

# Road to zero

**A response to the consultation paper**

**August 2019**



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# Road to zero

## Introduction

This paper is a brief response to some of the issues raised in the 'Road to zero' consultation paper. It mainly covers:

- The merits of the Road to zero vision
- New Zealand's recent performance
- Comparator country performances
- The 2030 target
- Speed limits and the time cost of reducing those limits
- Issues with the Used Car Safety ratings
- Investing in better roads

## The Road to zero vision

### The proposed vision

*Our proposed vision is: a New Zealand where no one is killed or seriously injured in road crashes. This means that no death or serious injury while travelling on our roads is acceptable.*

We do not agree with the proposed vision. While everyone agrees that deaths and serious injuries are undesirable, nearly everyone who has thought about the issue understands that it is impossible to get to zero deaths and serious injuries, or anything close to it, without unacceptably high costs.

### Most 'serious' injuries are not life changing

The Road to zero vision sets an especially high bar because it also targets zero 'serious' injuries. Serious injury is not even defined or seriously discussed in the consultation document, other than a statement that there are thousands of them, and an inference that they are all very serious and 'life changing'. Mostly they are not. A serious injury appears to be defined, for statistical purposes in New Zealand, as an injury requiring at least an overnight stay in hospital. In 2018 there were 3200 of these 'serious' injuries, but more than 1000 of these involved a hospital stay of less than three days. The Norwegians do collect data on what they term 'life threatening' injuries, which is probably a good proxy for life changing injuries. Typically these are about 40 percent of road deaths. If this relationship is applied to New Zealand then there may be around 150 truly life changing injuries each year, not the many thousands implied by the Consultation paper discussion.

If reducing recorded serious injuries to close to zero is taken seriously, and is not just part of an unthinking mantra, then this has implications for road speed limits. They would have to set at much lower levels, especially in urban areas. Probably the Government doesn't really intend that overnight hospital stays should be reduced to zero. In which case it should remove the zero serious injury test from the slogan.

Most people accept that life has its risks and that it is a question of balancing the benefits of further improvements in life safety against the costs. This is the traditional approach to road safety that the Zero vision approach contests. In the Zero vision view, resources should be committed to reducing road deaths and injuries on roads, regardless of whether those resources could be better used elsewhere, such as by improving outcomes in the health sector. Vision zero proponents say that theirs is a moral perspective. We don't find anything very moral about pushing your own hobby-horse to the exclusion of other people's interests. It is really just a case of 'expert - we know what's good for you', self-indulgence.

### **Whats the harm?**

One response to our objection to the Road to zero vision is that it is not meant to be taken literally, or even very seriously. Rather it should just be regarded as just a nifty slogan designed to energise a new focus on road safety.

The harm is the risk that the 'intermediate' target of a 40 percent reduction in road deaths and injuries (which equates to a 55 percent fall after adjusting for a 3 percent per annum increase in road travel) is unlikely to be met. The Government does not appear to be committed to the kinds of expenditures that would support the outcome; nor, probably, will it be able to get away with sharp across-the-board reductions in speed limits. But the pressure will be on to 'do something'. That pressure will tend to go on 'improvements' that have: less visible costs; make little difference; and if cost benefit analysis is applied at all, it will probably be fabricated, or the results ignored. After all Vision zero proponents do not believe in cost benefit analysis. It is enough just to believe that the measure might reduce deaths and 'serious' injuries.

The other harm is that it could undermine support for sensible, well selected decreases in speed limits, where the benefits do exceed the costs<sup>1</sup>. However, if these reductions are seen as the start of a slippery slope to later, more drastic,

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<sup>1</sup> For an example recommending a reduction of the speed limit on SH57 near Wellington based on a robust cost benefit analysis see 'Speed limit reductions to support lower SCIM investigatory levels' February 2018 P Cenek and R Henderson Opus Research, Opus International Consultants NZ Transport Agency research report 636

across the board reductions implied by the Zero vision philosophy, promoted by an elite, urban, and anti-car ideologues, then the sensible response by provincial and rural New Zealand might be to resist any change at all.

