Crash prevention strategies: can the Trauma Services stand down?

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Injury 2002: Injury Trauma
Alexandra Park Function Centre
Green Land, Auckland, 8 August 2002

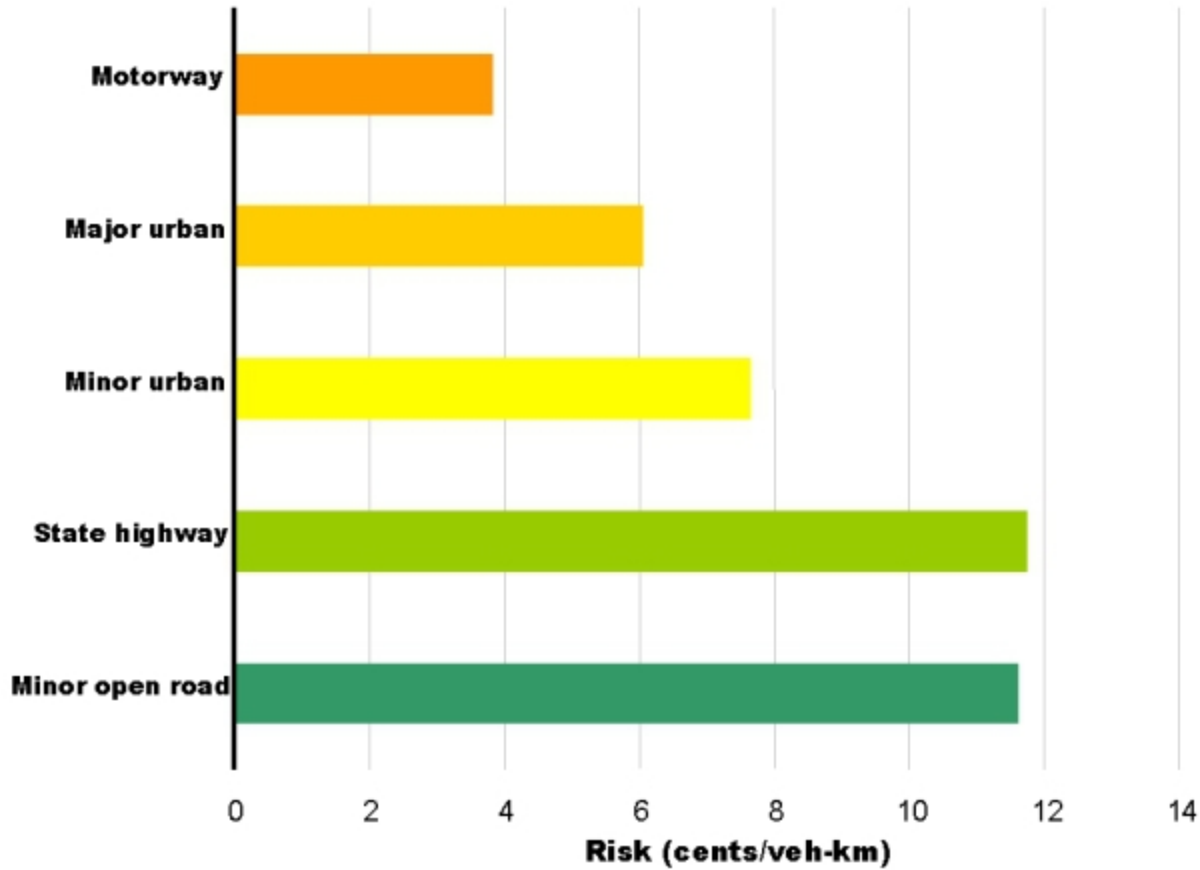
The social cost of deaths and injuries on our road network is still unacceptably high.

