

10 Years to Change Our World

TRAFINZ Conference

Wellington, September 5 - 9, 2010

“Changing Mindsets Now to Slash Fatalities to 2020 and Beyond”



Eric Howard & Associates

Changing Mindsets Now to Slash Fatalities to 2020 and Beyond



Changing Mindsets Now to Slash Fatalities to 2020 and Beyond

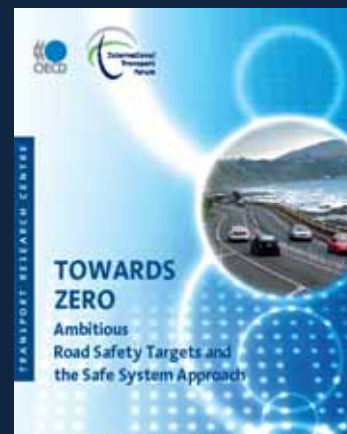
SAFE SYSTEM

- A changed approach to road safety
- Framework to understand and apply safety on road network
- Remarkable benefits if understood, embraced and applied
- Major change in traditional approach to road safety
- Challenge to win understanding/ acceptance by stakeholders and community

Changing Mindsets Now to Slash Fatalities to 2020 and Beyond: SAFE SYSTEM

Optimistic about opportunities it offers.

1. OECD/ITF *"Towards Zero"* Report
2. Australian Road Safety Strategy Action Plans to 2010
3. Sweden's *"Vision Zero"*
4. Netherlands *"Sustainable Safety"*
5. Western Australia's *"Towards Zero"*
6. *"Decade of Action"* - 50% target



Changing Mindsets Now to Slash Fatalities to 2020 and Beyond

Road Safety in New Zealand today

- **8.6 fatalities / 100,000 (2008)**
- **> Double rate for Sweden and Netherlands, higher than Australia (6.9 – 2008)**

“Traditional” areas of opportunity for NZ

- **0.05 BAC legal limit**
- **Increased licensing age**
- **Extended GLS**
- **Improved vehicle safety**
- **General road investment and blackspot programs**
- **Compliance**

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New Zealand’s New Strategy – Signals a new approach



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New Zealand's SAFE SYSTEM Approach



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Developing a safe system

What is a *safe system* of road use?

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When road users cannot be killed or seriously injured on the network.

- Human life and health are paramount
- Individuals have a right to survive
- Crashes always likely to happen, even with continuing focus on prevention.
- Minimize severity of injury in a crash
- **Road users should not die because of system failings.**
- Driving force needs to be demand from the public

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What does that require us to do?

- Safe system - a new, very different approach – *a framework for long term elimination of serious casualties.*
- Much realignment in our thinking is necessary if we are to embrace and apply it.
- Provides many 'levers' for action

How will we do it?

What are the important steps?

Changing Mindsets Now to Slash Fatalities to 2020 and Beyond - towards a Safe system - *Five steps*

- **Understand the way the system elements interact and the key major crash injury risks – *biomechanical tolerance limits***
- **Recognise/ reflect on the ways of operating that make the current system unsafe. *Accept human beings make mistakes.***
- **Envisage ways to redesign the system to make crashes *survivable* – *the elimination goal***

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- **Reflect on need for “*shared responsibility*” across users and system managers**
- **Consider how to manage to achieve required change over time, including informing and achieving acceptance by practitioners, senior bureaucrats, Ministers and the public of this thinking**

