

Transport System - System Failures

Truck
passenger

Young male
(no seat belt)

Crash on an 80
km/h urban
freeway

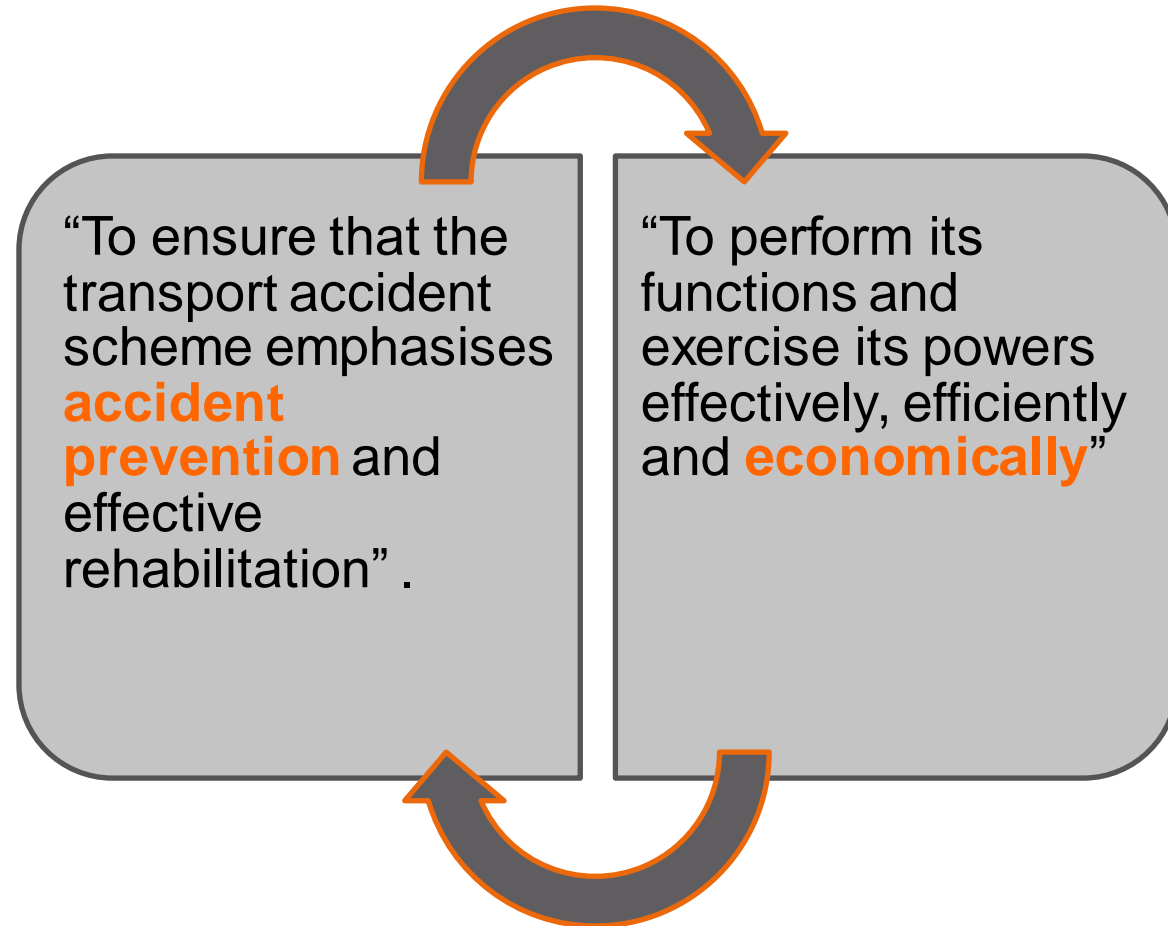
- No injury to restrained occupants
- Multiple spinal fractures and severe head injuries
- Acquired Brain Injury
- Quadriplegia
- 24-hour medical care required

