Future Vehicle Safety in Australasia and the Role of ANCAP

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Note: This presentation represents the views of the author and not of any organisation

TIMELINE FOR NCAP & REGULATIONS

- 1995
  - 64km/h Frontal Offset
  - ADR69 48km/h full width frontal
- 2000
  - 64km/h Frontal Offset
  - ADR73 56km/h Frontal Offset
  - Dual airbags
- 2005
  - 50km/h MDB Side Impact
  - ADR72 50km/h MDB Side Impact
  - High-seat vehicles exempt
  - Head-protecting side airbags
- 2010
  - 29km/h Side Pole
  - ADR85 OSP
- 2015
  - ESC required for 5-stars
  - ADR31/35 ESC
- 2020
  - 50km/h FWF
  - Obl SP

ANCAP - all vehicles
Australian Design Rules
Utilities GVM>2.7t

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TIMELINE FOR NCAP & REGULATIONS

**Head-protecting side airbags**

- 1995: 56km/h FW Frontal Offset (ADR69 48km/h full width frontal)
- 2000: 64km/h Frontal Offset (ADR73 56km/h Frontal Offset)
- 2005: 50km/h MDB Side Impact (not high-seat vehicles) (ADR72 50km/h MDB Side Impact)
- 2010: 29km/h Side Pole (High-seat vehicles exempt)
- 2015: 56km/h Full Width Frontal (ADR69 48km/h full width frontal)
- 2020: 50km/h FWF (ADR73 56km/h Frontal Offset)

**ESC required for 5-stars**

- 2015: 60km/h FWF (ADR73 56km/h Frontal Offset)
- 2020: 60km/h FWF (ADR73 56km/h Frontal Offset)

**Dual airbags**

- 1995: **Zero Stars** No airbags
- 2005: 2 airbags

**ANCAP - all vehicles**

- 1995: ANCAP - all vehicles
- 2000: ANCAP - all vehicles
- 2005: ANCAP - all vehicles
- 2010: ANCAP - all vehicles
- 2015: ANCAP - all vehicles
- 2020: ANCAP - all vehicles

**Australian Design Rules**

- 1995: Australian Design Rules
- 2000: Australian Design Rules
- 2005: Australian Design Rules
- 2010: Australian Design Rules
- 2015: Australian Design Rules
- 2020: Australian Design Rules

**Utilities GVM>2.7t**

- 1995: Utilities GVM>2.7t
- 2000: Utilities GVM>2.7t
- 2005: Utilities GVM>2.7t
- 2010: Utilities GVM>2.7t
- 2015: Utilities GVM>2.7t
- 2020: Utilities GVM>2.7t

**TOYOTA HILUX UTE EXAMPLE**

- 1995: Zero Stars No airbags
- 2005: 2 airbags
- 2015: 6 airbags

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**TIMELINE FOR NCAP & REGULATIONS**

**TOYOTA HILUX UTE EXAMPLE**

- **Zero Stars** No airbags 1995
- **2 airbags** 2005
- **6 airbags (2013)** 2015

**ANCAP - all vehicles**

- 1995: ANCAP - all vehicles
- 2000: ANCAP - all vehicles
- 2005: ANCAP - all vehicles
- 2010: ANCAP - all vehicles
- 2015: ANCAP - all vehicles
- 2020: ANCAP - all vehicles

**Australian Design Rules**

- 1995: Australian Design Rules
- 2000: Australian Design Rules
- 2005: Australian Design Rules
- 2010: Australian Design Rules
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- 2020: Australian Design Rules

**Utilities GVM>2.7t**

- 1995: Utilities GVM>2.7t
- 2000: Utilities GVM>2.7t
- 2005: Utilities GVM>2.7t
- 2010: Utilities GVM>2.7t
- 2015: Utilities GVM>2.7t
- 2020: Utilities GVM>2.7t

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No crash test regulations currently apply to large utes (high-seat & GVM >2.7t). ADR85 pole test applies to new models from 2018.


SAFETY FEATURES - ALL LIGHT VEHICLES
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Without ANCAP there would have been little incentive to add most of these features to light vehicles sold in Australia and New Zealand.

CRASHWORTHINESS IMPROVEMENTS
CRASHWORTHINESS IMPROVEMENTS

Estimated that risk of serious injury is halved in a 5-star vehicle, compared with its 3-star predecessor (23rd ESV).

UPTAKE OF ANCAP 5-STAR MODELS (ALL LIGHT VEHICLES)

Est 93% of LV sales in 2015 were 5 stars.
ESTIMATED VEHICLE KM TRAVELLED (VKT) & SAVINGS IN KILLED & SERIOUSLY INJURED (KSI)

Predicted that by 2020 the number of occupants killed or seriously injured will be one third less than if the crashworthiness of the fleet had remained the same as 2001 (24th ESV)

Est 40% of VKT in 2015 was in 5 star LVs

Predicted KSI reduction compared with fleet safety in 2001
PEDESTRIAN PROTECTION IMPROVEMENTS

Remarkable improvements in pedestrian protection for all types of light vehicles in recent years

No regulations in Australia

2-step improvement (eg poor to acceptable, marginal to good) halves the risk of serious pedestrian injury (23rd ESV Pastor)
PEDESTRIAN PROTECTION IMPROVEMENTS