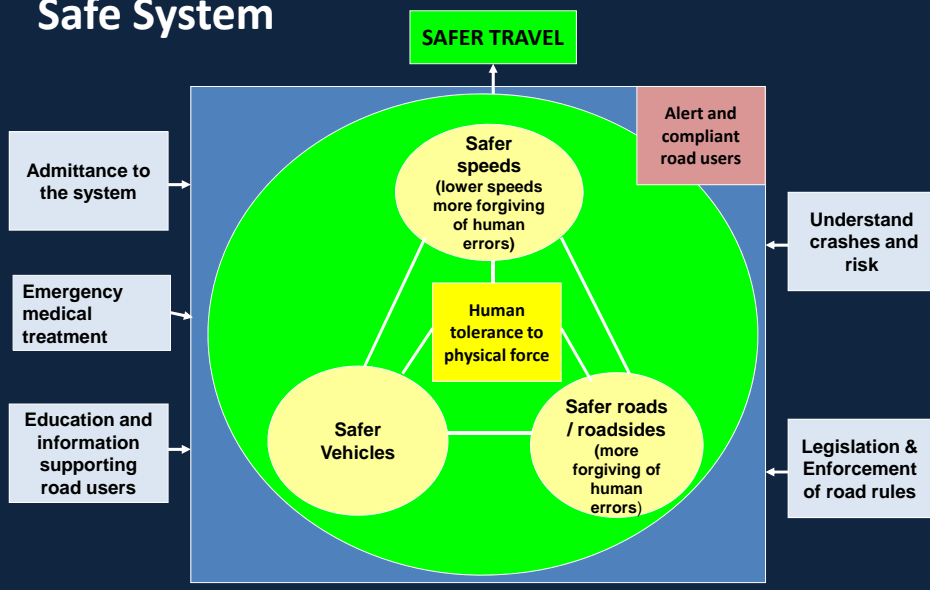
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ONE: Understand the way the system elements interact - and the crash outcome risks

- There are biomechanical tolerance limits
- Focus on injuries not crashes

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Safe System



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TWO: Recognise the ways of operating that make the current system unsafe. Humans make mistakes.

SOCIETY

Reliance on perfect behaviours by a driver/ rider (doesn't support those complying in other vehicles who could be affected)

1. Permissive attitude to speeding
2. Accepting that some drivers will have alcohol in their system (below legal limits) when driving
3. Accepting driver fatigue
4. Placing convenience above safety in travel

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Recognise the ways of operating that make the current system unsafe. Humans make mistakes.

AUTHORITIES

Practices by authorities that result in inadequately safe outcomes.

3. Inadequate graduation of novice driver exposure to risk as they gain experience
4. Permitting too low a licensing age.
5. Traditional approach – road authorities have striven to *improve safety while maintaining desired mobility*
6. Permitting inappropriate travel speeds for the safety characteristics of the length of road and roadside (Head on crash risk, intersection crash risk, pedestrian crash risk, run off road crash risk)
7. Permitting land use development without considering (and offsetting) negative impacts on safety on the adjacent network



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Recognise the ways of operating that make the current system unsafe. Humans make mistakes.

AUTHORITIES

Practices by authorities that result in inadequately safe outcomes.

- 8. Inadequate deterrence of freight transport risks – especially fatigue**
- 9. Insisting on speeds of travel for buses in urban areas where pedestrians present, greater than 40 km/h**
- 10. Permitting imports of new vehicles which meet ADR standards but are less than 4 star ANCAP rated.**
- 11. Extending urban clearways (lengths and times) to improve capacity (OK) but increasing travel speed to less safe levels.**

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Recognise the ways of operating that make the current system unsafe. Humans make mistakes.

AUTHORITIES

Practices accepted by authorities that result in inadequately safe outcomes.

12. Developing improved licensing systems which focus on customer service but increase cost barriers for analysis of offence trends.
13. Removal of safety regulations/ legislation which increases risk (eg., removal of DRL requirement for motorcycles in Australia)
14. Based on industry lobbying, failing to support safety programs (eg., lack of ANCAP support by Australian government until 2009, Victoria withdrawing from mid 1990s to 1999.)
15. Metrication of urban speed limits in Australia in the 1970's resulting in rounding up of limits – ie. 35 mph (56 km/h) becoming 60km/h - rather than 50 km/h.

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Recognise the ways of operating that make the current system unsafe. Humans make mistakes.

AUTHORITIES

Practices accepted by authorities that result in inadequately safe outcomes.

16. Lack of injury insurance premium differentiation for risk/ safety
17. Installing bicycle use schemes in urban centres without considering helmet wearing requirements
18. Permitting hands free phone use while driving
19. Failure to confront the issue of top speeds of vehicles that are double legal limits

Changing Mindsets Now to Slash Fatalities to 2020 and Beyond

Recognise the ways of operating that make the current system unsafe. Humans make mistakes.