Estimated Transport Accident
Commission benefit payments:
\$21 million

Transport Accident Commission (TAC): 1987- Now

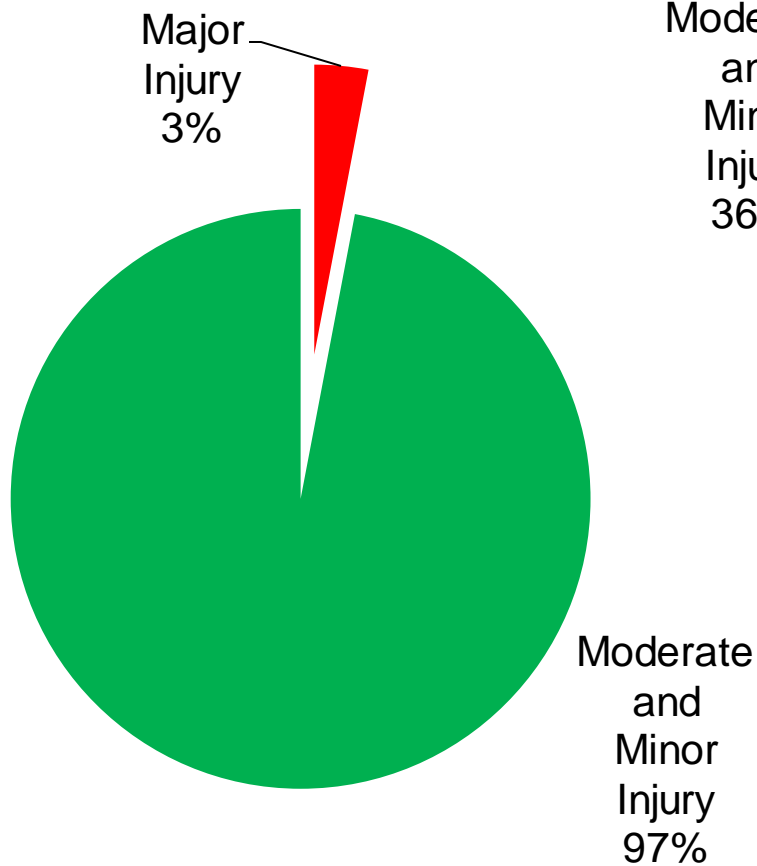
- Government-owned insurer of third-party personal liability for Victorian road traffic injuries
- Established under the Transport Accident Act 1986
- 16,000 claims per annum (over 30% hospitalised)
- From superficial and soft tissue injuries to Acquired Brain Injury (ABI), Quadriplegia and death
- Medical, income and impairment benefits (no-fault) and common law benefits: +\$1,000,000,000 (2012)

TAC objectives – Transport Accident Act (1986)

