TRANSPORT ACCIDENT COMMISSION

TAC 2015 September 2013

SERIOUS INJURY INQUIRY

Transport Accident Commission

State Government Victoria

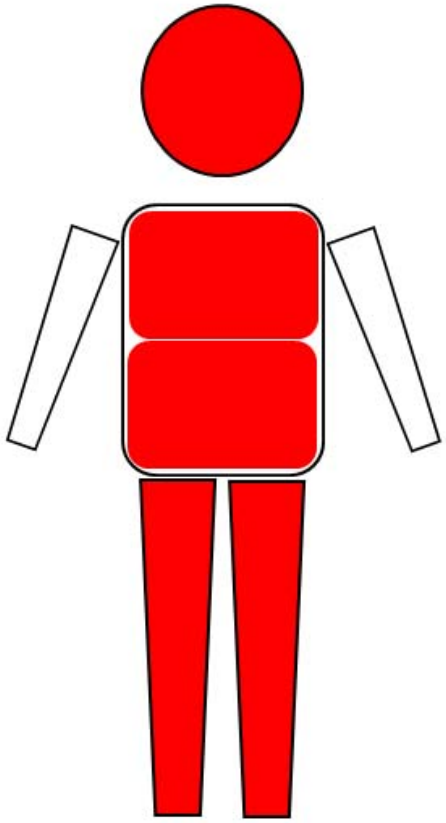
Case Study

Sociodemography

- Age: 26-39
- Gender: Male
- Marital Status: Married
- Education: High School
- Bricklayer

Life Story (pre-injury)

- Married father with two young children
- Owned successful bricklaying business
- Employed other people
- Enjoyed boating, fishing, camping, water sports
- Suffered asthma
- Occasional recreational drug use



Injured Body Regions

Road Crash Circumstances

- Road User: Driver
- Run-off-Road into a Pole
- Vehicle: Ute
- Rural Intersection

Injury Details

- Concussive closed head injury
- Facial laceration
- Collapsed lung
- Internal chest injuries
- Multiple ribs fractures
- Fractured left hip, legs and ankles
- Psychological reaction

Consequences of Injury

TAC Compensation

Estimated Lifetime TAC Costs (excluding common law liabilities): $700-$750k

Impairment

- Walks with a limp
- Permanent scarring
- Depression & thoughts of self-harm
- Anxiety & aggressiveness

Threat to Life

- Injuries considered severe and life threatening
- Up to 50% chance of death

Resource Use

- Air emergency ambulance
- Initial Hospitalisation: 32 days
- Subsequent Hospitalisation: 8