EMPLOYERS

Practices by employers that are not adequately safe.

- 1. Failing to provide staff with safer vehicles as they become available (ANCAP ratings)**
- 2. Work practices that require fatigue limits to be exceeded**
- 3. Expecting staff to take and make phone calls while driving**

Changing Mindsets Now to Slash Fatalities to 2020 and Beyond

Recognise the ways of operating that make the current system unsafe. Humans make mistakes.

- Safety usually squeezed out by economic interest, inconvenience and inattention**
- Impacts often fall disproportionately on more vulnerable - young, old, marginalised**
- Conditioning by environment – eg. Growing up in rural areas, loss of life on the road was part of price for necessary mobility!**

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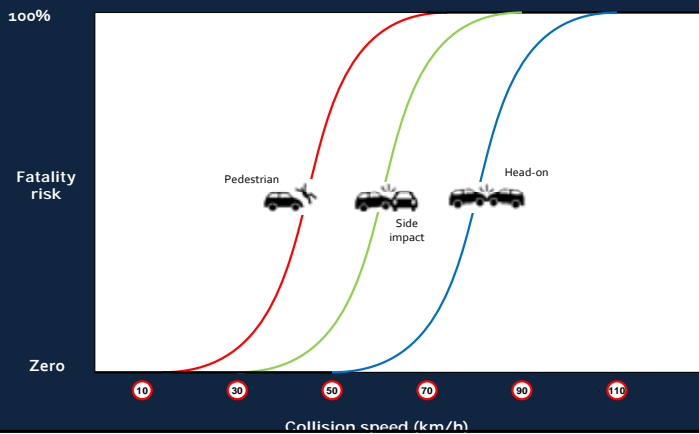
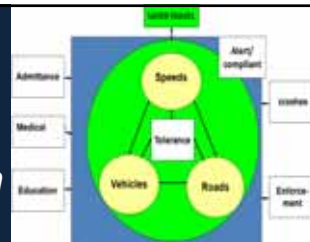
THREE: Envisage ways to redesign the system to make crashes survivable – the elimination goal

- Completely new design philosophy for roads and streets
- Speed limit related to biomechanics and road crashworthiness
- Integrated model for safe traffic

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Redesigning the system to make crashes survivable - the elimination goal

Safe System – Crash types and indicative fatality risk at speeds:
(from P. Wramborg, 2005)



Changing Mindsets Now to Slash Fatalities to 2020 and Beyond

Redesigning the system to make crashes survivable - the elimination goal

Safe system speed/ vehicle and infrastructure principles

- Vulnerable road users not exposed to vehicles at speeds exceeding 30 km/h. Separate or reduce speeds to 30 km/h
- Car occupants not exposed to other vehicles travelling at speeds exceeding 50 km/h at intersections.
- Car occupants not exposed to oncoming traffic at speeds exceeding 70 km/h
- Car occupants not exposed to road side in speeds exceeding 60 km/h if road side contains trees or other narrow objects

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KiwiRAP – Analysis of risk on rural highway network

Star Rating results for New Zealand rural state highway network

	1 - star	2 - stars	3 - stars	4 - stars	5 - stars
By Length (10,002 km)	0%	39%	56%	5%	0%
By Vkt. (Travel)	0%	33%	40%	28%	0%

Changing Mindsets Now to Slash Fatalities to 2020 and Beyond - *Redesigning the system to make crashes survivable – the elimination goal*

MEASURES ?