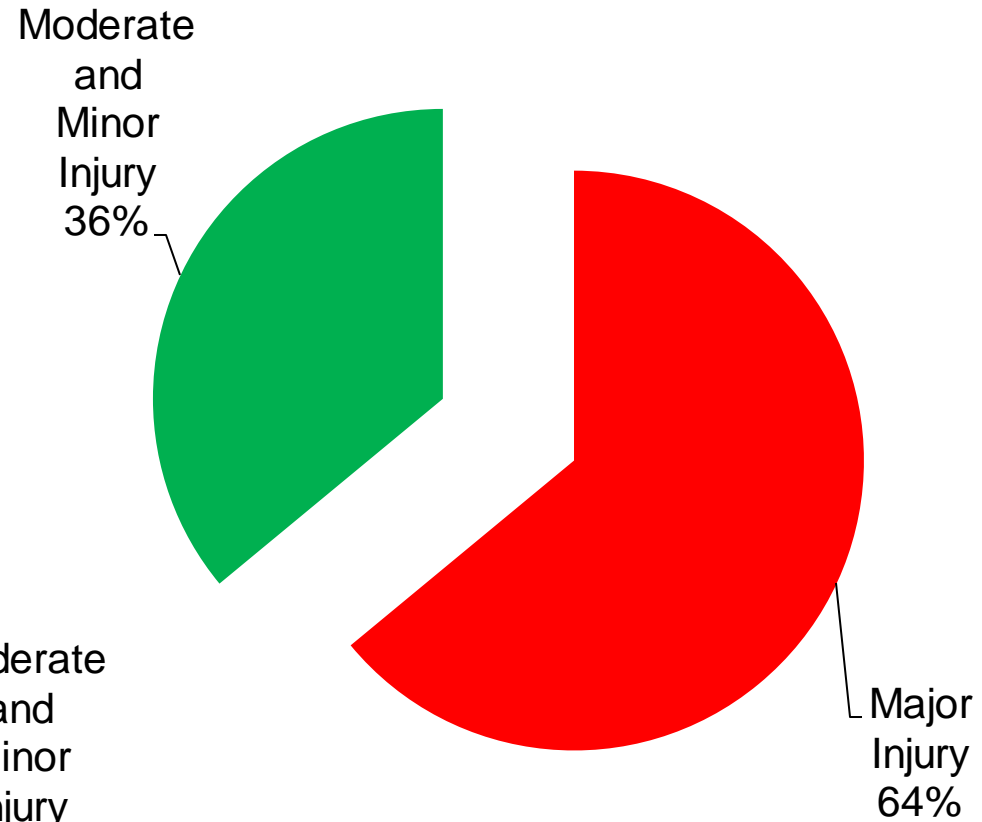


Financial burden of major trauma

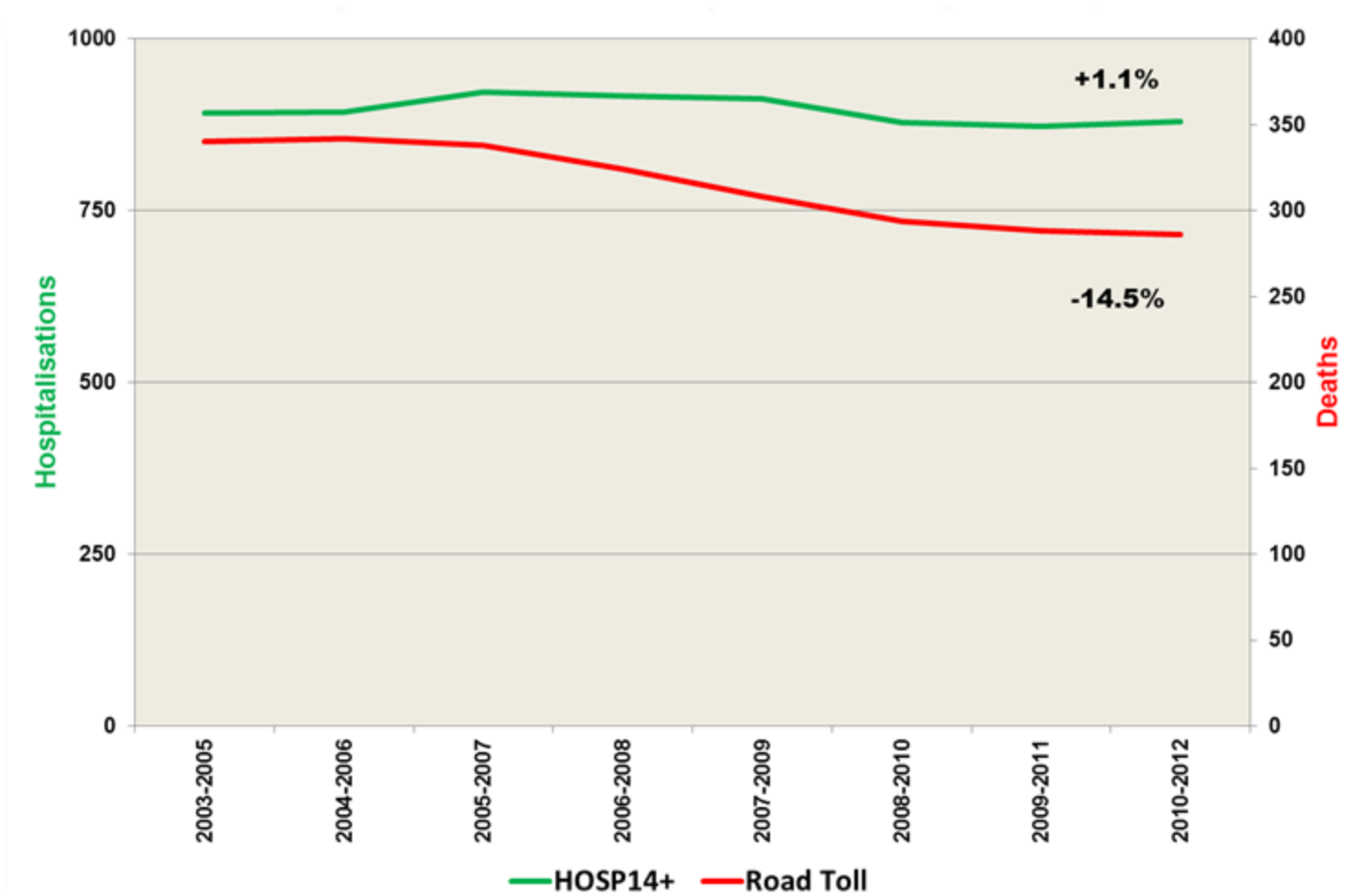
TAC Claims Portfolio Profile



TAC's Spread of Liability



Hospitalisation over 14 days (Key Road Safety Performance Indicator)





Estimating Factors Influencing Hospitalisation over 14 Days Among Compensated Road Crash Injuries in Victoria

Hafez Alavi & Michael Nieuwesteeg
Road Safety Research Team

Study design

- 4,094 TAC claims (2010 – Admitted to hospital for 1+ days)
- Dependent variable: Binary variable (1: Hosp14+; 0: Hosp0-14)
- Explanatory variables: Road User; Vehicle; Road; Crash Circumstances
- Controlled for Injury Severity