We think that words do matter. While slogans need to be 'catchy', they also need to be realistic and honest. If you don't really mean it, then don't say it.

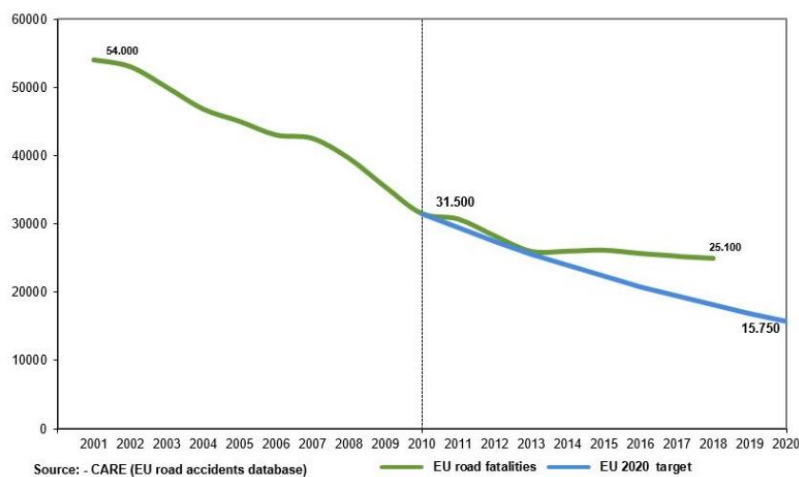
### **Has the death rate on roads really got worse?**

The Consultation paper argues that the increase in road fatalities since 2013 is not just due to the increase in kilometres travelled, but there were 'other factors at work'. The truth is that the increase can almost certainly be ascribed to randomness. 2013 was an unusually good year for road deaths. In 2012 there were 308 deaths and in 2014 293. In 2013 there were just 253 deaths, abnormally low, as there would have been little difference in the fundamental drivers over those years. But 2013 was chosen as the base to make things look worse than they were. This was dishonest.

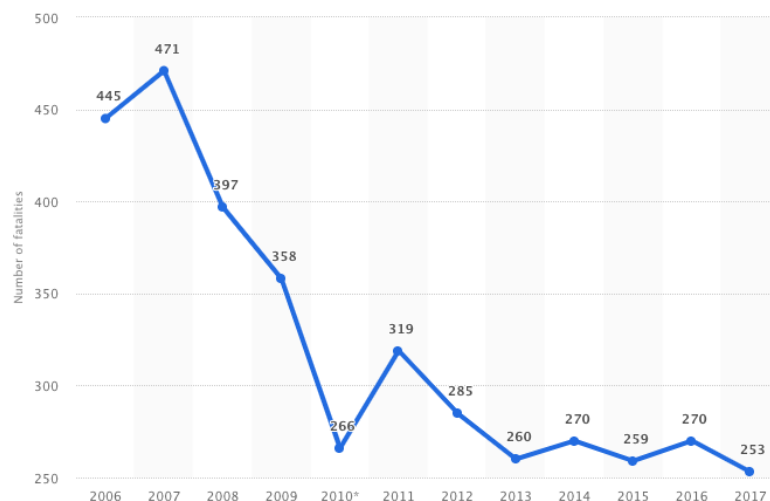
We can say that there was a substantial improvement in road safety from 1987 until the early 2010s. The number of deaths per 10,000 vehicles was 3.9 in 1987 and fell to about 0.9, a 75 percent reduction. The agencies that helped bring this about should be commended, not unfairly disparaged by Johnny, or Julie, come-latelies.

From the early 2010s, however, the improvement has stalled. New Zealand is not alone in this. The following graphs from the EU and two of the rockstars of the Vision Zero movement, Sweden and Norway, have shown a similar pattern. The reason is that the low hanging fruit of safety improvements have already been picked and it will be harder and more expensive going from here.