- **Infrastructure safety measures** – good analysis; need funding and executive support for network based action

\$150m. per year additional safety based works – 8 lives pa
(80 lives a year by year 10)

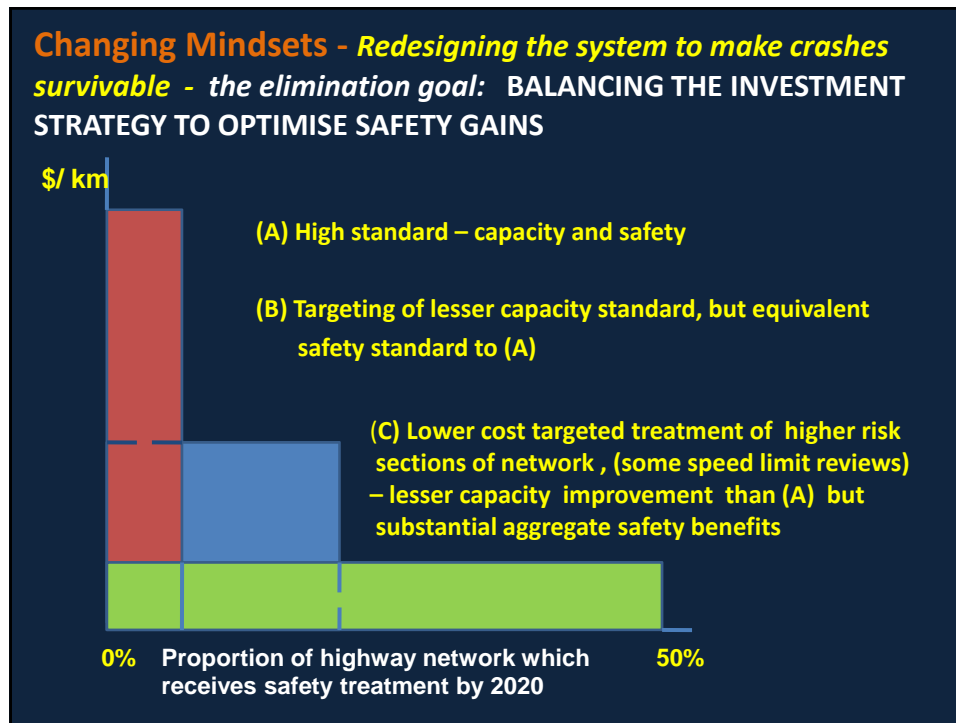
- **Safe speeds** – limits based on safety, especially higher risk locations
 - coordination of road design/speedReduced limits in targeted higher risk situations

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Redesigning the system to make crashes survivable - the elimination goal

RONs – extent/ standard/ options.

Balanced infrastructure investment ? – seeking optimum capacity and safety treatment type for extensive coverage of network with available funds - next 10 years.



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- *Redesigning the system to make crashes survivable - the elimination goal*
- Duplication ?
- 2 +1 ?
- Minor works along long lengths of major routes ?

Changing Mindsets Now to Slash Fatalities to 2020 and Beyond - Duplication



Changing Mindsets Now to Slash Fatalities to 2020 and Beyond - 2 + 1





Changing Mindsets Now to Slash Fatalities to 2020 and Beyond - *Redesigning the system to make crashes survivable – the elimination goal*

REVIEWS OF SPEED LIMITS - WHERE INFRASTRUCTURE SAFETY IS NOT TO BE IMPROVED – A CRITICAL OPTION

- Lowering, say, 100 km/h limits to 90 km/h will reduce mean speeds by 4 to 5 km/h. Will deliver **20%+ saving in fatalities** on those lengths of roads. (Require enforcement support)
- Speed management is at the centre of developing a safe road system
- Public are blind to the risks of kinetic energy

Changing Mindsets Now to Slash Fatalities to 2020 and Beyond - *Redesigning the system to make crashes survivable – the elimination goal*

MEASURES ?

- **Vehicles** – strengthen vehicle safety standards for imports.
 - promote safer new and used cars to public
 - promote new technologies to public

(60 lives a year by year 10)

Changing Mindsets Now to Slash Fatalities to 2020 and Beyond - *Redesigning the system to make crashes survivable - the elimination goal*

PROMOTE BETTER PERFORMING SAFER USED CARS TO PUBLIC

- **“First Car List” (Vic)** provides new drivers (and their parents) with safety information to inform first vehicle purchasing decisions for under \$15,000
- **MUARC study** – 60% of incidents where young drivers killed or seriously injured avoided if in a safer car of same age as in crash.
- **See** http://www.arrivealive.vic.gov.au/initiatives/safer_vehicles/the_first_car_list/the_/the_list.html?#

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MEASURES ?