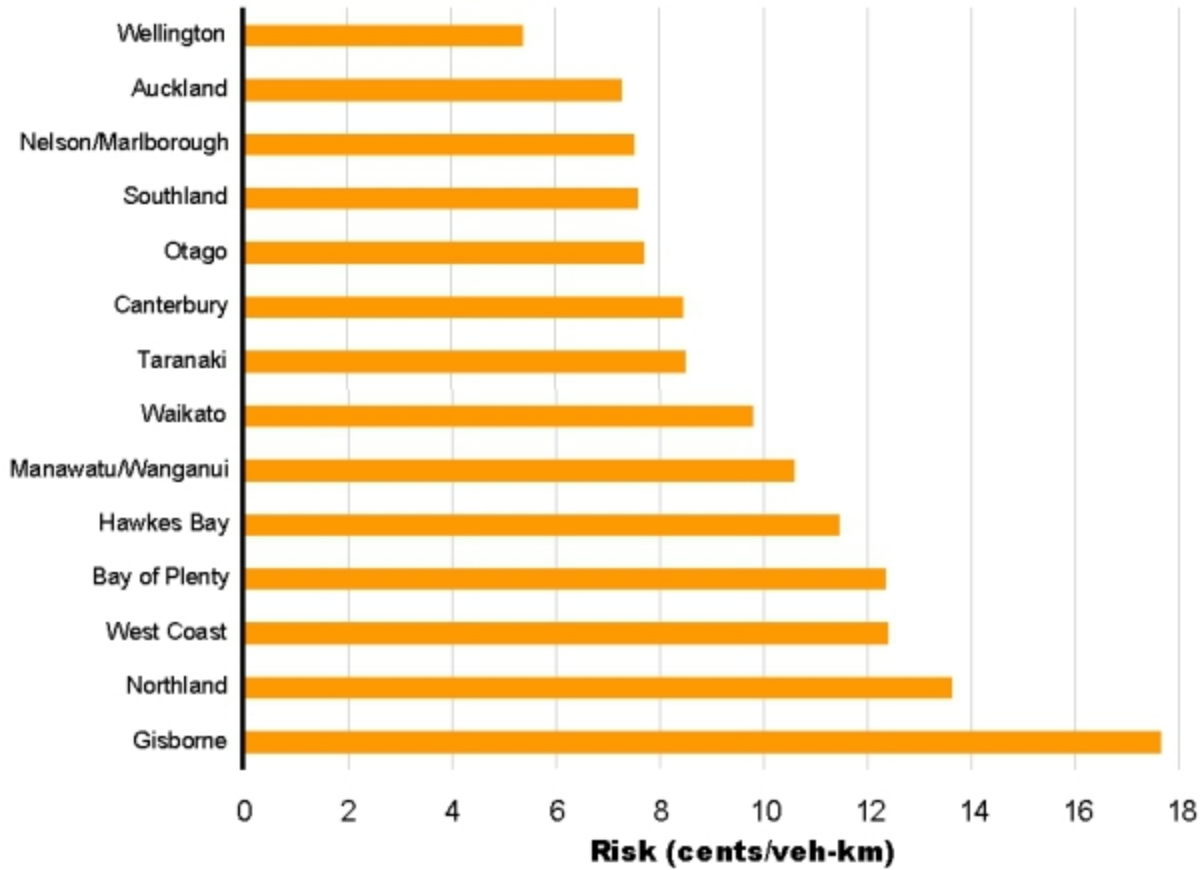
Some key statistics

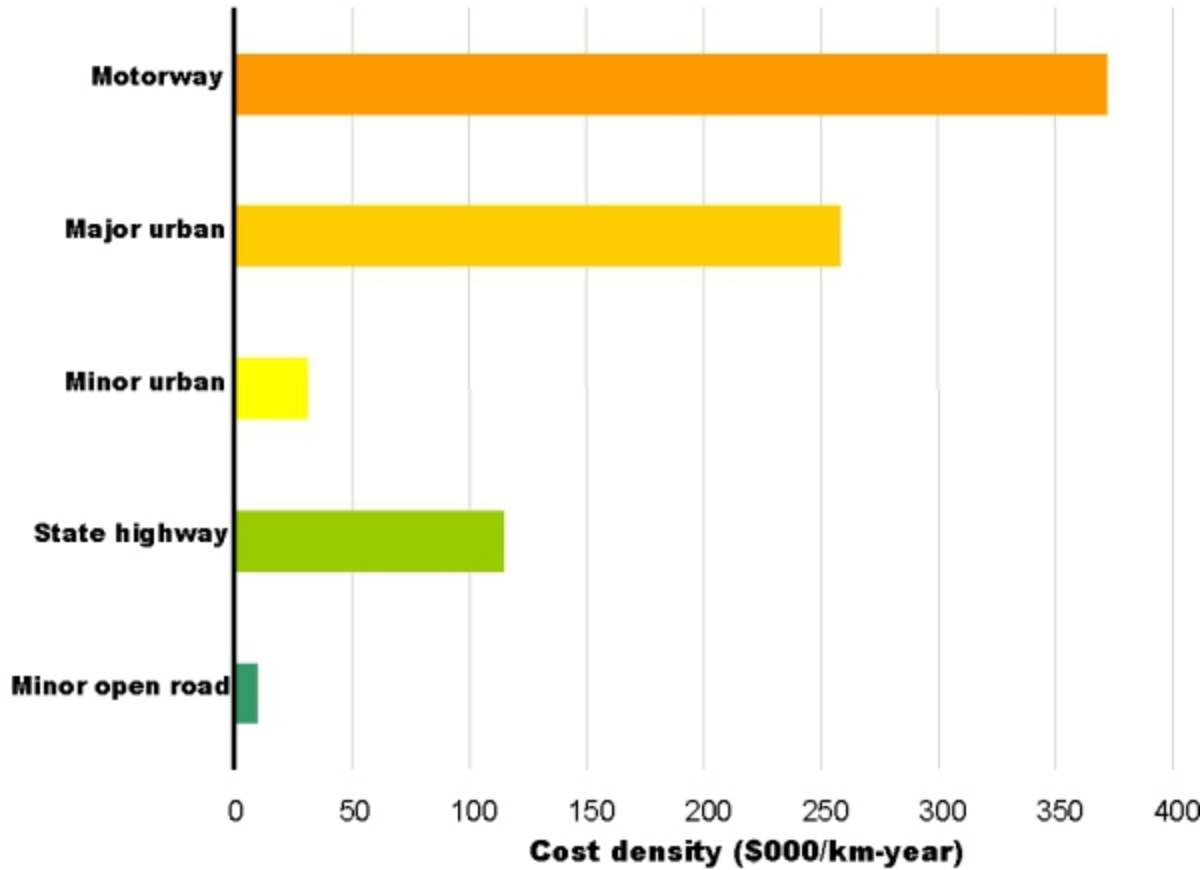
New Zealand has more than 90,000 kilometres of roads.

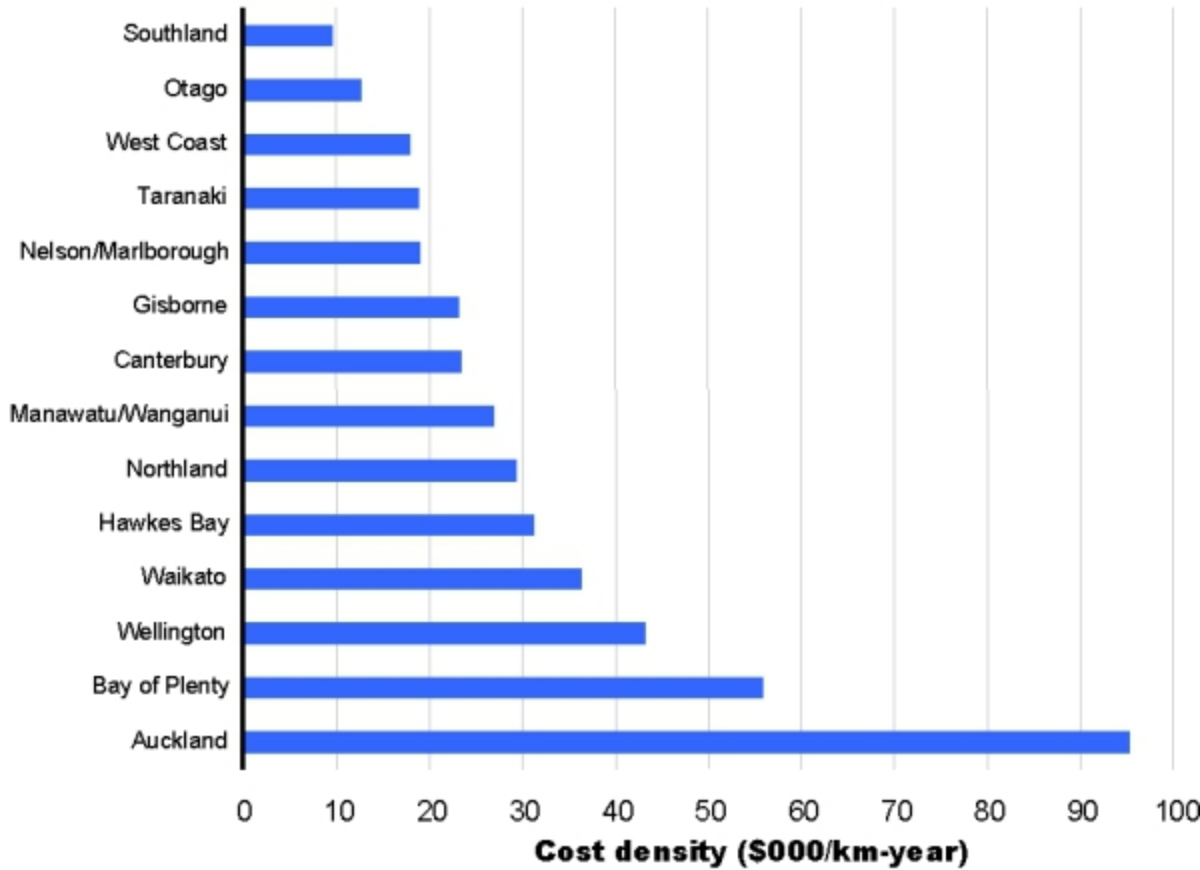
Annual traffic carried on these roads is about 38 billion vehicle kilometres.