## Total road deaths in the EU



## Road deaths in Sweden



Source: Statistica

## The Swedish failure

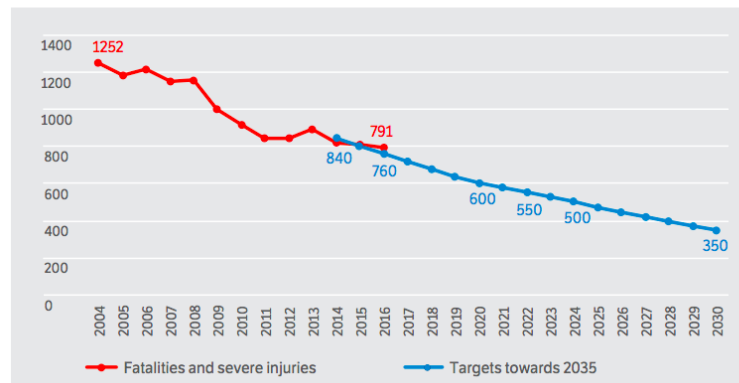
Sweden was first to adopt the vision zero approach in 1997, with the objective of reducing road deaths and serious injuries to zero by 2020. Road deaths fell by about 55 percent over 1997 to 2017, before increasing by 28 percent in 2018<sup>2</sup> (the worst performance in Europe). They will obviously fail to meet their 2020 target. Over the whole period to 2018 the improvement was 42 percent, not much better than New Zealand's 38 percent. Accounting for population growth differences, the improvements in road safety were about the same. In 2018 the Swedish government reaffirmed its commitment to Vision Zero, but their position paper<sup>3</sup> had little in the way of concrete proposals. They appear to have run out of ideas.

<sup>2</sup> European Commission fact sheet 2019 '2018 road safety statistics: what is behind the figures?'

<sup>3</sup> Renewed Commitment to Vision Zero Intensified efforts for transport safety in Sweden  
Government offices of Sweden 2018

## Road deaths and severe injuries in Norway

**FIGURE 1.1** - Development in the number of fatalities and severe injuries – recorded situation and targets for development up until 2030



### Why can't we be as good as Norway?

As Sweden blotted its copybook in 2018, the focus in the Consultation paper is on Norway, which is described as having a similar population and roading system to New Zealand. Norway did reduce its death toll to be first equal best in the world with 106 deaths in 2018.

But there are significant differences between New Zealand and Norway.

- Norway have fewer cars per head of population.
- Norway is much richer than New Zealand and can afford better cars and better roads.
- There are cultural differences between Norway and New Zealand. We have more 'high-risk' drivers, who are disproportionately Maori. One culture's high risk might be anothers reasoned acceptance of a higher risk for the benefits of faster travel. Cultures also differ in the way they balance state intervention and coercion, and individual freedom and responsibility.
- Norwegians may be more accepting of official 'nudging' (bullying and nagging ?)
- Norway has low speed limit of (a maximum of 80 km/hr on national roads without divided lane).

### Norway on to Zero

Despite (or because of) their success in reducing road deaths the Norwegians are pressing on with their Zero death and severe injury objective, targeting a total of 350 by 2030. They have recently had the standard national agency talk-fest and came up with 136 priority actions, mostly in the education and 'will try harder' categories. In terms of road improvements they intend to open 192 km. of four lane roads over 2018-21. They also intend to spend more more on roading investments – about \$38

billion over the next 10 years, possibly three times as much as New Zealand. Heightened ambition does cost serious money.

## **The 2030 target**

The Road to zero interim target is a 40 percent reduction in deaths and serious injuries by 2030, equating to about a 55 percent reduction in the death rate per kilometre travelled. It is claimed that the target is based on the modelling of a substantial programme of road safety improvements over the next ten years.

As the target is the centrepiece of the Road to zero programme we would expect that this modelling to be disclosed and that the costs (road improvements, enforcement and increased travel time) would also have been calculated. But there is no sign of it. This is really unacceptable for a policy that purports to be evidence based and transparent.