Explanatory variables

Road User

- Type
- Age
- Gender
- License Type
- Seatbelt/Helmet

Vehicle

- Type
- Year of Manufacture

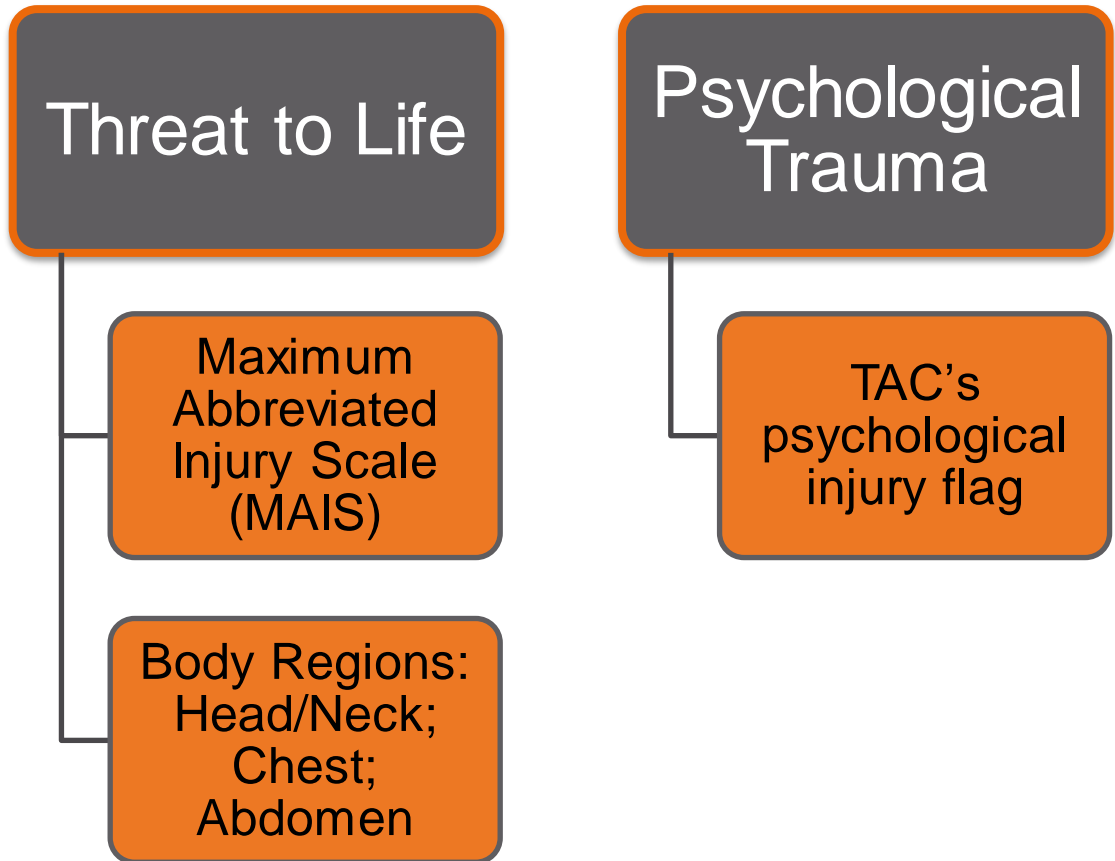
Road

- Speed Limit
- Intersection/Midblock
