

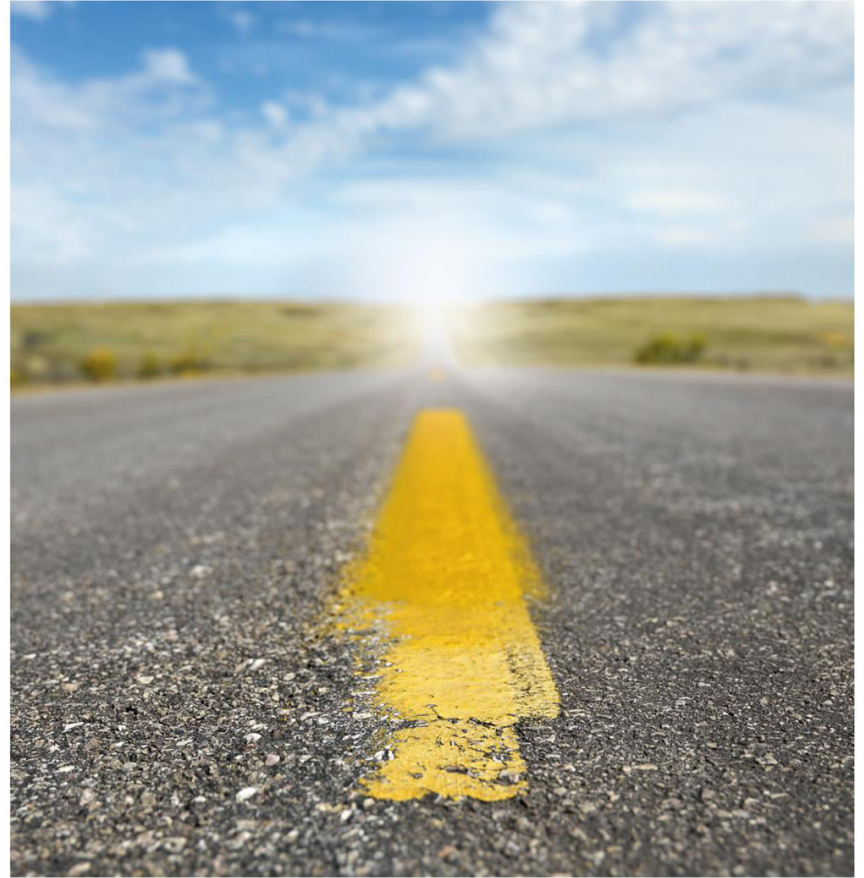
Injury Schemes Seminar

Road to Recovery



**Actuaries
Institute**

8-10 November 2015 • Hilton • Adelaide





Vehicle Risk Rating

Approach and pitfalls

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*This presentation has been prepared for the Actuaries Institute 2015
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Minister



Open

Vehicle Risk Rating

Vehicle risk rating reflects our interest in evolving vehicle technology and the implications for vehicle safety. Find out how vehicle risk rating works, how we're working to improve it, and tell us what you think.

Why introduce vehicle risk rating?

Not all vehicles provide their occupants and other road users with the same level of protection in a crash.

From 1 July 2015 we've used a risk rating so the Motor Vehicle levies reflect:

- how well the vehicle protects the occupants of the vehicle in the event of a crash
- how well the vehicle protects other road users in the event of a crash
- the influence of vehicle design on the severity of injuries caused to road users in the event of a crash
- the diversity and the age of the New Zealand fleet.

How to do it? Monash Research

Crashes and injuries from Australia and New Zealand analysed to determine the relative safety of light passenger vehicles (cars, SUVs and light commercial vehicles). Over 4 million drivers and 1 million injured drivers.

Three ratings that estimate the probability of death or hospital admission given a tow-away crash.

Crashworthiness focuses on drivers of the rated vehicle.

Aggressivity focuses on drivers of other vehicles and unprotected road users such as pedestrians, cyclists and motorcyclists colliding with the rated vehicle.

Total Secondary Safety (TSS) examines the combined crashworthiness and aggressivity performance of the rated vehicle. Measures the relative safety of a vehicle in preventing severe injury to all road users (vehicle occupants, bicyclists and pedestrians) involved in a crash with the rated vehicle.

The ratings were adjusted for sex and age of the injured person, the speed limit, the number of vehicles, the jurisdiction in which the crash occurred and the year in which the crash occurred.

These factors are strongly related to the risk of an injury being sustained in a crash and the likelihood of injuries sustained being severe.

Measures the risk of death or hospital admission for drivers involved in tow-away crashes as a function of vehicle model or market group driven.