Interestingly, the Associate Minister seems to have changed her tune on the possibilities for the next ten years. A report on Stuff (Damian George Jan 03 2019) reads as follows:

*It will be several decades before New Zealand's road toll sees a substantial drop, Associate Transport Minister Julie Anne Genter says.*

*The Government announced last month it would invest \$1.4 billion in road safety upgrades over the next three years in an effort to reduce the road toll, which ended at 382 for last year. But Genter says while she expects the number of deaths to come down over the next few years, it will be decades before the number drops significantly.*

But in the consultation paper we are told as a result of the 40 percent reduction in road deaths.

*Steady progress towards this target would mean approximately 750 fewer people would be killed and 5,600 fewer would be seriously injured on our roads over the next ten years, compared to current levels of harm. Doing so would reduce the total social cost of road crashes on New Zealanders by approximately \$9.6 billion.*

This is obviously optimistic and there is no mention of the costs. We are also told about the benefits of reducing road deaths and injuries altogether.

*If we continue as we are, we estimate that by 2030 around 3,000 people will have lost their lives between now and 2030. Approximately 30,000 people will have been seriously injured with ongoing or long-term consequences. The social cost of these tragedies would be about \$45 billion in today's dollars (Ministry of Transport, 2019).*



Eliminating these costs could be done by very drastically and immediately, by reducing speeds limits (try limits of 15-20 km/hr) and draconic enforcement. The economic and social costs would be in the hundreds of billions.

## Reducing speed limits

The centerpiece of Road to zero is a widespread reduction in speed limits, though this is not very explicitly spelt-out in the paper.

### What speed limits do you need to reduce death and injuries to zero?

The discussion on this question rests just on the following.

*Biomechanical research indicates that the chances of survival or avoiding serious injury decrease rapidly above certain impact speeds. (IRTAD, 2018)*

*For a PEDESTRIAN, CYCLIST OR MOTORCYCLIST HIT BY A CAR, it's around 30-40 KM/H.*

*In a SIDE IMPACT COLLISION INVOLVING TWO CARS, it's around 50 KM/H.*

*And in a HEAD-ON CRASH INVOLVING TWO CARS, it's around 70-80 KM/H.*

What the IRTAD actually said was:

*The design of the road system and the speed limits set for it must consider the forces the humanbody can tolerate and survive. Working towards a Safe System, reasonable speed limits are 30 km/h in built up areas where there is a mix of vulnerable road users and motor vehicle traffic. In other areas with intersections and high risk of side collisions 50 km/h is appropriate. On rural roads without a median barrier to reduce the risk of head-on collisions, a speed limit of 70 km/h is appropriate.*

These speed limits are lower than those presented in the discussion document. Importantly they are based on biomechanical research on the speed limits that sharply reduce **death** rates. If the intention is to sharply reduce injuries resulting in an overnight stay in hospital, then the speeds would have to be much lower. A human has a good chance of surviving an impact of a car at 28 km/hr, but would have a much higher probability of having to spend at least a night in hospital.

However interpreted, widespread speed limit reductions are apparently on the way. It appears that there will be a push, over time, to reduce limits to 40 km/hr. in built up areas, and to 80 km and less in rural areas. Only divided highways will stay at 100km/h. Many rural communities could see limits of 60 to 70 km/h. Only limited funds will be available for upgrading roads to allow higher speed limits. There is no assessment of the cost of making these changes. Rather an attempt to made to

convince people that the time costs will not be too bad, and, drawing on ‘research’ findings the paper tries to show that drivers tend to overstate the costs.

### **PERCEPTION**

*Reducing speeds in some areas won’t save lives, it will just take people longer to get anywhere.*

### **RESEARCH FINDINGS**

#### **Rowland and Mcleod**

*Research has shown that reducing your speed a little generally results in a very small increase in travel time (Rowland & McLeod, 2017).*

This is a misrepresentation of the Rowland and McLeod paper, which was largely about drivers’ perceptions of travel time increases. They found that drivers tended to underestimate increases in travel time with reductions in speed limits in urban areas, and overestimate times from reductions in highways speeds. This research was largely a test of respondents’ mathematical skills. They tend to confuse relative and absolute changes in travel times. In any event you don’t need research to tell you that decreasing your speed ‘a little’ will generally result in a small increase in travel time. Equally, decreasing your speed ‘a lot’ will result in a large increase in travel time.

