



Using population-based trauma registries to monitor long term outcomes after injury

Dr Belinda Gabbe

School of Public Health and Preventive Medicine

National Trauma Research Institute, The Alfred Hospital



School of Public Health & Preventive Medicine



MONASH University

Trauma registries

- Key functions
 - 4 Incidence of trauma and process of care
 - 4 Monitor patient outcomes
 - 4 Benchmarking and quality improvement
- Reliance on mortality as the major outcome of interest has been a limitation
- Not a finite research project
- All age groups and broad spectrum of injuries and severities

Context



- 5.36 million
- Statewide, integrated, inclusive trauma system
- Routine data collection systems
 - VAED
 - VEMD
 - Deaths/Coroners
 - **Victorian State Trauma Registry (VSTR)**
 - Victorian Orthopaedic Trauma Outcomes Registry (VOTOR)

Victorian State Trauma Registry (VSTR)

- Statewide, population-based
 - All health services (n=139), ambulance services, coroner's data
- All major trauma
- Opt-off consent
 - Identifiable data
- Operating since July 2001
- Primary reason for funding is monitoring the trauma system
 - Including patient outcomes



Data collection

Patient details	Gender, age, preferred language, fund source, contact details
Pre-hospital data	Indicators, observations, mode of transport, etc.
Injury event details	Cause, place, intent, type and activity at the time of injury
Injury diagnosis	ICD-10 AM, AIS, ISS
Injury management	ICU, Procedures and operations
Key indicator data	Length of stay, discharge destination, in-hospital mortality

Outcomes measurement

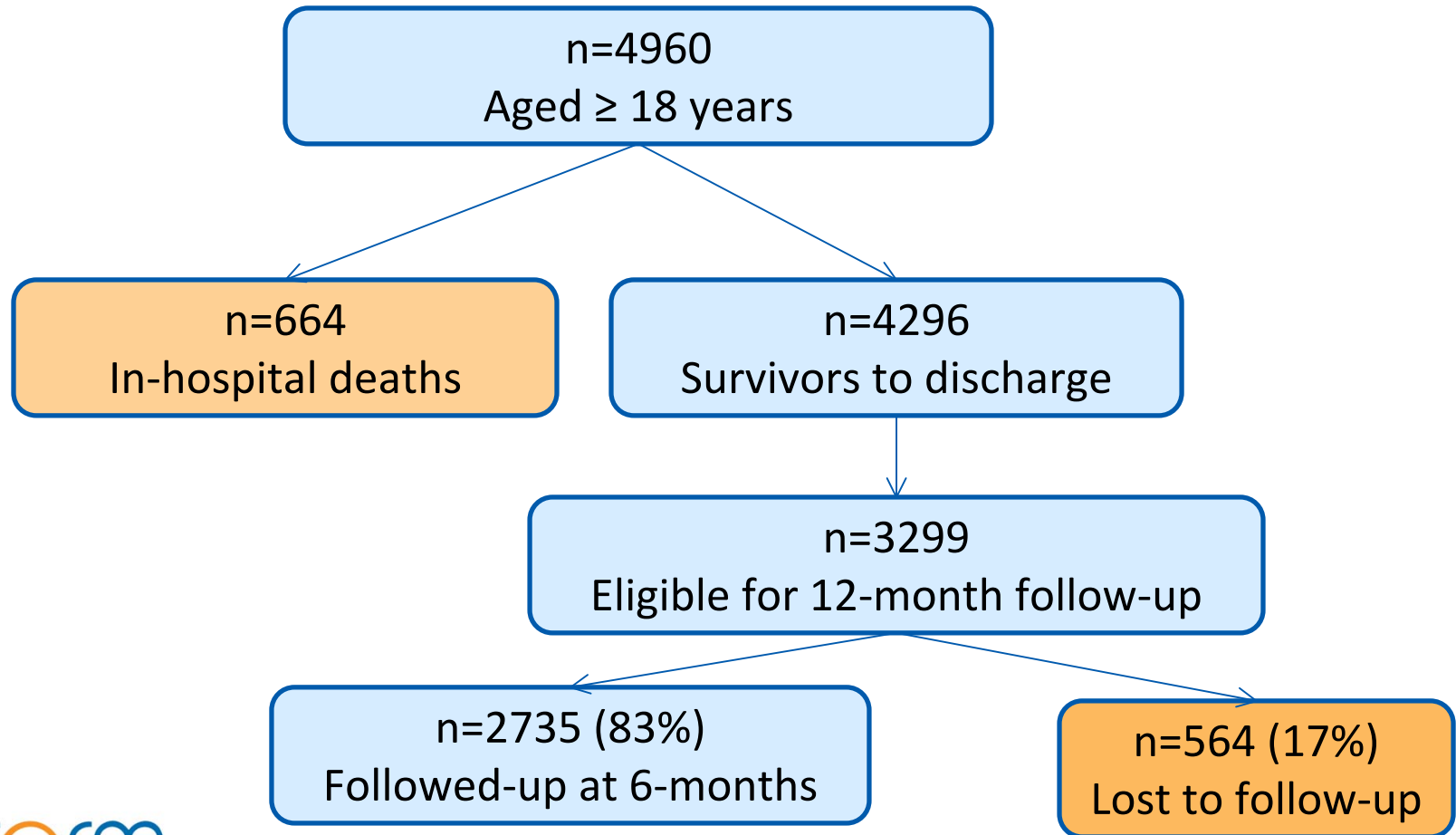
- Implemented a brief follow-up at adult Level 1 centres*
- Validation study of functional measures[§]
- Standardised telephone interview
 - Pain (NRS)
 - SF-12 (Health status)
 - GOS-E (Functional measure)
 - Pre-injury demographics
 - Return to work and work disability