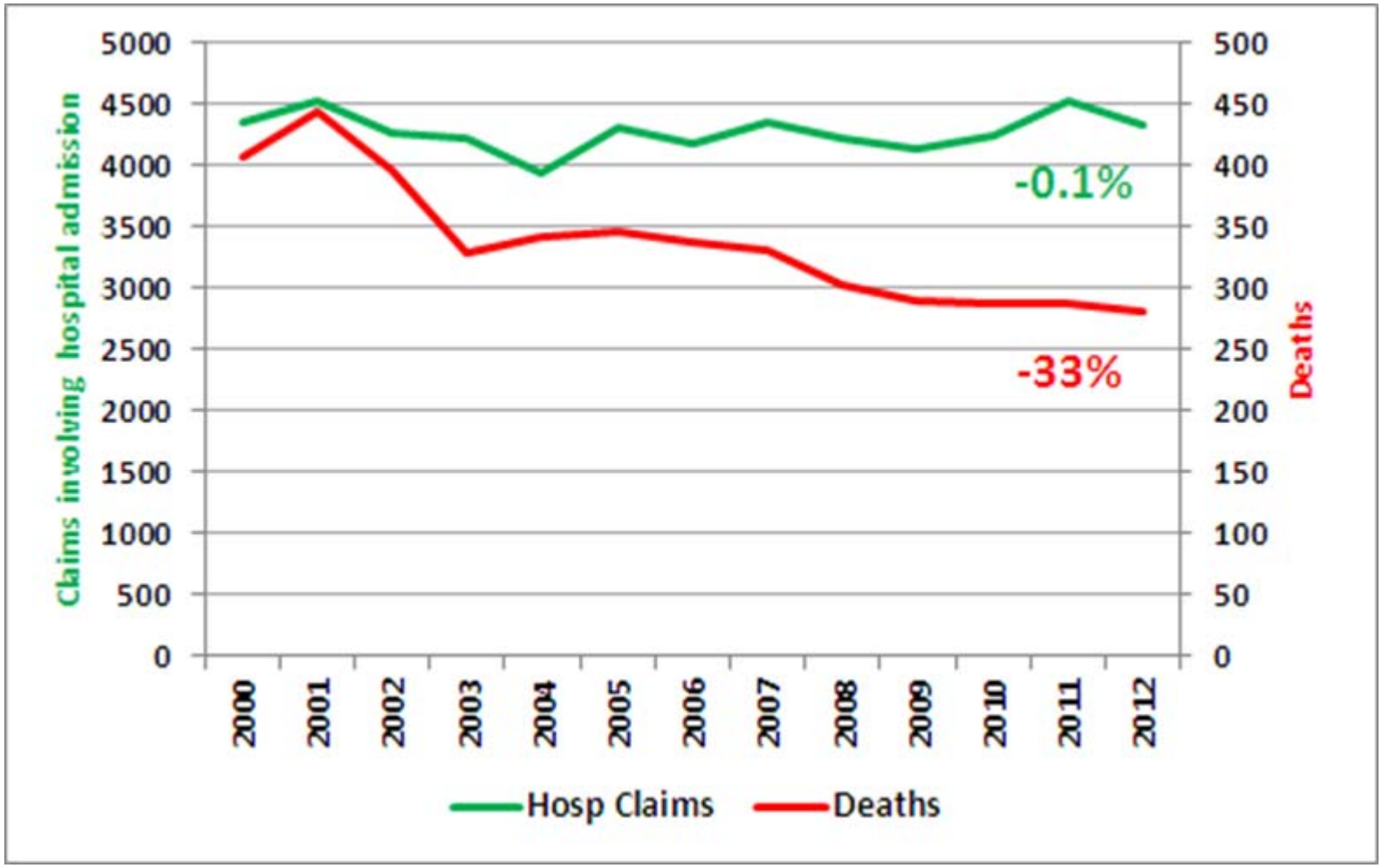
Quality of Life Loss

- Social withdrawal
- Stopped running his business
- Stopped his hobbies
- Took up gambling

Pain and Suffering

- Ache and discomfort in leg, thigh and ankle
- Separated from wife within 6 months

Importance of this inquiry



Presentation contents

- The TAC and serious injury
- The extent of road trauma (what we know)
- Inquiry terms of reference and TAC suggestions

TAC objectives and functions

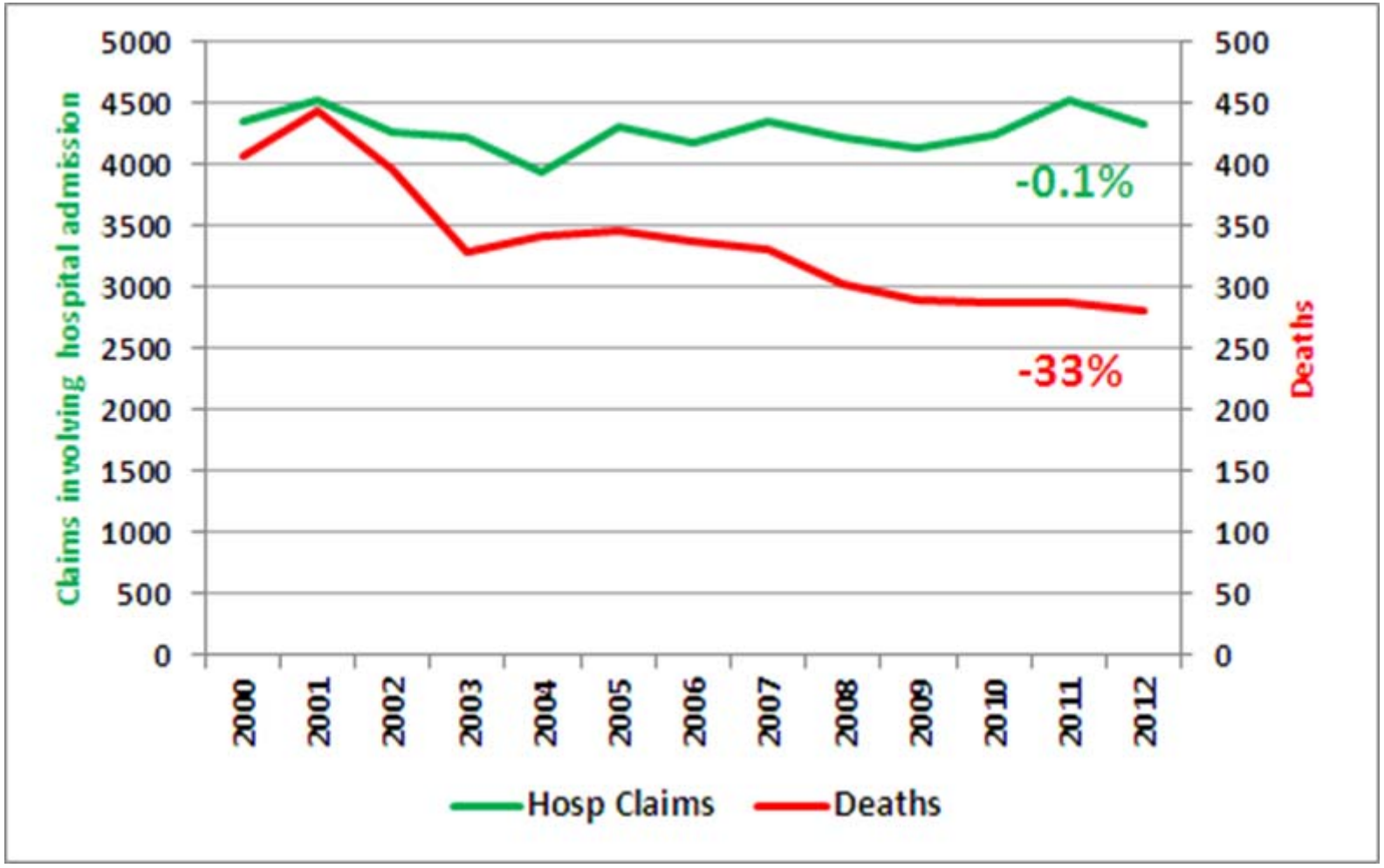
Transport Accident Act (1986)