The annual social cost of road crashes is nearly $3 billion.


Motorway
Major urban
Minor urban
State highway
Minor open road
0
2
4
6
8
10
12
14
Risk (cents/veh-km)


Wellington
Auckland
Nelson/Marlborough
Southland
Otago
Canterbury
Taranaki
Waikato
Manawatu/Wanganui
Hawkes Bay
Bay of Plenty
West Coast
Northland
Gisborne
0
2
4
6
8
10
12
14
16
18
Risk (cents/veh-km)


Motorway
Major urban
Minor urban
State highway
Minor open road
0
50
100
150
200
250
300
350
400
Cost density ($000/km-year)


Southland
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Northland
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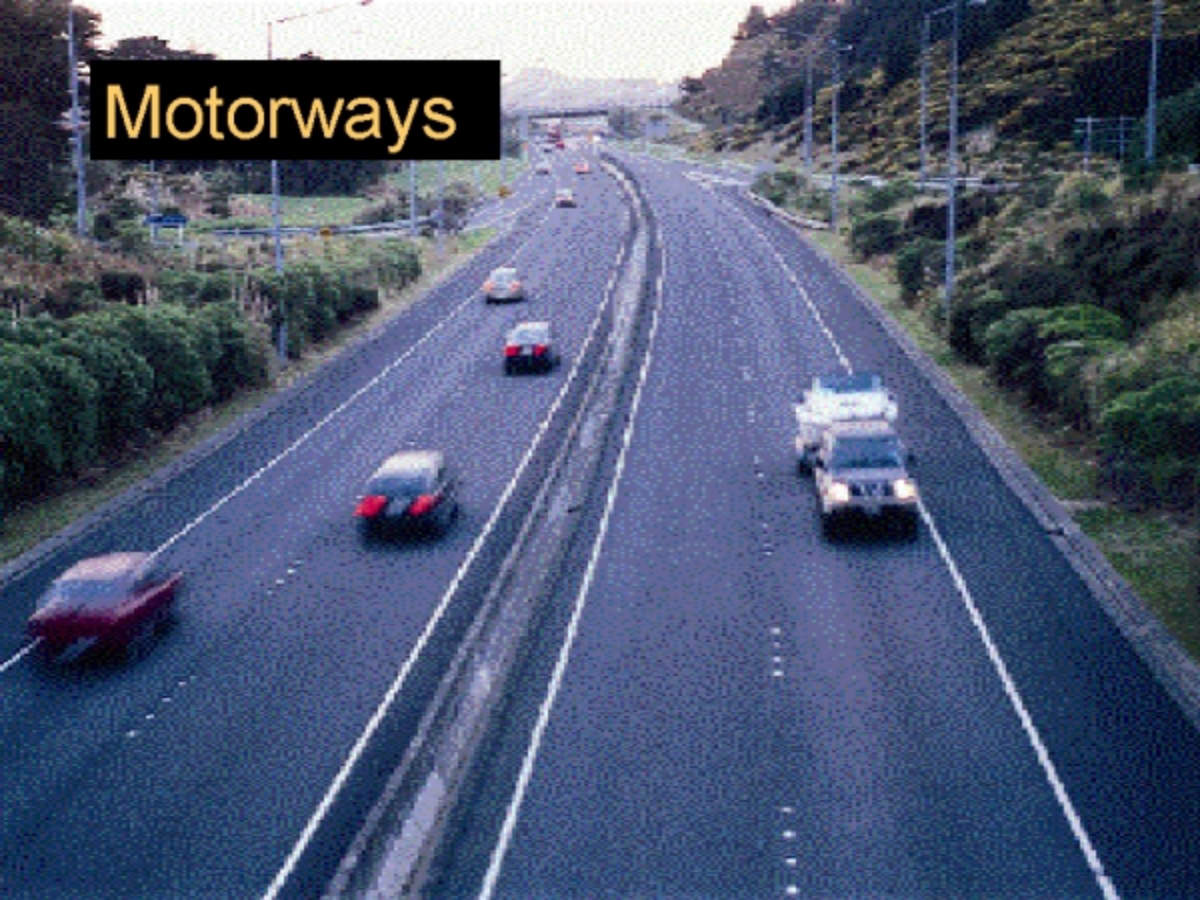
Cost density ($000/km-year)


Motorways

Motorways

4% of social cost and 9% of traffic on a tiny fraction of network length.

Because they carry so much traffic, they still have a high social cost per kilometre, suggesting that well targeted safety measures could be particularly cost-effective.


Major urban roads

Major urban roads

21% of social cost and 30% of traffic on 3% of network length.

Like motorways, they have a high social cost per kilometre. Many could be greatly improved, as they were never designed to carry their present volume of traffic.


Minor urban roads

Minor urban roads

13% of social cost and 15% of traffic on 13% of network length.

They carry about the same risk as major urban roads, but have a much lower social cost per kilometre, which makes them economically harder to treat.


State highways

State highways

39% of social cost and 29% of traffic on 11% of network length.