How does it impact the levy rate?

Prior to 1 July 2015 all light passenger vehicles paid the same levy rate (differentiated between petrol and non-petrol powered).

VRR allocates light passenger vehicles to one of four bands.

Band 1: 19% (highest levy)	\$158.46 (petrol-powered licence fee)
Band 2: 15%	\$123.46
Band 3: 24%	\$103.46
Band 4: 42% (lowest levy)	\$68.46

Initial rules

Vehicles are initially allocated as follows:

If < 3.5 years old (from the start of the levy year i.e. manufactured from 1 January 2012 onwards) then based on NCAP if available (if none then default to band 4)

5 Stars -> Band 4

4 Stars -> Band 3

3 Stars -> Band 2

1 & 2 Stars -> Band 1

If > 3.5 years old then use Total Secondary Safety Index (TSSI) from Monash University Accident Research Centre (MUARC) to allocate vehicles to one of four bands.

If there is insufficient information (TSSI or NCAP) or vehicles numbers are low then vehicles are assigned a default levy based on its year of manufacture:

1975 - 1995 -> Band 1

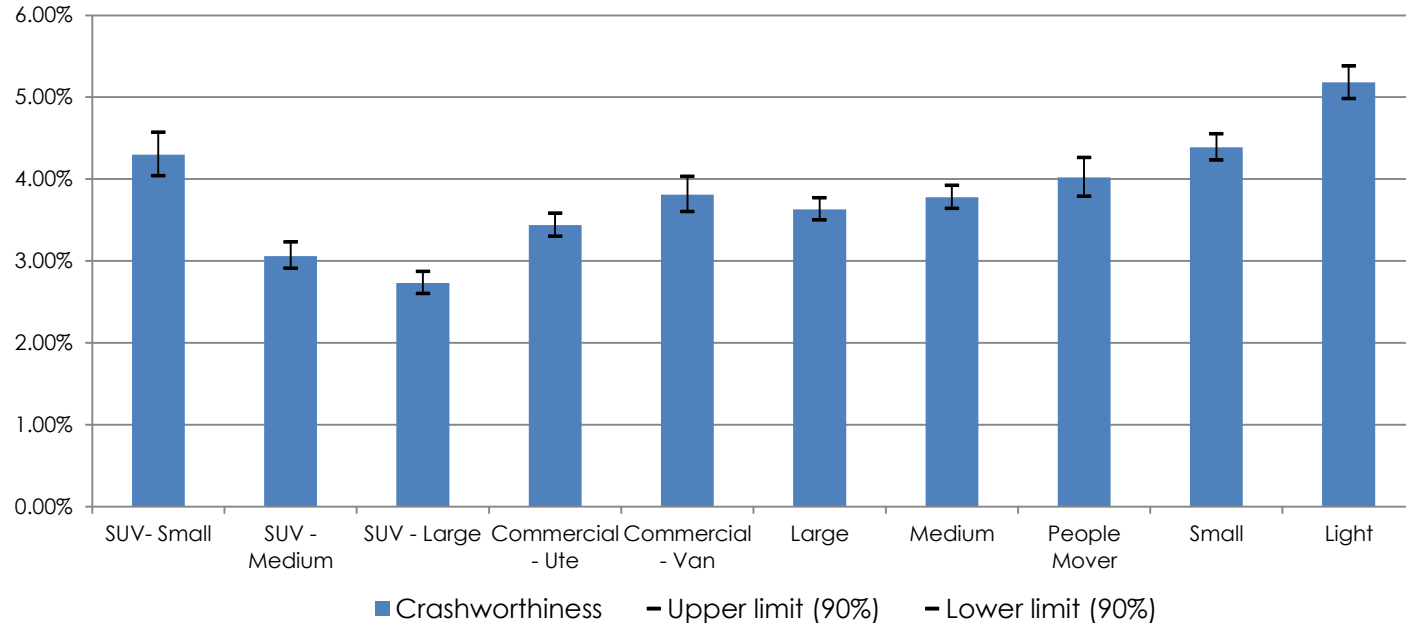
1996 - 2000 -> Band 2

2001 - 2008 -> Band 3

2009 - Present -> Band 4

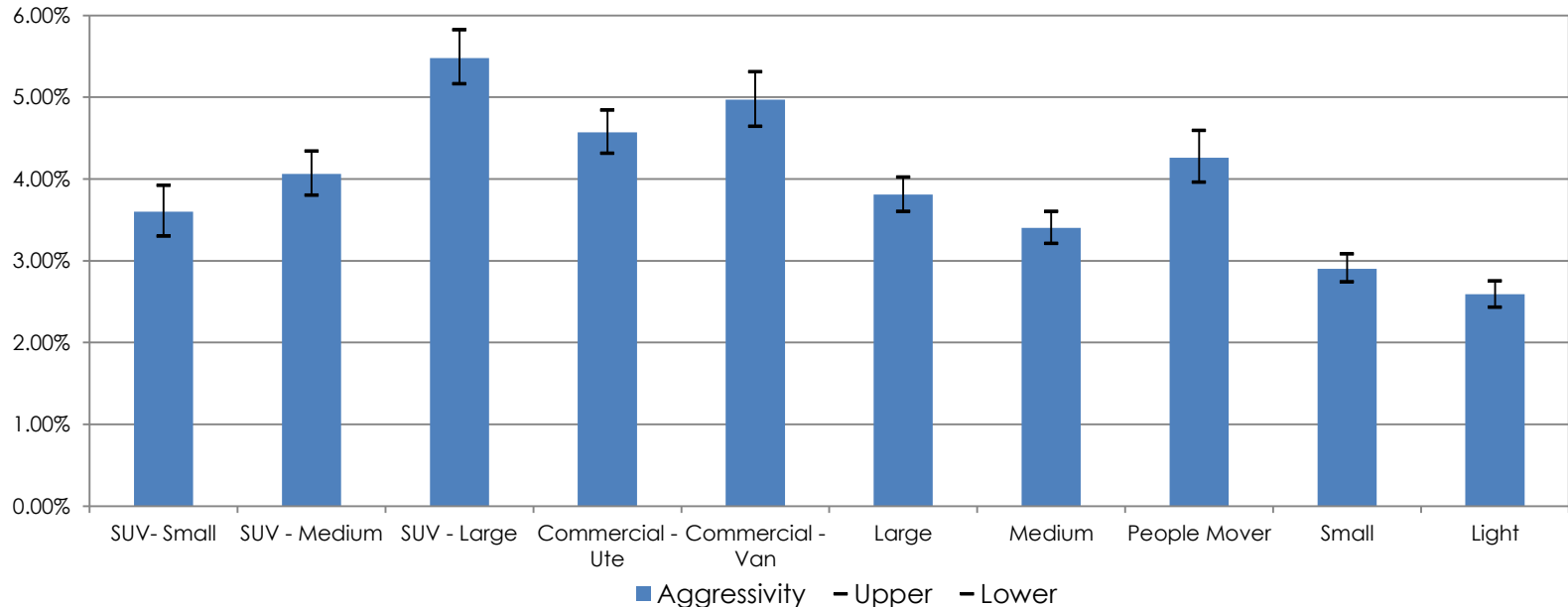
Relative performance by vehicle type – Crashworthiness

Crashworthiness by Market Group



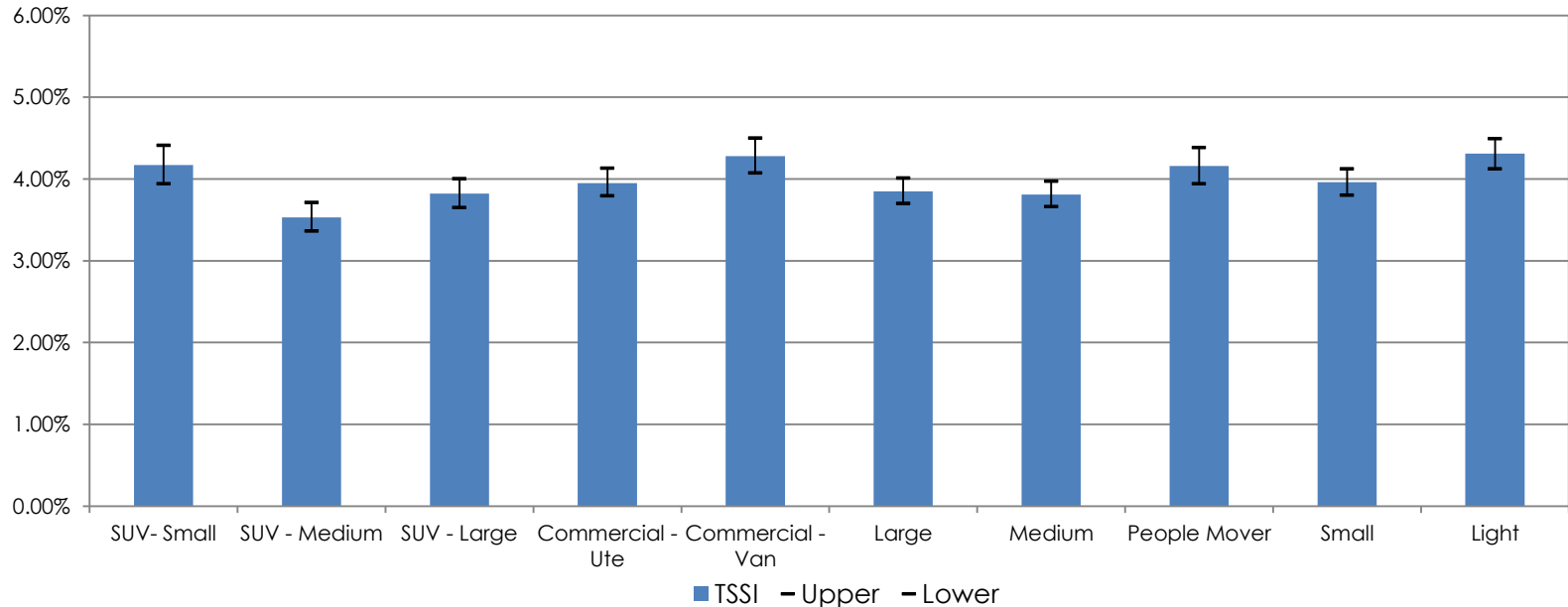
Relative performance by vehicle type – Aggressivity