TAC's statutory definition of Serious Injury

- Serious long-term impairment or loss of a body function
- Permanent serious disfigurement
- Severe long-term mental or severe long-term behavioural disturbance or disorder
- Loss of a foetus

This definition is used to determine access to common-law compensation

The extent of road trauma (what we know)

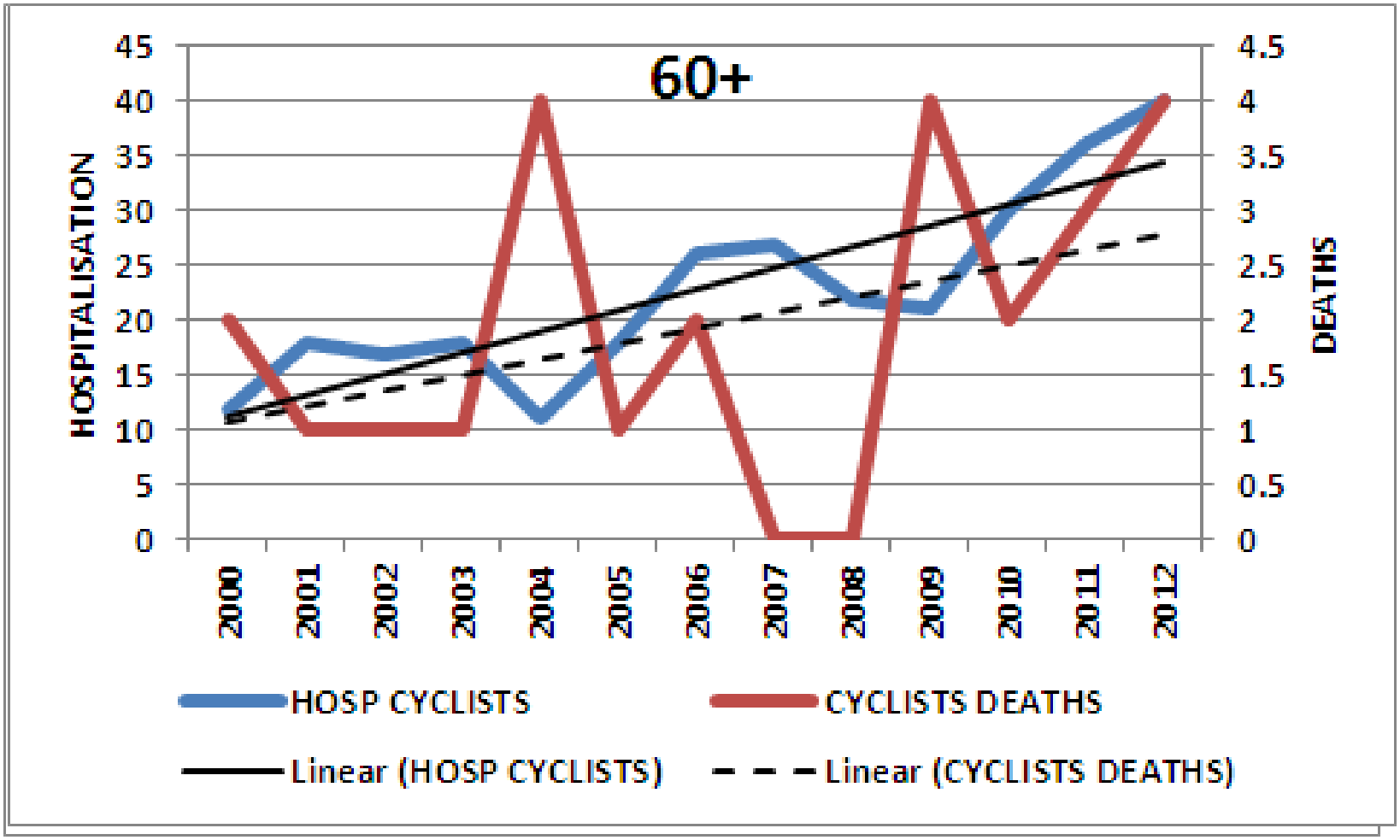


The extent of road trauma (what we know)

- Overall hospital admission claims unchanged over 13 years, but:
  - 7 days or less UP 8%
  - 8 days or more DOWN 17%

Changes are calculated on the two-year periods 2000 to 2001 and 2011 to 2012.

The extent of road trauma (what we know)