Since they account for so much social cost, no nationwide safety strategy is likely to succeed unless it improves them. Their high social cost per kilometre means any improvement will have a big pay-off.

Minor open roads

Minor open roads

23% of social cost and 17% of traffic on 73% of network length.

They are about as risky as state highways, but harder to remedy, since they have a much lower social cost per kilometre of road.

Over the last decade we have substantially reduced deaths and injuries on our roads.

Performance highlights

Road safety performance in New Zealand has shown continuous improvement over the last decade.

The incremental benefit-cost ratio of the total programme is high (around 10:1).

Deaths per 100,000 people reduced from 21.7 in 1990 to 11.2 in 2002.

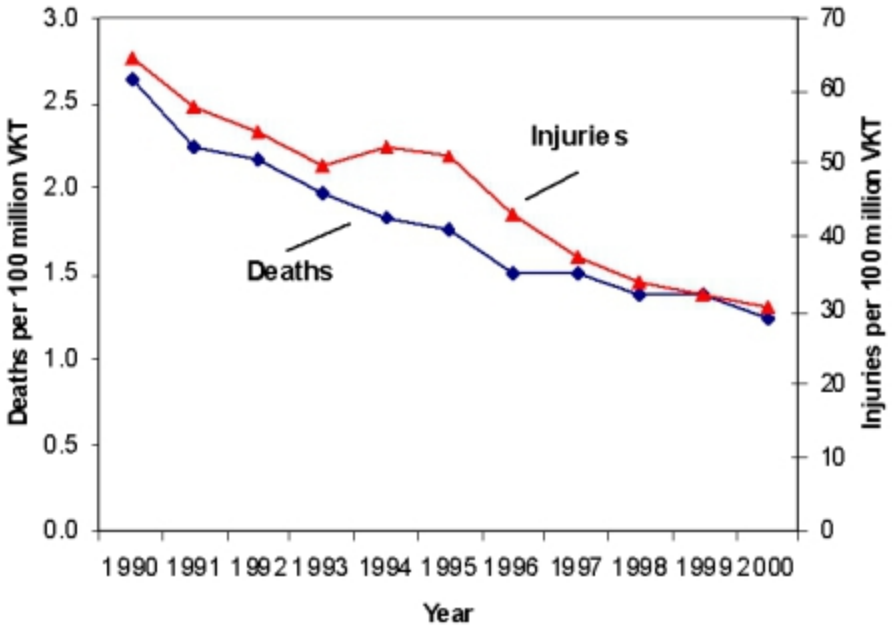
Performance highlights (cont'd)

Deaths per 10,000 vehicles
reduced from 3.6 in 1990 to 1.6 in 2002.

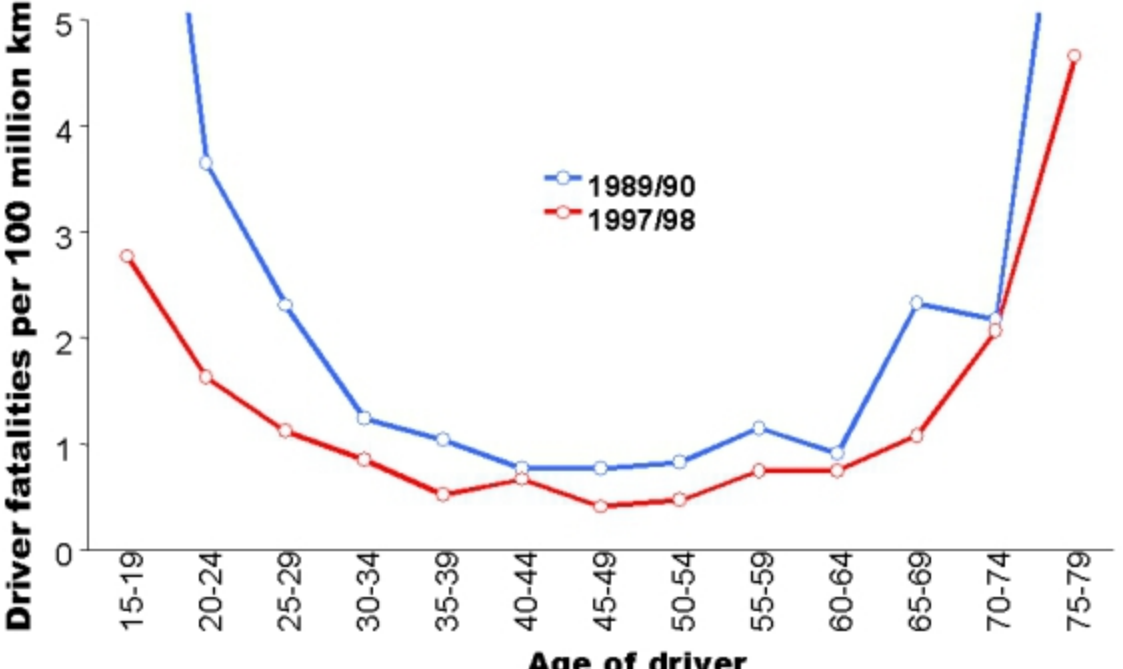
The percentage of dead drivers over the legal blood alcohol limit reduced from 46% in 1990 to 21% in 2002.

Key targets set by the National Road Safety Plan have been achieved and performance will continue to improve.