#### **Ministry’s calculations**

*When you factor in traffic lights, congestion and intersections, travel times don’t vary as much as many people think. If you drove for 10 km at 80 km/h instead of 100 km/h, it would take you between 30 to 48 seconds more.*

The Ministry has got its arithmetic wrong. The lower speed increases travel time by 90 seconds, from six minutes to 7.5 minutes. Probably the Ministry was attempting to present a more complicated argument, but got their cut-and-pasting wrong.

#### **French research**

*When France lowered speed limits from 90 km/h to 80 km/h in some areas in 2018, the move saved 100 lives in six months, but increased average travel times by only one second per kilometer (Cerema, 2019).*

The Cerema ‘research’ was based just on ‘before and after’ readings from Google maps. It was not a serious piece of research. The effect of the reduction in the speed limits was to reduce speeds by an average of 3.9km/h, as 55 percent of drivers exceeded the limit. The increase in travel time would have been about 2 seconds per kilometre. Only 30 percent of surveyed French supported the reduced limit, mainly

on the grounds that it was an unwarranted intrusion on their freedom to choose their own speed (up to the old limit).

Although the results of the research were very provisional, death rates were reduced by about five percent.

### **Saddle Road experience**

*Similarly, when the speed limit on most of Saddle Road (a 14 km stretch near Woodville, New Zealand) was reduced from 100 to 60 km/h due to an increasing number of crashes, average travel times only increased by around 50 seconds (or less than four seconds per kilometre).*

The Saddle Road example is hardly illustrative. It is a temporary situation on a hilly, windy, road carrying much more traffic (it is a diversion for the blocked state highway 2) than it was designed for. The average speed before the reduction in the speed limit would have been much lower than 100km/hr.

## **Significantly improving the safety performance of the vehicle fleet**

The focus on improving the average safety of the light vehicle fleet by increasing the demand for safer vehicles is largely built around the used car safety rating (UCSR) system.

*If we want people to buy safer cars, they need reliable, understandable and accessible information about which cars to buy.*

In this part we focus on issues with the UCSR system. The system is based on a statistical model developed and run by the Monash University Accident Research Centre. It is based on road crash information from both New Zealand and Australia, and so is dominated by the Australian data.

It has the following issues.

### **Timeliness of data**

It can take many years (often up to 5 or 6 years, though less for the most popular models) before there is enough data to issue a rating.