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2018 Test & Assessment Protocols

From 2018:

- Same test and assessment protocols as Euro NCAP except for some regional differences
- Includes alignment of technical policies & procedures.
- This means:
  - new & updated tests
  - new test equipment
  - new assessment methods
  - new scoring methodology
2018 Test & Assessment Protocols

ANCAP Safety Assist assessment will include:

- Speed assistance systems (SAS)
- Advanced seat belt reminders (SBR),
- Autonomous Emergency Braking (AEB): car-to-car, pedestrian & cyclists and
- Lane support systems (LSS)

2018 Test & Assessment Protocol
REAR SEAT IMPROVEMENTS

- 50km/h full width frontal crash test using a small adult female dummies for the driver and rear passenger
- Q6 & Q10 (older child) dummies in rear seat for frontal offset test
- Rear seats are neglected in regulation
UPTAKE OF SAFETY FEATURES
REAR SEAT IMPROVEMENTS

In Europe OEMs are now fitting seat belt pretensioners and load-limiters to outboard rear seat belts.

Nearly all models rated by Euro NCAP in 2015 had these features.

But only 10 of the 23 models with Australian counterparts had them.

Pretensioners for outboard rear seats
Euro NCAP ratings in 2015

43% Pretensioners fitted in Europe but not Australia
57% Pretensioners fitted in both regions

Pretensioners fitted in Europe but not Australia:
Mazda2, Hyundai Tuscon, Honda HRV, Audi A4, Kia Optima, Honda Jazz, Kia Sportage, Mazda CX3, Mitsubishi Triton/L200, Nissan Navara, Suzuki Vitara, Suzuki Baleno, Holden Spark/Karl

UPTAKE OF SAFETY FEATURES
AEB - INTERURBAN

AEB Interurban for Euro NCAP Ratings

Optional
Standard

Part of Safety Assist rating from 2013

% of Ratings in that year

0% 10% 20% 30% 40% 50% 60% 70% 80% 90%

Year Rated by Euro NCAP
2011 2012 2013 2014 2015
Euro NCAP has included AEB-interurban in Safety Assist score since 2013. Fitting rates have improved from 25% to 88%.

ANCAP starts in 2018 (46% now*)

Potential to prevent 40% of serious crashes (CASR106)

* 46% of ANCAP ratings published in 2015 & 2016. Not % of models on sale.
Euro NCAP has included AEB-interurban in Safety Assist score since 2013. Fitting rates have improved from 25% to 88%

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UPTAKE OF SAFETY FEATURES
SPEED ASSIST SYSTEMS

- **Manual Speed Assistance (MSA)** - driver selects a speed for speed limiting
- Many vehicles use the same buttons as the cruise control system
- **Speed Limit Information Function (SLIF)** - displays current posted speed limit to driver
- Speed sign recognition and/or a digital map of speed limits, often part of a sat-nav system
- **Intelligent Speed Assist (ISA)** combines MSA & SLIF
SPEED ASSIST SYSTEMS
MANUAL SPEED LIMITER

Euro NCAP has included SAS in Safety Assist score since 2012. Fitting rates for a manual speed limiter have improved from 25% to 95%

ANCAP starts in 2018 (36% now)

Travelling at 5km/h over the speed limit doubles the risk of a serious crash (CASR093)
SAFETY ASSIST AND AUTONOMOUS CARS

The active safety systems that will soon be assessed by ANCAP are essential components of an autonomous car.

Building blocks to automated driving (and testing)

Planned for 2018
Proposed for 2020
SAFE SYSTEMS

COUNTERMEASURES OVERLAP

Size of pie slices indicative only

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SAFE SYSTEMS

COUNTERMEASURES OVERLAP

Size of pie slices indicative only

SAFE SYSTEMS

SAFER VEHICLES COULD POTENTIALLY ADDRESS ABOUT 2/3\textsuperscript{RDS} OF SERIOUS CRASHES
SAFE SYSTEMS
VEHICLE COUNTERMEASURES - ANCAP

- SAFER SPEEDS
- CRASH AVOIDANCE
- OCCUPANT PROTECTION
- VULNERABLE USER PROTECTION

SAFETY ASSIST
CRASH TEST RATING
CHILD OCCUPANT RATING
WHIPLASH RATING
TELEMATICS?
PEDESTRIAN RATING
SAFETY ASSIST
**FUTURE VEHICLE SAFETY 2018+**

ANCAP from 2018...
- Tougher crash tests
- Small occupants
- Rear seat occupants
- Smart restraint systems
- Speed assist systems
- AEB - city, interurban, pedestrians & cyclists
- Lane support systems
- Other safety assist

![Graph showing Current ANCAP Roadmap](image)

? Savings due to ANCAP-influenced improvements in active & passive safety from 2018

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**BEYOND NCAP - TELEMATICS? PAY-HOW-YOU-DRIVE INSURANCE**

- Some UK insurers now offer substantial premium discounts for drivers who install a “black box” to show they are driving safely
- One fleet reports 47% reduction in crashes (ETSC 2016)
- Could be particularly effective for young drivers (Greaves 2011, Stigson 2013)

![Ingenie app screenshots](image)

Note: Presenter’s opinion
Not ANCAP policy