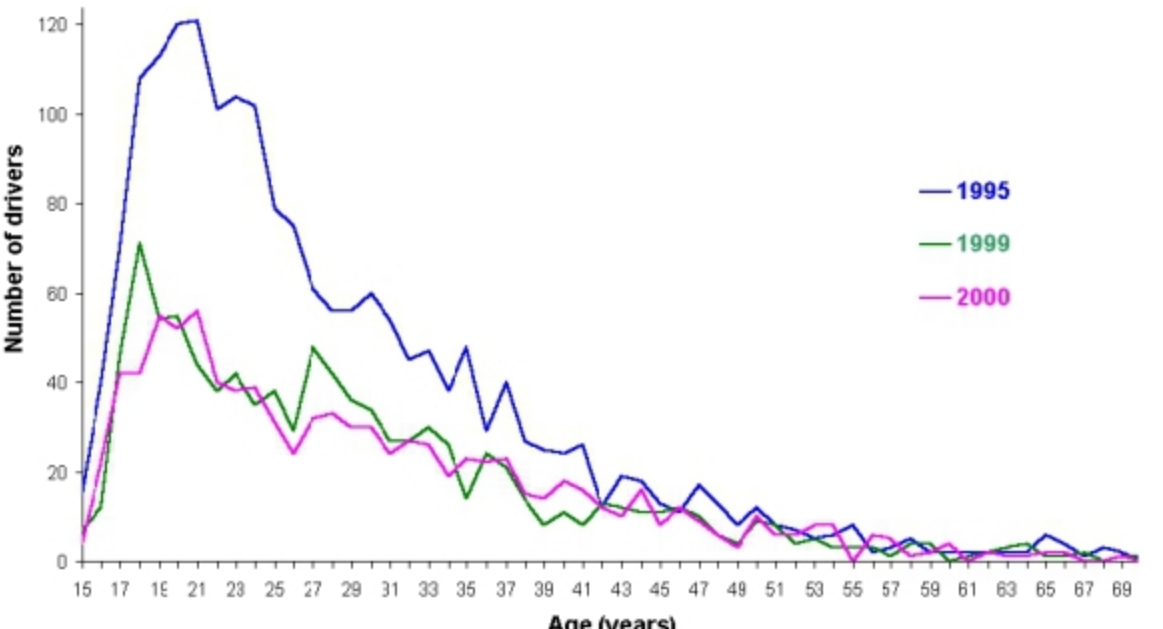
Deaths and injuries per 100 million vehicle kilometres travelled



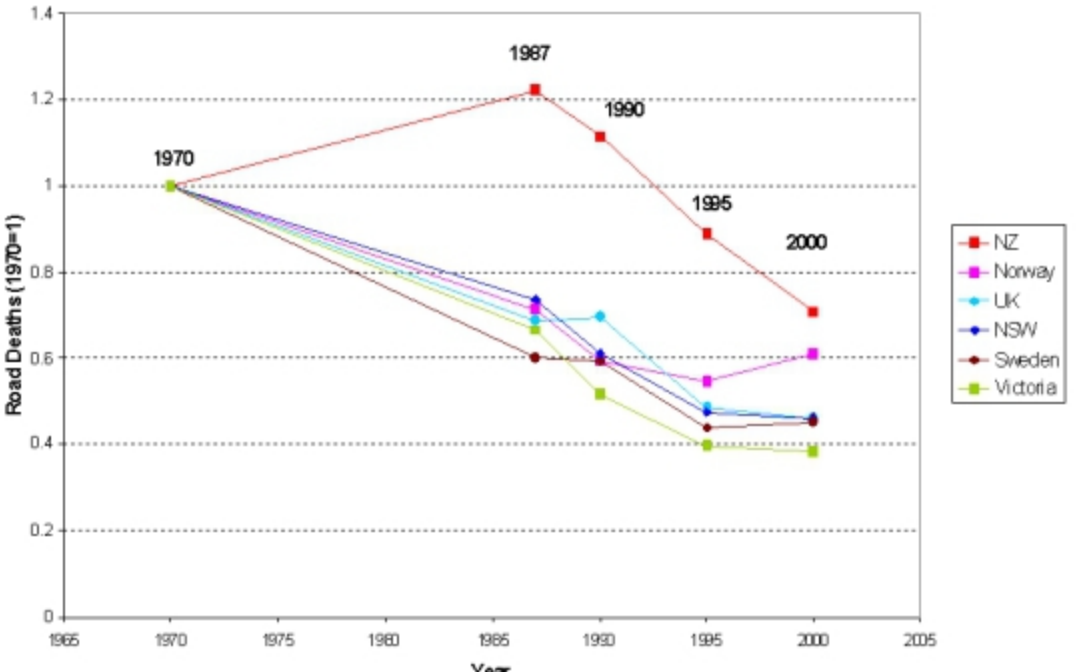
Crash risk by driver age group



Male drunk drivers in crashes



Deaths (1970 = 1)



Although we continue to make progress, it needs to be understood that given the ‘state of the art’ there are limits to the safety performance we can expect to achieve.

Diminishing returns

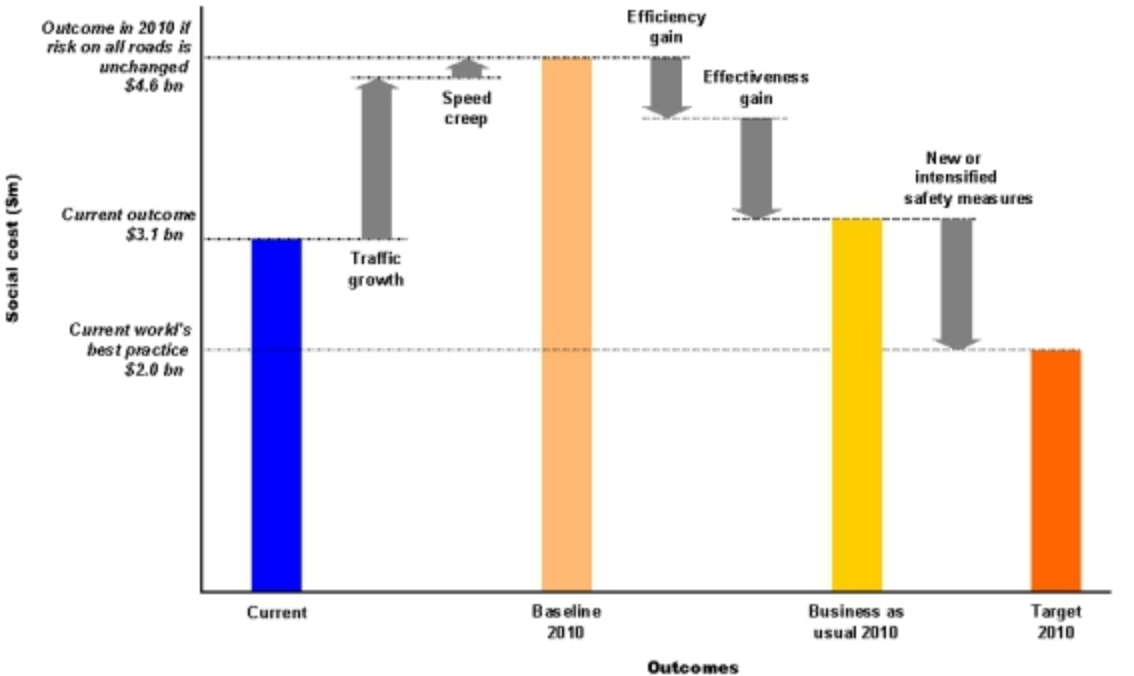
In the best performing countries there is an emerging concern that diminishing returns are setting in with strategic enforcement programmes.