•Road users: - legislation/ more enforcement

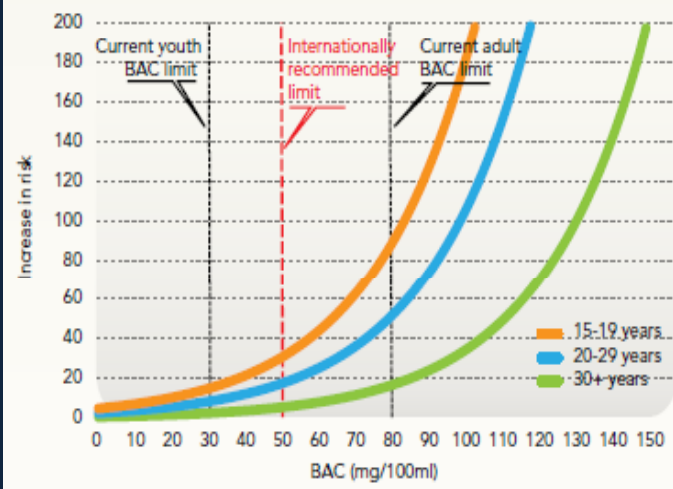
Good practice opportunities

Alcohol

- 0.05% BAC (25 lives a year)
- Zero BAC for public transport vehicles and heavy vehicles

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Figure 8: Relative risk of fatal crash by blood alcohol level



Changing Mindsets Now to Slash Fatalities to 2020 and Beyond - *Redesigning the system to make crashes survivable - the elimination goal*

MEASURES ?

- **Road users: - legislation/more enforcement**

Good practice opportunities

GLS

- **Licenses at 18 years (20 lives a year)**
- **4 year probationary period with restrictions & zero BAC (4 lives a year)**

Speed Compliance

- **Expanded hours (50%) of covertly operated mobile cameras (45+ lives a year)**

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Relationship between speed changes and changes in casualty rates (Elvik et al 2004)

Change in mean speed	Speed reduction			Speed increase		
	-10%	-5%	-1%	+1%	+5%	+10%
Change in:						
Deaths	-38%	-21%	-4%	+5%	+25%	+54%
Serious injuries	-27%	-14%	-3%	+3%	+16%	+33%
Other injuries	-15%	-7%	-1%	+2%	+8%	+15%
Property damage crashes	-10%	-5%	-1%	+1%	+5%	+10%

Speed variation has greater effect upon more severe crashes

**Changing Mindsets Now to Slash Fatalities to 2020 and Beyond -
Redesigning the system - the elimination goal**

Interventions	Lives saved by 2020	Annual fatalities in 2020 (385 in 2009)
Road user compliance measures	780	-75
Infrastructure safety	400	-80
Vehicle safety	250	-60
Speed limit (Targeted adjustments)	60	-12
Other net effects including increased traffic	(380)	(+38)
TOTAL	1100	- 189

1100 lives saved via Safer Journeys strategy to 2020. Fatalities reduced to 189 in 2020, a 50% reduction – if measures implemented
Vehicle safety, infrastructure, speed limit reviews, user compliance legislation and enforcement, emergency medical system improvements - would deliver!

Changing Mindsets Now to Slash Fatalities to 2020 and Beyond - Redesigning the system to make crashes survivable - the elimination goal

- **Additional road user behaviour measures – Driver behaviour can be tackled through:**
 - limited access to vehicle
 - support for normal driving (eg., ISA)
 - warnings in risky driving (eg., LDW)
 - taking control in situations when driver is out of control



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Redesigning the system to make crashes survivable - the elimination goal

- **Ways to gain community support to implement these reductions need to be found.**

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FOUR: Reflect on the concept of “*shared responsibility*” across users and system managers

Changing Mindsets Now to Slash Fatalities to 2020 and Beyond – **shared responsibility**