- Urban/Rural
- Divided/Undivided
- Straight/Curve

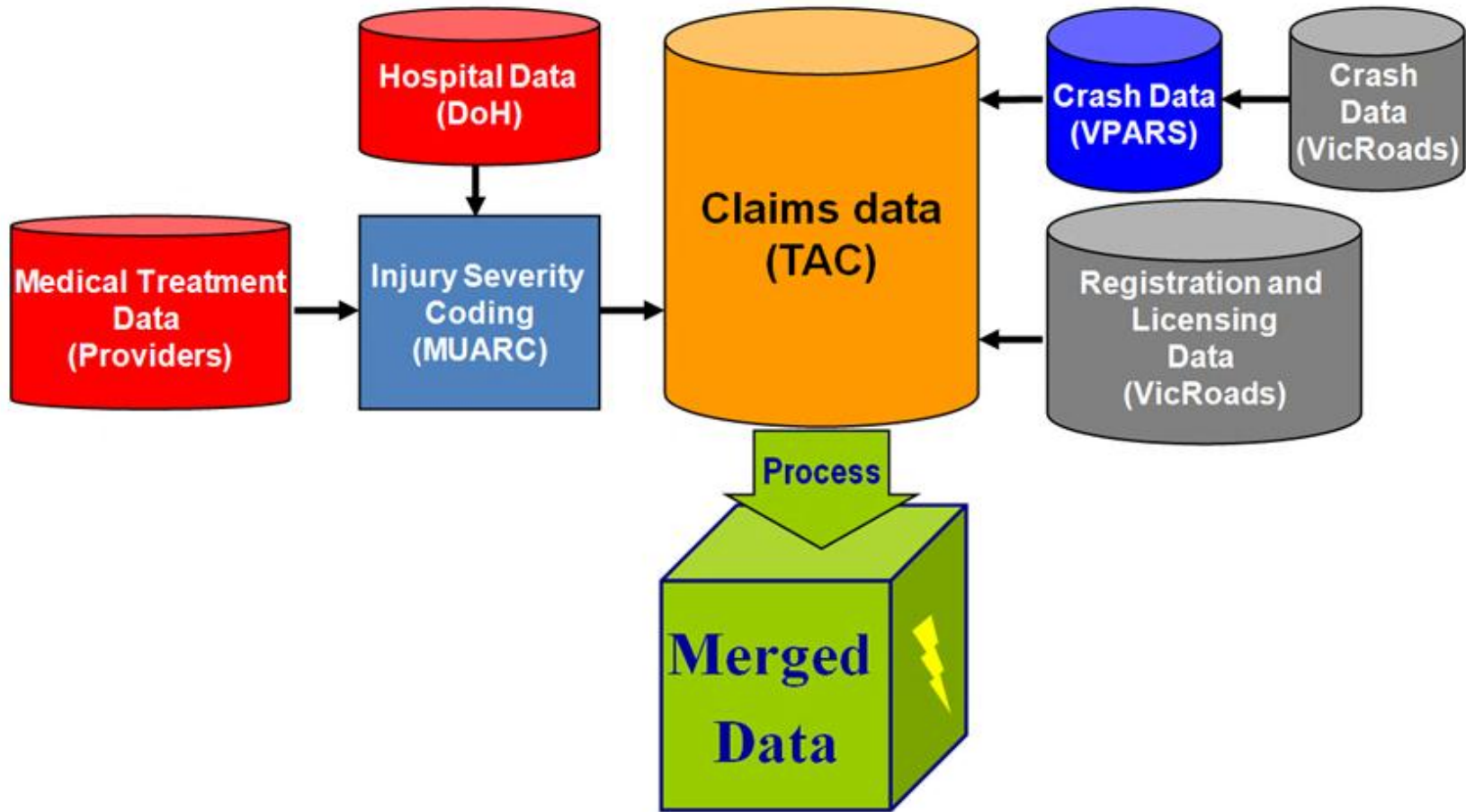
Crash

- Type
- Time of Day
- Day of Week
- Light Conditions
- Atmospheric Conditions
- Vehicle Movement
- Hit-and-run