A view is being put that current safety management practice places an undue emphasis on driver behaviour alone.

Diminishing returns (cont'd)

Our analytical findings in New Zealand support this view and confirm the ultimate need for more radical safety measures, if current mobility growth is to be sustained and best practice safety outcomes are to be surpassed.

Proposed strategic goal



The road network is becoming the reference point for contemporary reflections on road safety policy and the development of new safety strategies for the longer term.

Ethics

From an ‘ethical’ perspective (Sweden: *Vision Zero*), questions are being asked about the social acceptability of the road network’s inherent ‘violence’ and related road agency goals and accountability for eliminating this.

Exposure

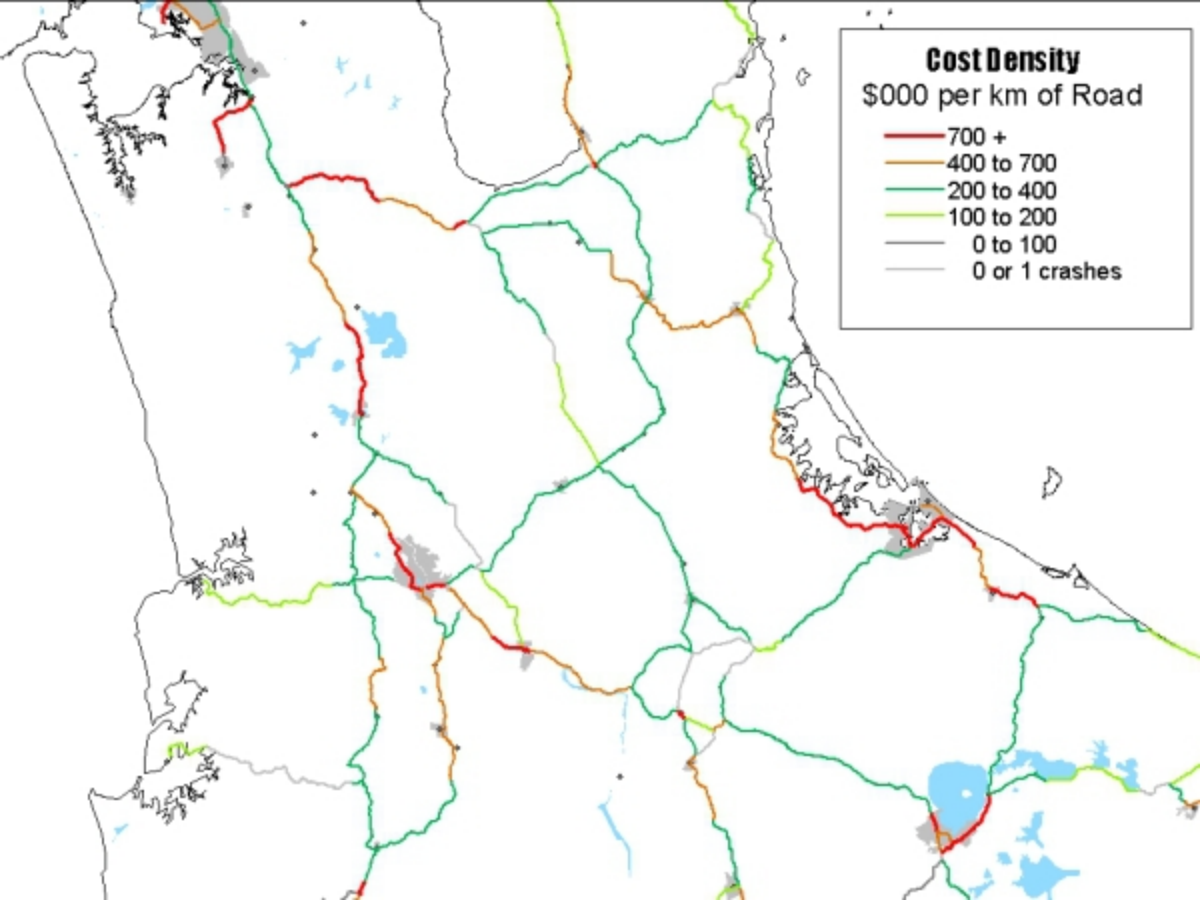
From an ‘exposure’ perspective (the United Kingdom: *Integrated Transport Policy*), questions are being asked about the differential risks faced by the road network’s users (drivers, passengers, cyclists, pedestrians) and the extent to which these constrain users’ mobility options.