- Changed view of responsibilities away from a “blame the road user” emphasis
- Understand key factors involved in **crash causation and outcome severity.**

System managers/ designers

- Provide roads/ decide priorities
- Provide vehicles
- Set Speed limits
- Make road rules and road laws
- Decide land use planning (flows and access)
- Use network

Changing Mindsets Now to Slash Fatalities to 2020 and Beyond – shared responsibility

System managers/ designers

- Enter contracts for supply of transport services
- Enforce compliance
- Employ drivers to use the road network in their work
- Operate emergency health system
- Provide injury insurance coverage
- Take bureaucratic and political decisions
- Operate professional bodies which set expectations
- Operate motoring clubs/ industry associations

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FIVE: Consider how to manage to achieve required change over time, including informing and achieving acceptance by practitioners, senior bureaucrats, Ministers and the public of this thinking

Changing Mindsets Now to Slash Fatalities to 2020 and Beyond – Managing to achieve required change

- Road safety management arrangements - for institutions/ individuals – focused on outcomes
- Integrated government decision making
- Knowledge transfer strategies/ actions for government and community
- Active influencers
- Adequate funding
- A robust Safety Performance Framework

Changing Mindsets Now to Slash Fatalities to 2020 and Beyond - Integrated government decision making



Changing Mindsets Now to Slash Fatalities to 2020 and Beyond

Robust knowledge transfer arrangements - essential :

- Within organisations
- LG and NGO's
- Senior bureaucrats
- Parliamentarians
- Elected members in local authorities
- Senior people in agencies are crucial change agents, *gatekeepers* for advice to Ministers. Need to be well informed about science/ research/ evidence
- Do senior people in key agencies have sufficient knowledge to successfully advocate necessary change – with public, with Ministers?

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Major knowledge transfer required to public

- Consider use of *Demonstration Projects* to support building community awareness
- Talk with the public about infrastructure safety standard/ speed limit combinations and resultant risk levels on the network
- Build understanding of risks/ solutions through this dialogue

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Active Influencers

- **Advocating change is challenging**
- **Government promoting vehicle safety information to public**
- **Working with the public health industry**
- **Advocacy within government and to public by senior officers, build confidence that change is manageable**
- **Seek other partners (eg., professional associations)**

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Active Influencers

Injury Insurance system opportunities

- **Incentives in premiums to encourage safer vehicles/ safer behaviours**
- **Investing in infrastructure measures to obtain a commercial return (perhaps in combination with government)**

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Funding

- National government, regional and local governments
- Insurers
- Net proceeds of expanded enforcement

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Successful delivery requires safety performance framework

All about accountability

- **Joint and individual agency responsibilities agreed**
- **Outcomes agreed , intermediate outcomes measured and regularly reported to government and public**

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Summary: Measures are available to at least halve fatalities by 2020. What is holding us back?

- Understand/ accept measures that safe system indicates will be successful – knowledge transfer task
- Coordinated effort – Cabinet/ senior officers/ LG and NGO's
- Get alongside community – help them to “come out of the dark”
- Drive innovation; Manage upwards
- Achieve step up in funding
- Accept accountability

Slash death and serious injury on NZ roads

10 Years to Change Our World

TRAFINZ Conference

Wellington, September 5 - 9, 2010

THANK YOU

“Changing Mindsets Now to Slash Fatalities to 2020 and Beyond”



Eric Howard & Associates

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ARTICLES OF THE TYLOSAND DECLARATION, SWEDEN, 2008

- 1. Everyone has the right to use roads and streets without threats to life or health**
- 2. Everyone has the right to safe and sustainable mobility: safety and sustainability in road transport should complement each other**
- 3. Everyone has the right to use the road transport system without unintentionally imposing any threats to life or health on others**
- 4. Everyone has the right to information about safety problems and the level of safety of any component, product, action or service within the road transport system**
- 5. Everyone has the right to expect systematic and continuous improvement in safety: any stakeholder within the road transport system has the obligation to undertake corrective actions following the detection of any safety hazard**