Injury Severity



Data build



Modelling

- Binary logistic regression
- Backward elimination procedure
- Model comparison: Log-likelihood ratio
- GoF: Hosmer-Lemshow test
- Importance of attributes of DVs: Odds ratio
- SPSS package (v. 20)

Results

Threat to Life

- MAIS
- Body region

Psychological trauma

Road User

- Type
- Age
- Gender
- License Type
- Seatbelt/Helmet

Vehicle

- Type
- Year of Manufacture

Road

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Crash

- Type
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Road User

Type	Sig.	Odds Ratio	Lower CI	Upper CI
Driver				
Passenger	0.616	0.93	0.72	1.21
Motorcyclist	< .001	2.45	1.9	3.16
Cyclist	0.423	1.19	0.78	1.82
Pedestrian	< .01	1.93	1.25	3

Age	Sig.	Odds Ratio	Lower CI	Upper CI
0-14				
15-24	< .01	2.74	1.4	5.39
25-44	< .01	2.51	1.28	4.93
45-64	< .01	2.96	1.50	5.81
65+	< .001	10.44	5.32	20.5

Vehicle

Manuf. Year	Sig.	Odds Ratio	Lower CI	Upper CI
2001+				
2000-	< .05	1.26	1.02	1.56

Road

Speed Limit	Sig.	Odds Ratio	Lower CI	Upper CI
<= 50 km/h				
60-70 km/h	0.119	1.23	0.95	1.59
75-110 km/h	< .01	1.52	1.16	1.99

Injury Severity

MAIS	Sig.	Odds Ratio	Lower CI	Upper CI
<= 2				
3+	< .001	5.1	4.14	6.27

Head/Neck	Sig.	Odds Ratio	Lower CI	Upper CI
<= 2				
3+	< .001	2.06	1.57	2.70

Psych. Trauma	Sig.	Odds Ratio	Lower CI	Upper CI
No				
Yes	< .001	4.03	2.97	5.45

Road Safety Issue	Context	Public Awareness Campaign	Road Safety Investment
Vulnerable Road Users	<ul style="list-style-type: none"> Walking/Cycling promotion Increase in motorcycles' popularity 	<ul style="list-style-type: none"> Motorcycle safety 	<ul style="list-style-type: none"> Community grants \$1 m/yr Safer Roads Infrastructure Program (SRIP): \$100 m/yr
The elderly	<ul style="list-style-type: none"> Ageing population 	<ul style="list-style-type: none"> Educational sessions Medication campaigns 	<ul style="list-style-type: none"> Ozcardrive RACV
High-speed roads	<ul style="list-style-type: none"> Homogeneity Mobility vs. Safety 	<ul style="list-style-type: none"> Anti-speeding 	<ul style="list-style-type: none"> Funding Victoria Police: \$2 m/yr SRIP
Vehicle Safety	<ul style="list-style-type: none"> Emerging technologies 	<ul style="list-style-type: none"> Vehicle safety ratings 	<ul style="list-style-type: none"> Enhanced Crash Investigation Study (ECIS): \$2.3 m/yr
Serious Injury (Head/Neck)	<ul style="list-style-type: none"> Definition Measurement 	<ul style="list-style-type: none"> Safe System messages 	<ul style="list-style-type: none"> SRIP ECIS
Psychological Trauma	<ul style="list-style-type: none"> Common law cases/Damage 		

Limitations

- Resource use measures are influenced by extraneous factors: Pre-Crash; Crash; Post-Crash
- Injury severity may not be properly controlled for
- No specific insight on why these factors, especially: psychological trauma

Questions?