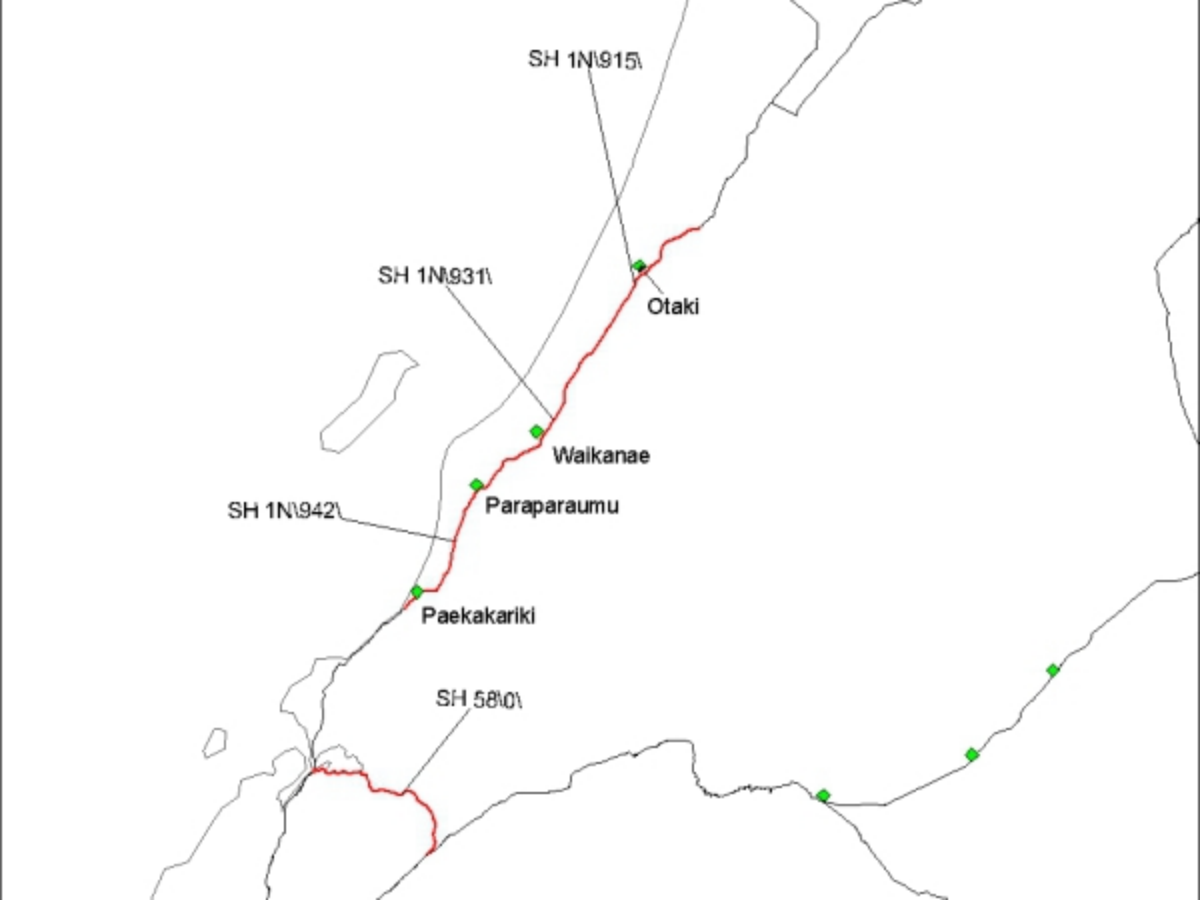
Environment

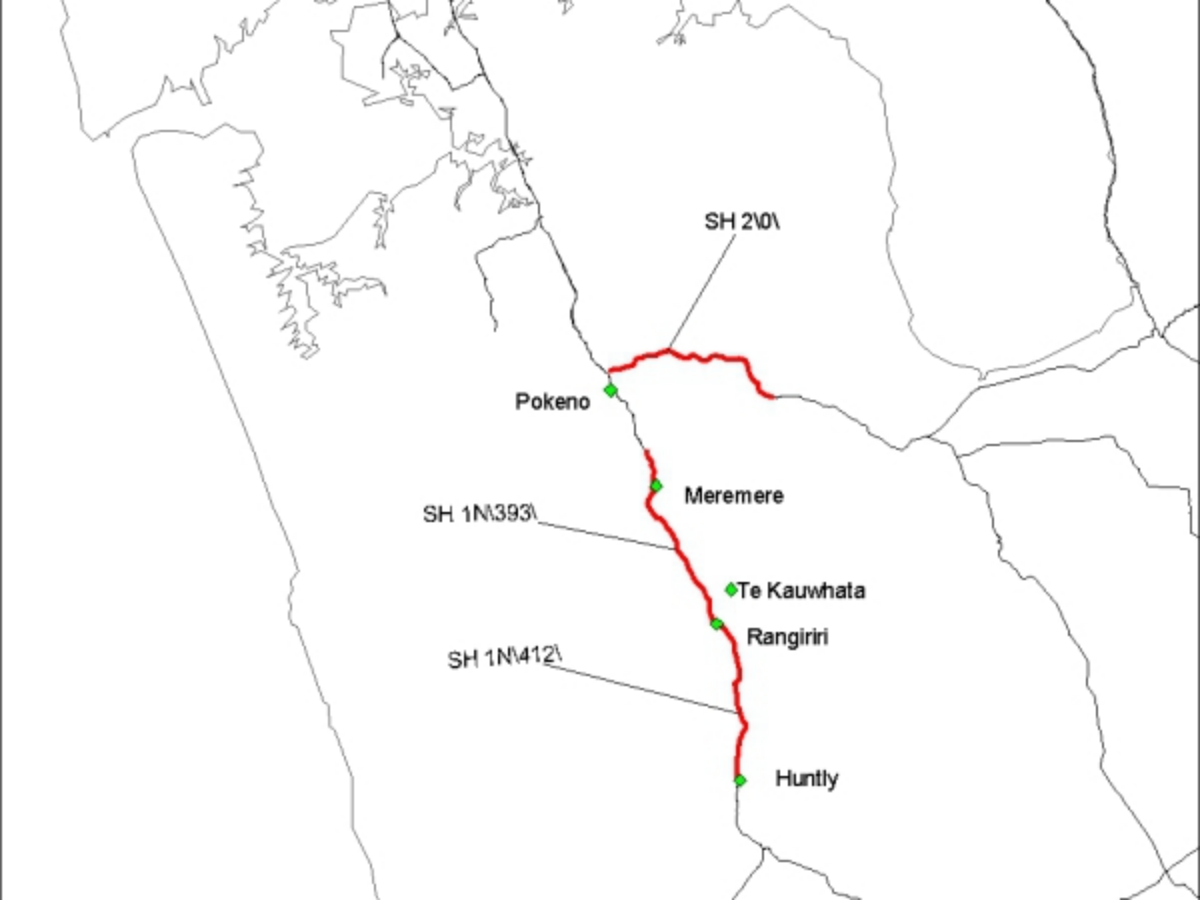
From an ‘environmental’ perspective (the Netherlands: *Sustainable Safety*), questions are being asked about the road network’s functionality and how it can be best designed and managed to be intrinsically and sustainably safe for all its users.

Efficiency

And from an ‘efficiency’ perspective (New Zealand: *Safety Directions*), questions are being asked about the social costs of the road network’s safety performance and where and how on the network the greatest safety gains can be achieved.