Term of Reference C

Definitions of Serious Injury

Six lenses for viewing injury severity

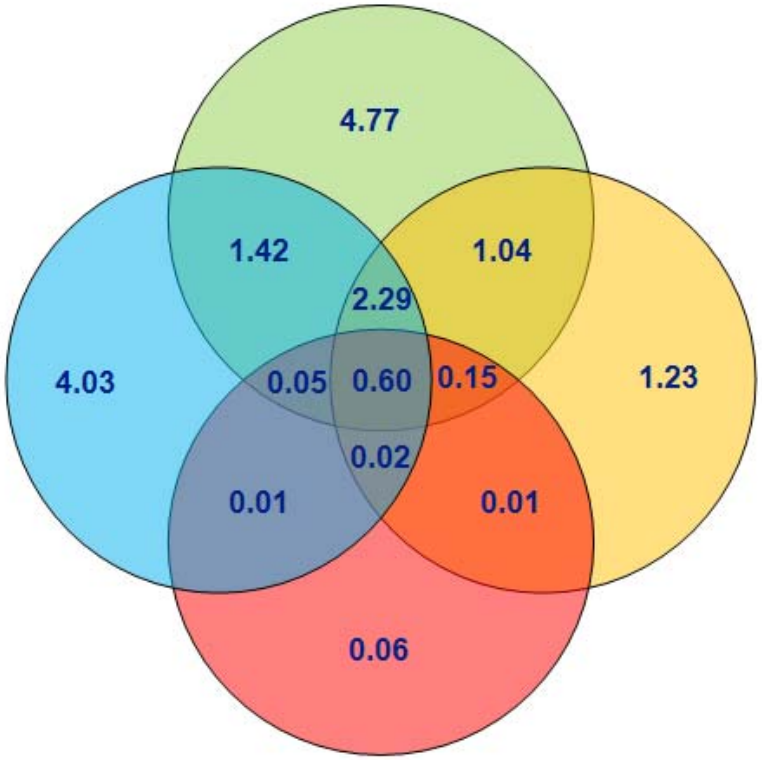
- Various ways to view injury severity

Cost

TAC Compensation Cost
Over $52,378
(10.4%)

Threat to Life

Maximum
Abbreviated
Injury Scale
3+
(9.2%)



Resource Use

Acute Hospitalisation
Over 14 Days
(6.1%)

Impairment

TAC Degree of Impairment
30+%
(1%)

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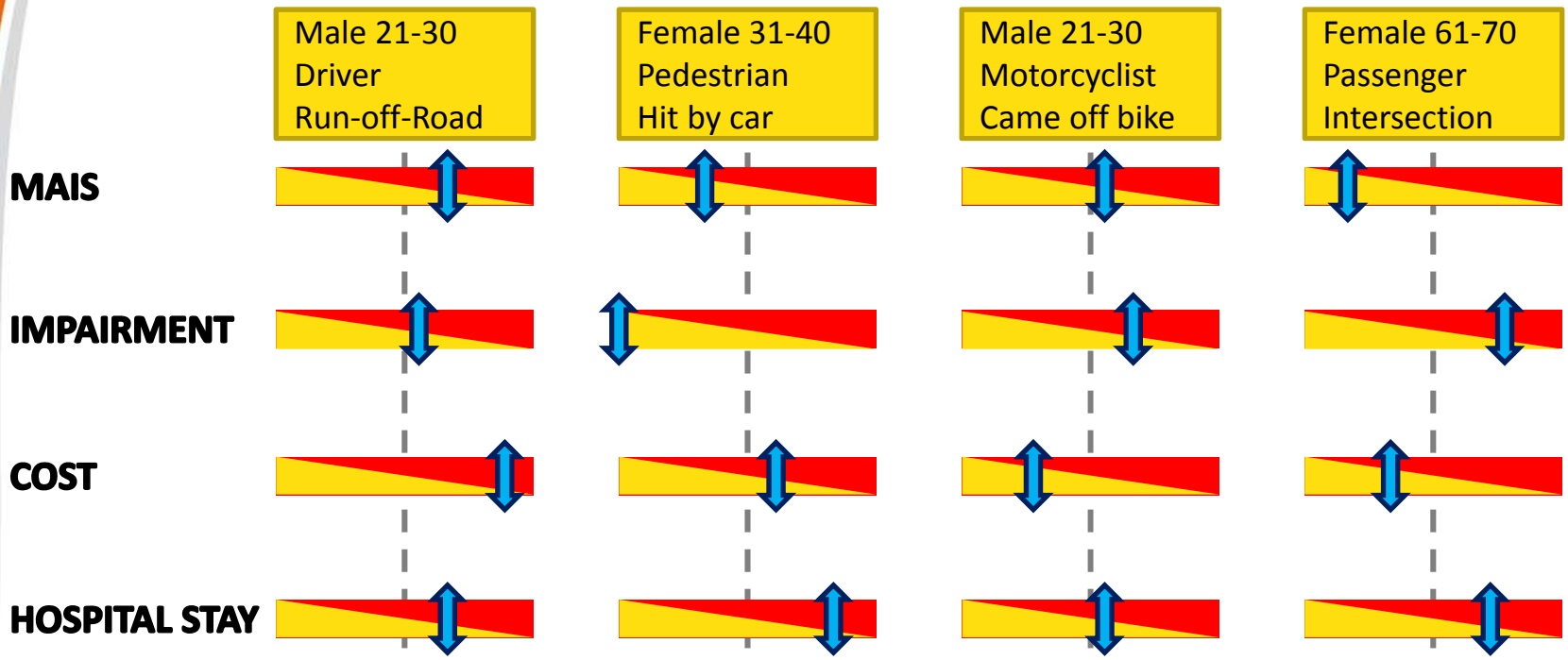
Consequences of Injury – TAC claims case studies



QUALITY OF LIFE - PAIN AND SUFFERING			
• Separated from wife within 6 months • Social withdrawal • Stopped running his business • Stopped his hobbies • Took up gambling	• Recovered well from her injuries • Has resumed her pre-crash lifestyle	• Significant disfigurement • Issues with hearing in both ears • Short-term memory issues • Unable to do sports	• Requires a wheelchair • Adjustment disorder and depression • Anxiety and mild features of

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What should a measure of Serious Injury look like?