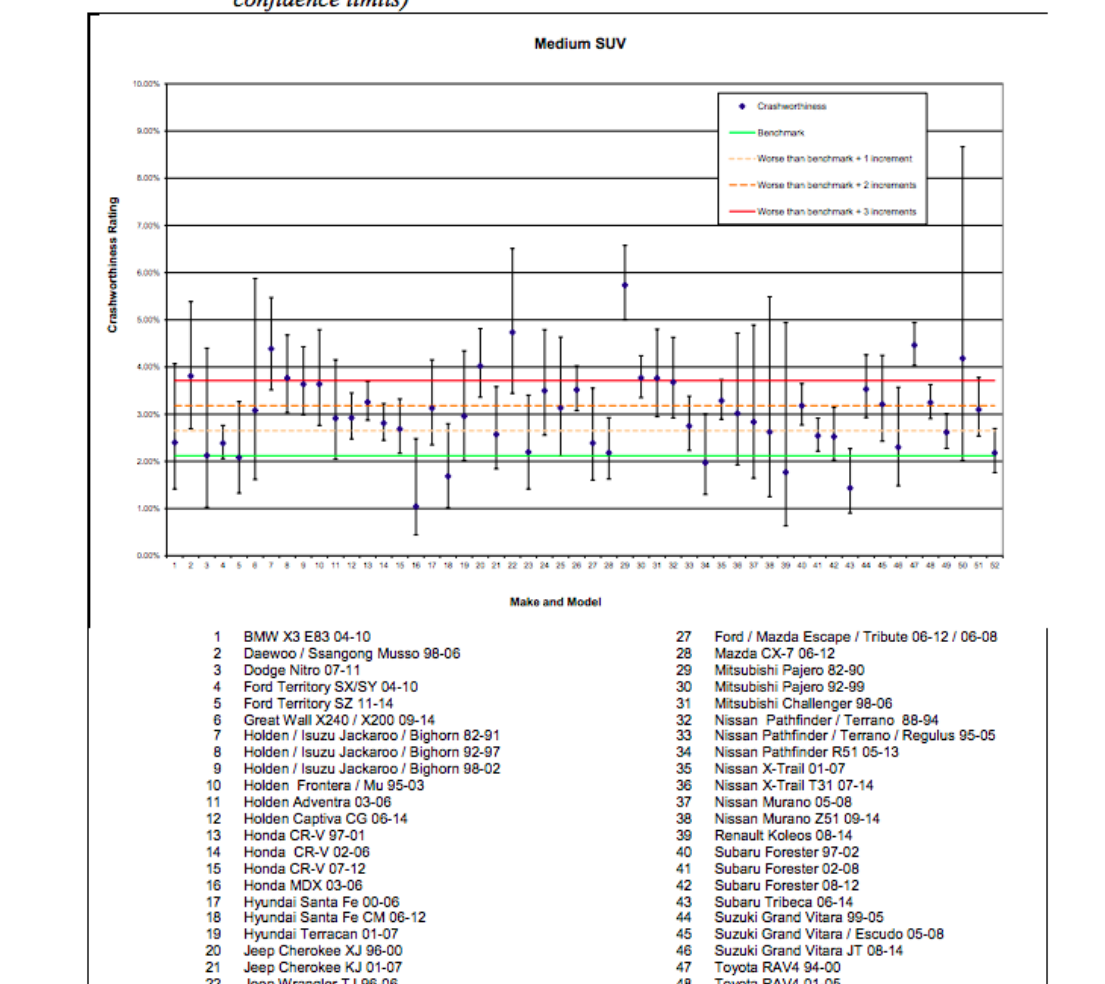
### **Comprehensiveness of ratings for New Zealand**

Cars that are popular in New Zealand (some Japanese used imports) may not be popular in Australia and may never get enough data points to get a rating, or only get a rating after many years.

## Statistical robustness of most ratings is poor

Because this is a statistically based system there will be statistical noise in the results. For many of the cars in the New Zealand market the error band is so wide that the ratings are almost useless. To illustrate this point, figure 2, which is taken from the Monash 2016 updated ratings paper, shows the rating (represented by the dot) and the 90 percent confidence bands (the vertical lines) for medium sized SUVs. The coloured lines divide the vehicle ratings. Vehicle number 6 is the Great Wall X 240 with a 3 star rating. However, given its confidence band, it could be anything from a 1 to a 5. In other words there is no information at all in the rating. Most of the vehicle rating confidence intervals cover more than one rating band. In some cases, identical cars, with different badging, have received very different ratings.