Cost Density
$000 per km of Road
700 +
400 to 700
200 to 400
100 to 200
0 to 100
0 or 1 crashes

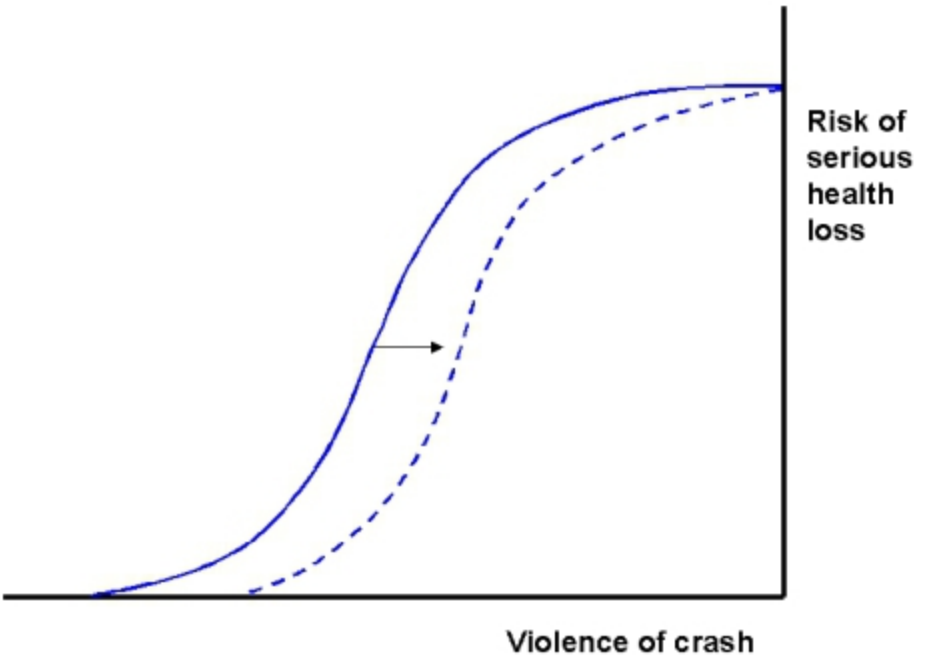

SH 1N\915\
SH 1N\931\
Otaki
Waikanae
Paraparaumu
SH 1N\942\
Paekakariki
SH 58\0\


SH 2\0\
Pokeno
Meremere
SH 1N\393\
Te Kauwhata
Rangiriri
SH 1N\412\
Huntly

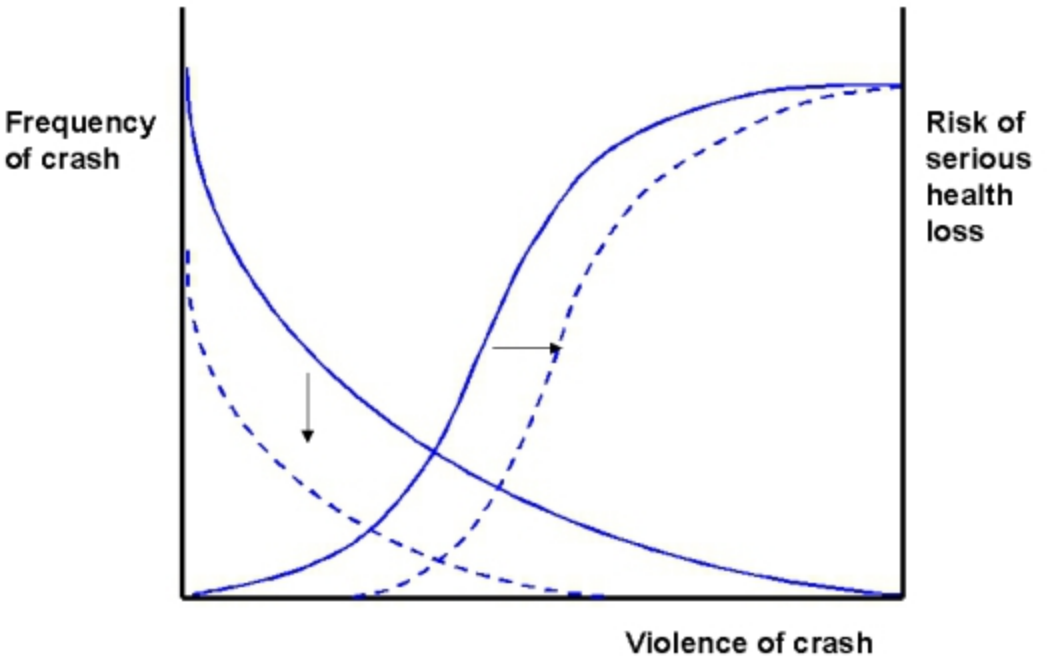
The ‘vision’ for the future is to design and operate the road network in accordance with bio-mechanical thresholds that eliminate any chance of deaths and serious injuries resulting from crashes.

Active safety measures

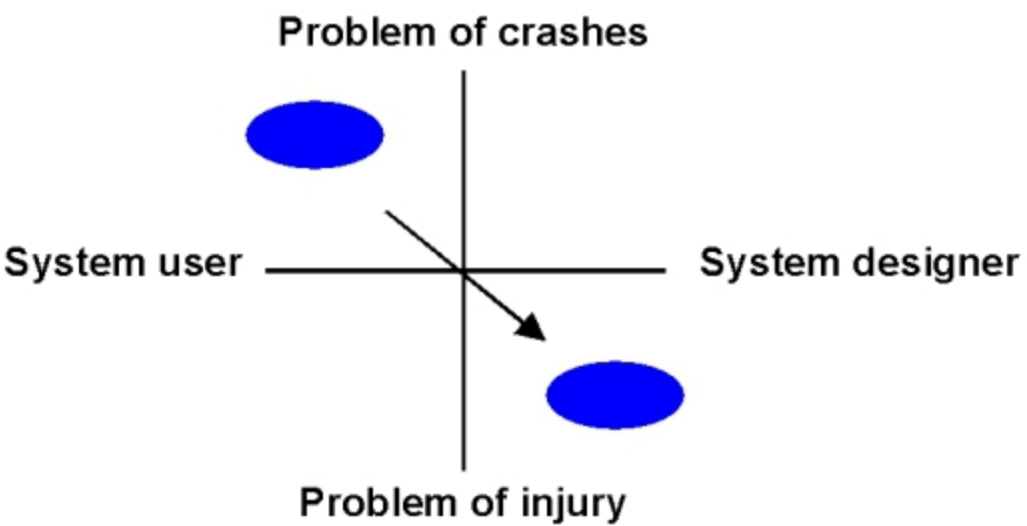
Passive safety measures



Active and passive



From focus on crashes to focus on injuries



Some implications

‘Mobility’ should not exceed the inherent safety of the road network.

The speed limit is the regulating factor for the *lack of safety* in the road network.

The challenge is to keep mobility at acceptable levels without health losses.

Looking to the near future, our road-based mobility systems will continue to have unacceptably high levels of death and injury built into them. Hence the Trauma Services cannot ‘stand down’.