- Objective, understandable and easily explainable
- Adequately related to consequences of injury, importantly: threat to life and impairment;
- Balance data availability, accuracy, timeliness, coverage and economy, whilst meeting practical needs
- Not discriminating between people in terms of demographic and socioeconomic circumstances (rich v poor; young v elderly and etc.)
- Consistent with interstate and international practices

Suggestions

Short-term adoption	TAC hospital admission measures are available for immediate use Threat-to-Life measures such as anatomical injury severity scoring systems: ICISS, MAIS (EU has adopted MAIS3+)
Mid-term incorporation	Measures of Impairment such as TAC's Degree of Impairment or DoH's research on non-fatal outcomes
Mid- to long-term incorporation?	Measures of Pain and Suffering, and Quality of Life Loss

Term of Reference B

Reporting of Serious Injury

Context

- A range of Victorian entities collect injury data, for different purposes, using different rules and recording practices
- Our understanding of the number and severity of incidents could be improved by increasing the exchange of data between agencies
- Much work has been undertaken and efforts are continuing

Suggested approach to improving data
The current situation

Victoria benefits from its network of road safety partners:

- ongoing data sharing and collaborations;
- relevant expertise
- history of road safety research and collaborating with road safety research centres and academia
- for many years the TAC has linked crash data with injury outcomes, and has used this data for good!

Suggested approach to improving data
The current situation (continued)

TAC, through Deloitte, has explored the existing datasets in Victoria and has knowledge on:

- data availability
- data attributes (e.g. quality, completeness, vintage)
- options for sharing data
- potential barriers to sharing (e.g. compliance with privacy regulations)
- the potential to enhance current road safety metrics

Suggested approach to improving data
The current situation (continued)

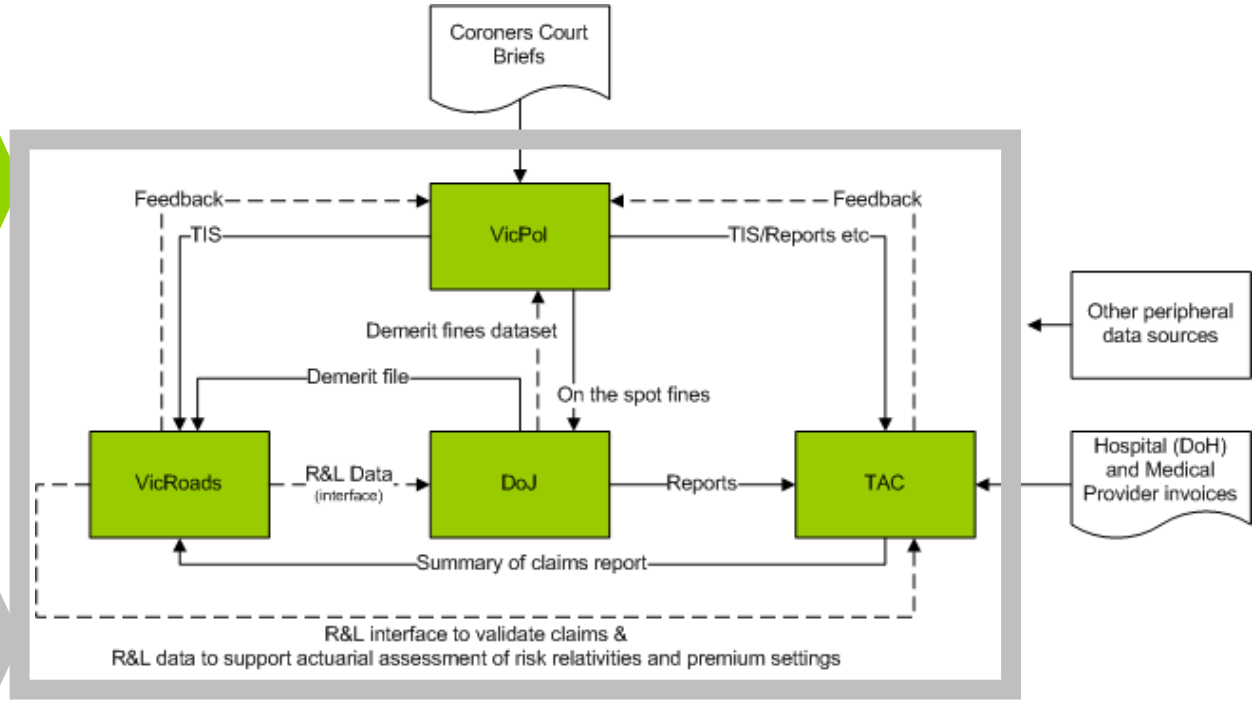
arrive alive members

- TAC
- VicPol
- VicRoads
- Department of Justice

Peripheral data sources

- Coroners Court
- Magistrate's Court
- DoH
- Transurban
- ABS, FCAI/Polk, Other

High-Level flow



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Suggested approach to improving data

The current situation (continued)

	VicPol	TAC	VicRoads	Department of Justice	Coroners Court*
VicPol	TIS ADIDIS LEAP CAD MAS FPPO VISU Crime Stoppers	TIS → VPARS Some ad-hoc reports Routine reports (DD strike rates)	TIS → RCIS-TIS VISU (selected data)	On the spot fines scanned and entered into VIMS	
TAC	Reports	AVANTI (=claims data) Survey data Injury data (from DoH and medical providers)	Claims data (summary) Reports		
VicRoads	R&L (interface)	R&L (extract and interface) RCIS Speed survey reports	RCIS R&L (VRIS and DLS inc Demerit data) Road attribute data Black spot data Speed survey	R&L (interface)	
Department of Justice	VIMS → IMES ESI + Hoon data	Reports	Demerit point data	SERCO VIMS Demerit point data ESI + Hoon data	
Coroners Court*	Coroners Briefs - BAC and Toxicology reports on fatalities High level and de-identified BAC and Toxicology reports	Ad-hoc coroners briefs and toxicology reports Access to reports on case-by-case basis	NCIS (National Coroners Information System)		Coroners Briefs - BAC and Toxicology reports on fatalities High level and de-identified BAC and Toxicology reports