Aggressivity by Market Group



Relative performance by vehicle type – TSSI

Total Secondary Safety by Market Group



Why we don't just use NCAP ratings

NCAP ratings are well understood by the public and has been used to supplement newer vehicles ratings where limited or no TSSI information exists (in the last 3.5 years). However NCAP ratings prior to this date were not considered suitable for rating purposes for the following reasons:

- NCAP focuses on driver protection rather than all road users.
- NCAP safety ratings should not generally be compared across vehicle categories, particularly if there is a large mass difference.
- ANCAP ratings protocols change over time to reflect increased safety levels, so comparing ratings across time periods can be problematic – that is, a 5 star ANCAP rated vehicle in 2000 may no longer be able to achieve a 5 star rating if retested today.
- Not all vehicles are tested – mainly high volume vehicles and some vehicles considered unsafe.
- Multiple jurisdictions exist e.g. ANCAP, Euro NCAP, J NCAP, US NCAP, Latin, etc.

Great in theory but.....

"There is no guarantee that the correct result will end up being produced. That an ANCAP 5 star vehicle is in the highest risk band for ACC gives me no confidence that they can get things right. "

– Brett

Like 2

"The system is a dog to start with, and no amount of "enhancements" i.e. fault fixes is going to change that. My is ACC so arrogant to think that it can re-invent the wheel and create a system the like of which doesn't exist anywhere else in the world? "

– Allen

Like 4

"Individuals drive cars not statistics. "

– Elizabeth

Like 5

A new more transparent approach to levy setting

- Focus on greater transparency around levy setting and new customer engagement approach to levy consultation.
- Low awareness among customers of the current levy setting process – many customers not even aware they were paying an ACC levy via their car registration.
- Difficult to simply explain the levy setting process, and the complexities within vehicle risk rating – let alone some of the anomalies it can produce.
- A system designed to take an ‘overall’ approach means there are ‘winners and losers’ – try explaining that to those customers that feel they are ‘losing’ out!
- An approach designed with continuous improvement in mind competing with a customer expectation of ‘getting it right’ first time, every time.