**Figure 2:** *Crashworthiness Ratings for Medium Sports Utility vehicles (with 90% confidence limits)*



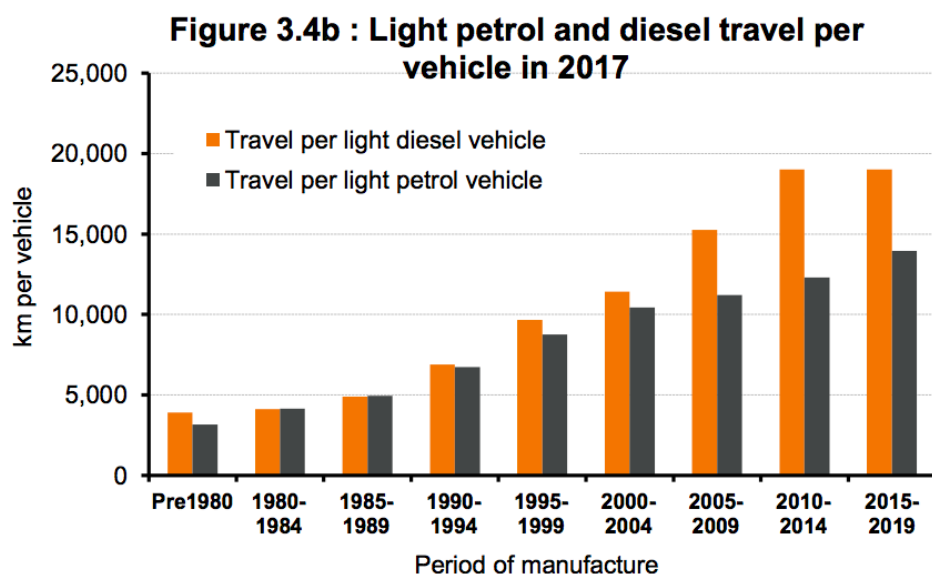
### **The most reliable information is that big vehicles are safer than small cars**

The only vehicle class, where the ratings are systematically reliable, is small cars. Many small cars do sit in the lowest 1 star grade with a statistically robust degree of confidence. So in general the most reliable information is that bigger vehicles are safer than small vehicles. But that it not telling consumers anything they don't know already. Basic physics or intuition will give you the same answer. Bigger is better from a safety perspective.

If the Government wishes to encourage consumers to buy larger cars then it needs to understand that this is running in exactly the opposite direction to its policies on Co2 emissions. The 'Clean Car' initiatives are designed to encourage the purchase of small cars.

### **Modern cars are safer than older cars**

In general newer cars do tend to be safer than older ones, but again that is not telling consumers something they don't already know. The other point to bear in mind is that while older cars are not as safe, they are driven less, and this will go some way to mitigating the risk to the drivers of older vehicles. Figure 3 below shows that new cars are driven about twice as far as cars built in the 1990's. Drivers can also equalise the risk by driving 5-10 km/h. slower, and many do.



### **Ratings are biased against older cars**

The ratings are meant to be a rating of the performance of the car rather than the performance of their drivers. But if drivers who drive more recklessly tend to favor certain kinds of cars (older, cheaper), then the rating system could be biased if there are inadequate statistical controls. There is an attempt to control for these biases

(e.g. sex and age), but some potentially important ones are missing due to data limitations. In particular seat belt usage is an important driver of death and injury outcomes. We know from New Zealand studies that failure to wear seat belts is strongly correlated with working class males driving old cheap cars. There may be a similar relationship with high speed crashes relating to reckless driving. There are likely to be similar issues in Australia, biasing the results, to an unknown degree, against older cars.

### **Ratings can evolve in a way which is not intuitive to consumers**

The rating system is based on a relative, not an absolute measure, of risk. Basically the model is structured so that roughly equal proportions of the fleet fall into each of the five rating classes. This means that about 40 percent of vehicles will always fall into the two 'worst' categories, regardless of how the absolute safety of the fleet improves over time. This also means that a car's rating will tend to deteriorate over time as the absolute safety of the fleet improves, and as the vehicle gets cheaper and more likely to be the vehicle of choice for careless or reckless drivers. The safety of the vehicle will not have deteriorated, but it will look that way in the rating system.

This also means that the Consultation paper objective of increasing the proportion of the fleet in the top three categories is unlikely to be successful. Our cars would have to be significantly newer than the Australian average to make a difference.

### **Does not sit well with the ANCAP rating system**

Commentators have already noted that cars with ANCAP ratings of 5 are receiving UCSR ratings of 1 or 2, when the ratings come out. This is due to the conceptually different, and incompatible, rating systems. The ANCAP rating system sets an absolute standard. Conceptually, all cars can meet the highest standard if they pass the test, and fleet safety can improve over time. The UCSR is a relative standard and only 20 percent of the fleet can get a 5 star grading. Measured fleet safety can never improve.