Shared from | Source | Shared to

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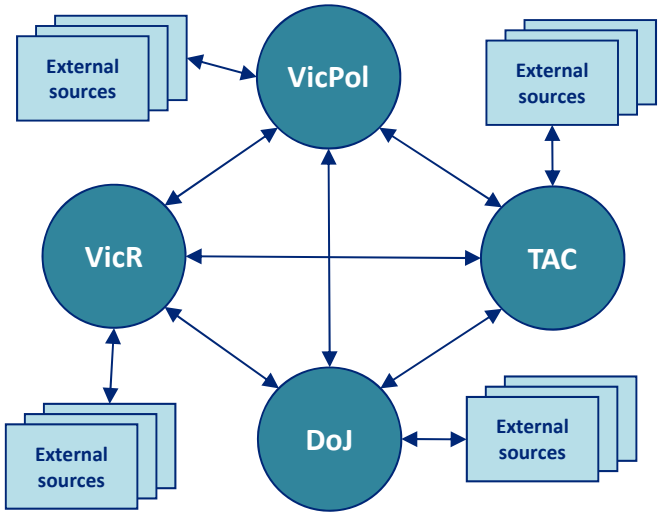
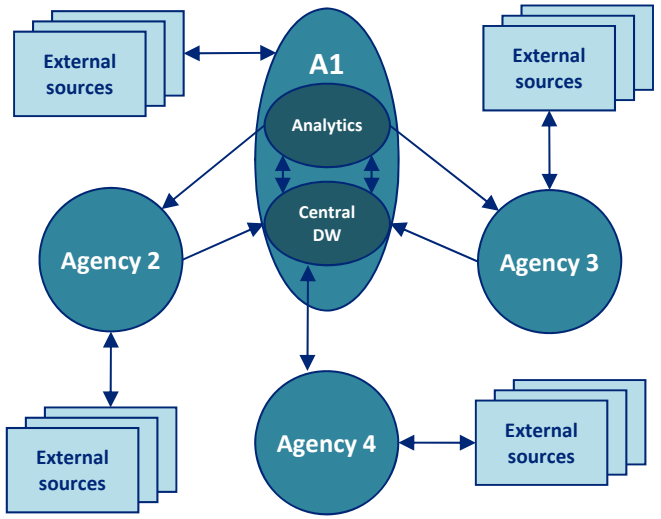
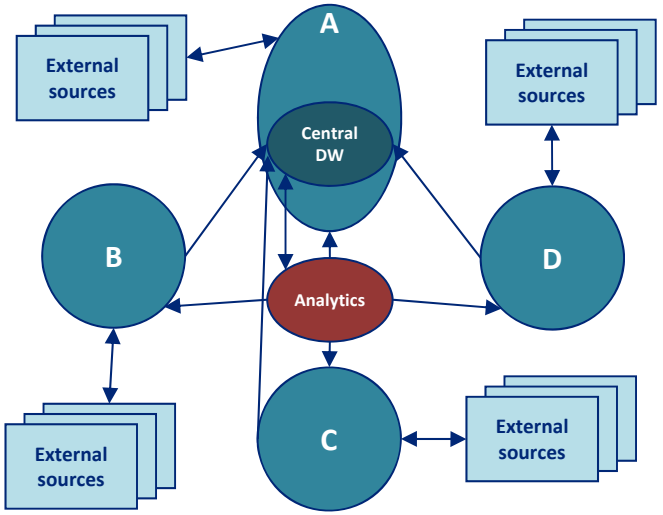
Data Sharing Model: Current vs. Proposed







