opposed to self-adoption? The issue of ‘equity’.

Safe Speeds (1)

Safe speed management and enforcement measures

- Vehicle speed limiting, ie, MyKey system
- Black box recording systems
- GPS monitoring
- Intelligent Speed Adaptation
- Enhanced speed enforcement during peak periods for young driver speeding? eg; weekend nights
Safe Speeds (2)

Safe speed management and enforcement measures

- Demerit pts for low level speeding to reinforce and make consistent the message of safe speeds
- Recidivist speeder program
- Vehicle restrictions. Does high performance necessarily mean higher speeds?

Safe Roads and Roadsides (1)

How can the roads be engineered to account for young driver:

- errors
- risk taking
- use of vehicles of lower crash worthiness
Safe Roads and Roadsides (2)

Countermeasures include:
- Sealed shoulders and wire rope barriers to reduce run off road and injury
- Road separation to reduce conflict
- Right-turn only with arrows at controlled intersections
- Reduced intersection speeds and associated camera monitoring of speeds
- Road markings to ‘guide’ safe following distances (intersection approaches)

Safe System approach to young and novice drivers requires:

• Commitment and collaboration from legislators and road safety stakeholders
• The development of an evidence-based whole-of-community strategy on ‘what to do’, ‘how to do it’ and ‘how to evaluate it’
• The development of a new culture for young driver standards and safety