### **Attempts to lower the age of the fleet could have adverse unintended consequences**

There seems to be a policy intent to accelerate the modernisation of the fleet by making it harder to import lower rated vehicles, and perhaps by making it more difficult to pass warrant of fitness tests.

While, in an ideal world, drivers would be safer if they could all purchase large, up-to-date, vehicles with the best safety technology, the reality is that many New Zealanders can only afford a vehicle costing a few thousand dollars. If cheaper cars

become more expensive then one option open to lower income consumers is to buy a motorbike. Motorbikes are 21 times more risky than the average car and perhaps 15 times more risky than older cars. The move away from motorbikes to cheap imported cars played a significant role in the reduction in the road toll in New Zealand, and it does not make much sense to introduce policies that would turn back that particular clock.

## **Conclusions**

First, The Ministry needs to take a hard look at the UCSR. The best outcome is probably not to use it. Consumers can always pick up the ratings online on the Monash Accident Research Centre website, if they choose.

The second takeout is that improvements to the fleet occur gradually over time and realistically, can make only a very moderate contribution to fleet safety by 2030. Attempts to accelerate that process are likely to be relatively ineffective, impact adversely on lower income car owners, and be, potentially, counterproductive.

## **Evaluation of road safety investments**

The paper mentions the need for the evaluation of safety initiatives but there does not seem to be any provision for a rigorous evaluation of the safety treatments completed over 2018-21. It is essential that this be done, if treatments are to be rolled out more broadly post 2021.

## **More investment**

One of the reasons for New Zealand's relatively poor safety record (at least compared to richer European countries and Australia) is a long history of underinvestment in roads. More investment would address both safety and time of travel concerns. This could be funded by an increase in fuel taxes and road user charges, which would have the co-benefit of reducing emissions. It is a more efficient and effective approach than the proposed 'Clean cars proposals'. This argument is developed in our 'Dirty and dangerous?'<sup>4</sup> paper. More spending would relieve the constraint that has seen a swing from the gold-plated, motorway or nothing 'roads of nation significance' approach, to the current, (almost) nothing but safety approach.

The cost benefit methodology could also be recalibrated to promote safety outcomes. The current statistical value of a life is around \$4.5 million, but this

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<sup>4</sup> Available at [tailrisk.co.nz](http://tailrisk.co.nz)

number is only one of a range of possibilities, and embodies philosophical as much as hard economic considerations. If we want to place a higher value on life safety then we can simply increase the \$4.5 million figure to a higher number, say, \$7 million. The Swedes have recently increased their value of a life estimate from around \$4 million to \$6.2 million.

The other variable is the discount rate. The current 6 percent Treasury discount rate is high, given market interest rates and the rates used by comparators (the UK rate is 3.5 percent). We could reduce the discount rate to say 4.5 percent, and to give a special weight to life safety, apply a discount rate of 3 percent to death and serious injury reduction benefits. If a road safety investment saves 1 life a year it would currently have a present value of around \$75 million. Our suggested recalibrations increase that to \$233 million.

Part of the Government's apparent aversion to cost benefit analysis is that safety appears to be undervalued.

*The Transport Agency's current evaluation methodology can result in some **worthy** safety projects being assessed with a very low priority which does not meet the previous expectation of a BCR greater than one, eg the high cost of some safety interventions and the negative impact on travel time in some cases overriding the safety benefits.<sup>5</sup>*

Our suggestions would help mitigate that concern, without throwing the baby out with the bathwater by effectively ignoring cost benefit analysis to promote 'unworthy' safety initiatives.

The New Zealand Land Transport Agency's new investment assessment framework has the following capacity.

*The policy also establishes the mechanism to allow inclusion of activities that are highly effective in achieving GPS priorities but have a  $BCR < 1$  into a programme, provided the overall programme demonstrates delivery of net positive benefits that exceed whole of life costs.*

In other words investments with low returns will be accepted, if you believe the overall programme is desirable. Which, of course, the Agency must 'believe'. A cost benefit analysis recalibration would allow a return to a reasoned, cost and benefit based approach.

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<sup>5</sup> New Zealand Transport Agency 2018 'Investment Assessment Framework'