STRADA
Swedish TRaffic Accident Data Acquisition

Driving license register,
vehicle register, road data

>1000
Public officials
Researchers
etc

•Agreement
•Education, information
•Establish routines
•Establish technology

Hospital

STRADA 1

STRADA 2

•Agreement
•Education, information
•Establish routines
•Establish technology

Police

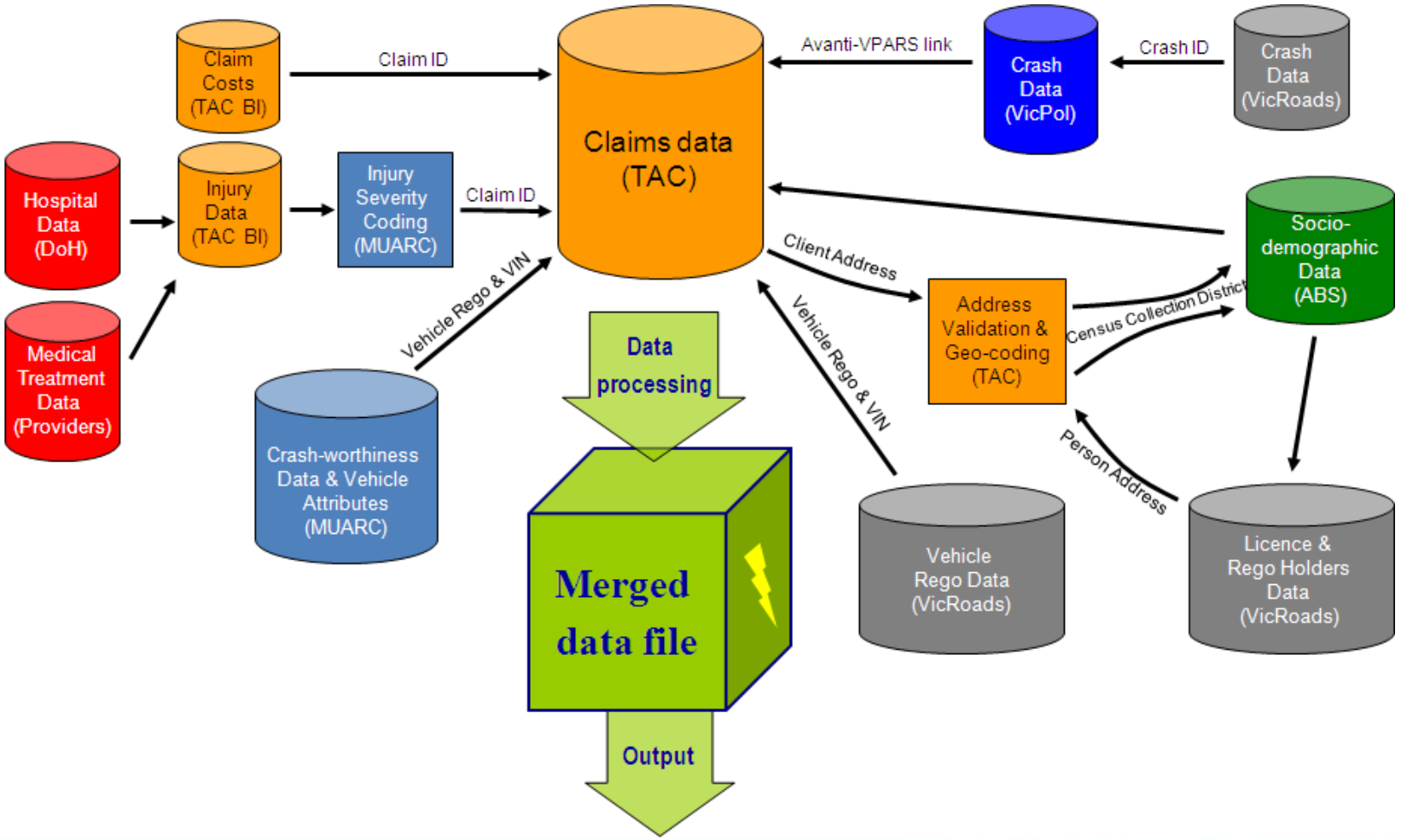
Reports are matched
-time
-place
-Person id nr

Data de-identification

SWEDISH TRANSPORT AGENCY

Suggested approach to improving data

A current example



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TAC: a potential host for linked data

Why TAC?

- Statutory mandate to improve road safety and collect road safety data
- Reliable source of funding
- Hosting both road safety and public health expertise
- Holding a unique interest in all pre-crash, crash, post-crash phases and across all dimensions of road, road user, vehicle and speed
- Having established agreements for data sharing and physical linkages with other road safety partners and the health system that are: Effective; Economical; Timely; Road Safety Oriented
- A track record of utilising linked data to provide insight into crashes and health outcomes
- Having undertaken research into road safety data needs (identifying and mapping data sources) and robust models for data linkage (Deloitte's works)
- A long history of dealing with privacy issues and risk management through managing personal information about TAC claimants

TAC: a potential host for data linkage

Making it happen

- High-level support from VicPol, VicRoads, DoJ, DoH and State Coroner
- Establishment of formal agreements
- Appropriate legislative supports to guarantee data collection
- Risk management approach to privacy
- Long-term funding commitment
- Creation of a small team (2-4 people depending on scope) and purchase of IT hardware and software

Term of Reference D

Comparing Trends in Fatal and Serious Injury

Context

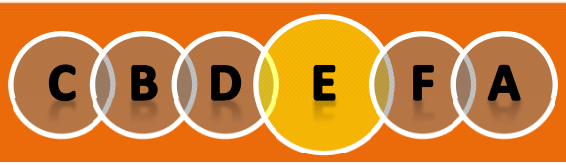
- The apparent plateau in serious injuries hides underlying trends, some positive and others negative
- Fatal injuries are mainly driven by extreme behaviours, while other injuries are mainly driven by system failures
- It has been suggested that existing road safety interventions target fatalities, not benefiting other injuries
- Speed has been a major focus of interventions (speed influences death and serious injury risks differently)
- Recent road safety interventions might explain discrepant patterns observed for different road users

Suggestions

- Some previously evaluated countermeasures would benefit from revised evaluations that use more precise injury severity metrics
- New research projects
  - TAC-funded, in-depth crash study will reveal causal factors of serious injury crashes
  - ARC research project. In car monitoring of drivers will identify risk factors and behaviours leading to crashes