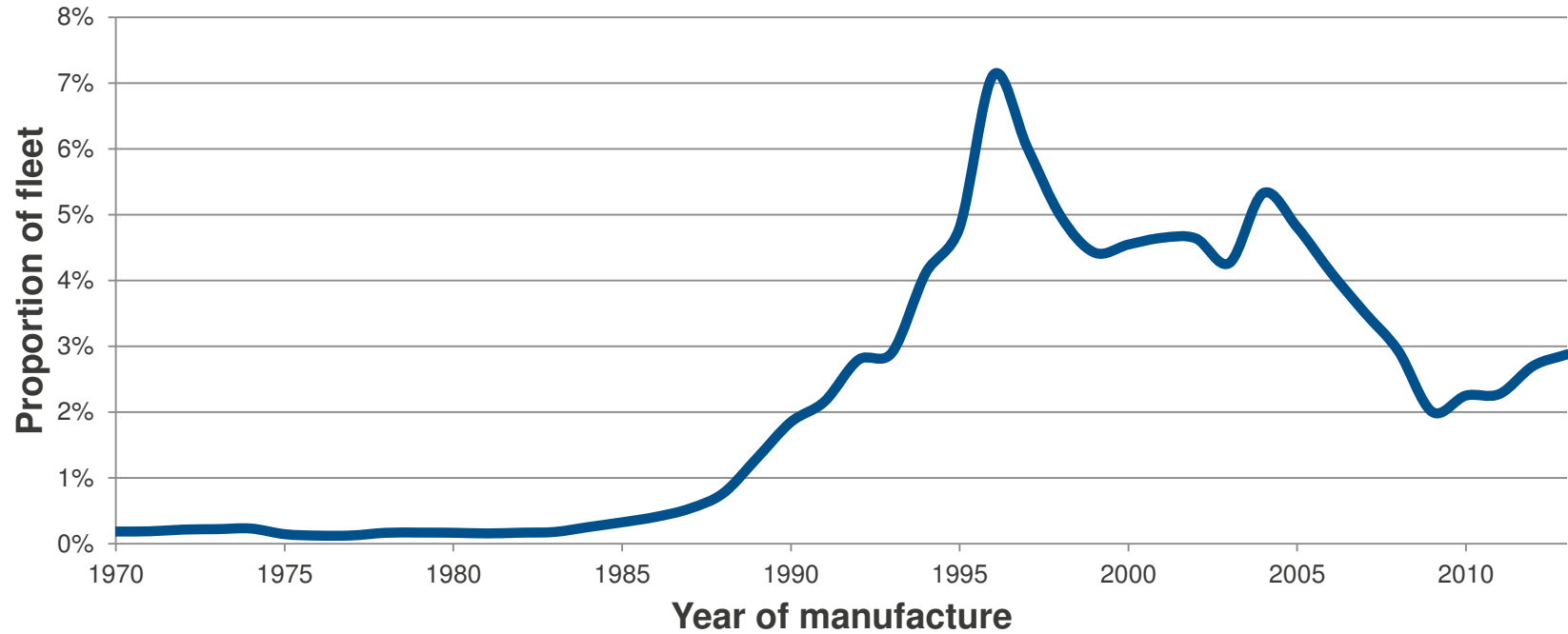
Limitations of TSSI

- The ratings are based on crash data, so have statistical uncertainty – they will move around each year.
- There needs to be enough data for a rating to be made.
- Recent models cannot be rated as reliably.
- For crashworthiness, only injuries to the driver are assessed (not passengers). This is because of limitations in crash data (we often don't know whether there was a passenger in a crashed vehicle unless they were injured). It is reasonable to assume that passenger injury outcome approximately mirror those of the driver.

NZ Fleet Challenges

- There are almost 3 million licensed light passenger vehicles.
- There were 86,317 unique make/model combinations (including typos on the register) for licensed light passenger vehicles in 2014.
- Imported used vehicles make up 51% of licensed fleet (2012 data).
- Prior to 1 July 2015 we spent months tidying up many of these so that we could allocate them correctly - the NZTA data is unchanged.
- Very old fleet.

Vehicle Fleet Age



Issues with the current system

The current system does not handle the following as well as it could:

- Consistency of ratings within each model generation so that vehicles of the same design manufactured in different years may be allocated to different bands - model generation information is not readily available
- Inconsistencies between TSSI & NCAP
e.g. Volkswagen Polo which we currently rate for 1992-2011 and then 2012-2015 but the new generation started in 2008 (which is what the 2012-2015 NCAP rating applies to).
- Vehicles of the same design may have been sold under multiple brands and should therefore be allocated to the same bands
e.g. Honda Cross Road vs LandRover Discovery & the Holden Astra vs Vauxhall Astra.
- Year on year volatility – new data will move some vehicles to different bands. Over time, we expect vehicles to move to lower bands.

The story continues...

Improving vehicle risk rating – a two stage consultation

When we introduced vehicle risk rating we anticipated making improvements to the system, particularly over the first three years or so. We decided to go live so that the vast majority of car owners could get the benefits that come with risk rating. We want to give you the opportunity to provide feedback on vehicle risk rating and our proposed improvements so we'll be running two consultations with you.

In the first consultation we'll provide more information on our proposed changes. We'll take all your feedback on board and use it to inform our proposals during the second round, open from mid-December 2015 until the end of January 2016. During the second round we'll provide a full list of cars and their proposed banding so you can see how your own vehicle is rated and why.

Consultation – enhancements