Term of Reference E

Cost Effective Countermeasures



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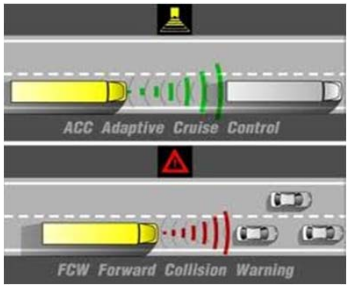
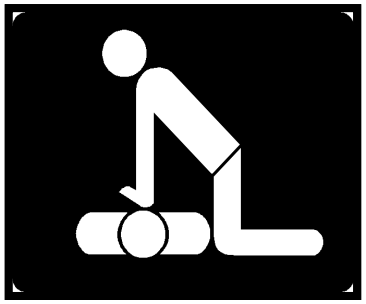
Haddon Matrix: Developing road safety interventions

	Road User	Vehicle	Environment
Pre-Crash Crash Prevention			
Crash Injury Prevention			
Post-Crash Life Sustaining			

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Haddon framework for developing road safety measures

Phase	Objective	Road User	Vehicle & Technology	Road & Roadside
Pre-Crash	Crash prevention	• Attitude • Impairment • Enforcement	• Roadworthiness • Crash-prevention technologies	• Road design • Layout • Facilities
Crash	Injury prevention	• Restraints • Impairment	• Restraint • Protective design	• Protective roadside design
Post-Crash	Life sustaining	• First-aid • Access to medics	• Ease of access • Fire risk	• Rescue facilities • Congestion

TAC road safety initiatives/interventions – Speed

Initiative/ Intervention	Objective	Budget per annum	Partners
Intelligent Speed Assist (ISA)	To roll out ISA to government fleet to increase its uptake and penetration in the market	$100K	TBC
Speed public education campaign	To enhance public's awareness of fundamental role of speed in increasing risk of crashes and injury severity	Incl. under road users	As cited under road users

TAC road safety initiatives/interventions – Road User

Initiative/ Intervention	Objective	Budget per annum	Partners
Public road safety awareness and education campaigns	To promote road users' behaviour via enhancing their perceptions and awareness of road safety risk factors such as drink- and drug-driving, fatigue, distraction… To educate road safety principles and safe road use to parents, young drivers, seniors, children…	$35M	VicRoads RACV Police DoJ DoT Social research centres
Enhanced Enforcement Program	To promote road users' road safety behaviour via increased targeted enforcement activity	$4M	Police
Motorcycle Protective Clothing Pilot Testing Program	To provide safety information on motorcycle protective clothing (consumer information program)	$170K	VicRoads

TAC road safety initiatives/interventions – Vehicle

Initiative/ Intervention	Objective	Budget per annum	Partners
Australasian New Car Assessment Program (ANCAP)	To crash test Australia 's most popular passenger and light commercial vehicles and publicise the results To lobby manufacturers and decision makers to develop safer vehicles	$160K	ANCAP RACV VicRoads
Used Car Safety Rating (UCSR)	To develop a total safety rating for most common vehicle types	$35K	MUARC RACV VicRoads
How Safe Is Your Car website (HSIYC)	To promote and provide independent information on vehicle safety	$365K	-
SafeCar	To demonstrate and promote key effective vehicle safety technologies	$150K	-

TAC road safety initiatives/interventions – Road/Roadside

Initiative/ Intervention	Objective	Budget per annum	Partners
Safer Roads Infrastructure Program (SRIP)	To reduce the incidence and severity of crashes along roads with a relatively high number of serious casualty crashes	$100M	VicRoads
LGA Grants Program	To address general road safety issues raised by public To address specific issues such as pedestrian and cyclist safety	$2M	-

TAC road safety initiatives/interventions – Speed

Initiative/ Intervention	Objective	Budget per annum	Partners
Intelligent Speed Assist (ISA)	To roll out ISA to government fleet to increase its uptake and penetration in the market	$100K	TBC
Speed public education campaign	To enhance public's awareness of fundamental role of speed in increasing risk of crashes and injury severity	Incl. under road users	As cited under road users

Term of Reference F

Sustainable Reduction of Serious Injury

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Context

- TAC has a long history of highlighting the burden of serious injury in its public education program
- Evaluations of programs have always been concerned with reductions in serious injuries
- Public awareness of the burden of injury – will becomes more important as road trauma levels decrease
- Important role for the TAC is to move public discourse – serious injury, is not an acceptable outcome
- Better measurement of serious injury will assist

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Suggestions

- Improving understanding of causal factors and developing the evidence base will support effective road safety measures, including public education
- Continued evaluation of serious injury counter-measures will benefit from greater precision in injury severity
- Upcoming technologies and societal changes will present new opportunities for reducing levels of severity and number of injuries

Term of Reference A

Identifying the Cost of Serious Injury

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Suggestions

- TAC supports Willingness To Pay methodology, though recognises substantial investigation required before adoption in Victoria
- Attending to data needs is a higher priority at present

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Suggested approach to improving data
A reality check

- What do we need?
- How much should we invest?
- Are there alternative sources of truth?

Risk of Permanent Medical Impairment (RPMI)

Research by Folksam Research & Sweden and Karolinska Institutet

- Risk of impairment was established for injuries to different body regions and AIS levels
- 20,484 injured car occupants were followed for > 5 years
- 10% of all car occupants with AIS1 injuries sustained a permanent medical impairment
- Injuries to the cervical spine and upper and lower extremities were more likely to result in impairment
- Injuries to the thorax and abdomen gave the lowest risk of permanent impairment on all AIS levels
- Risk of impairment for single diagnoses (ICD)?