*Gabbe et al. *J Trauma* 2006;61:1393-9

[§]Gabbe et al. *Ann Surg* 2008;247:854-9

[§]Williamson et al. *Arch Phys Med Rehab* (in press)

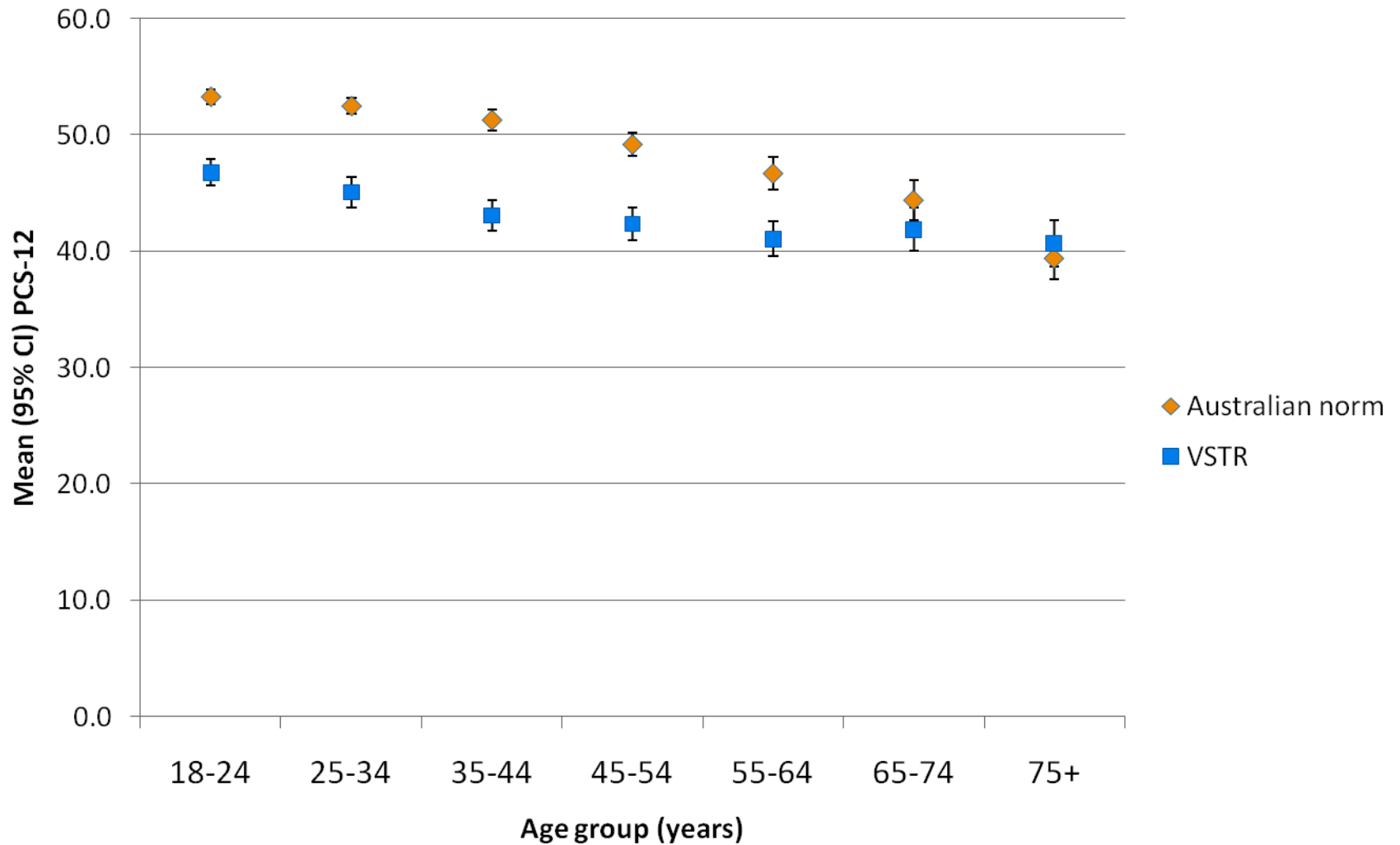
October 2006 – December 2008



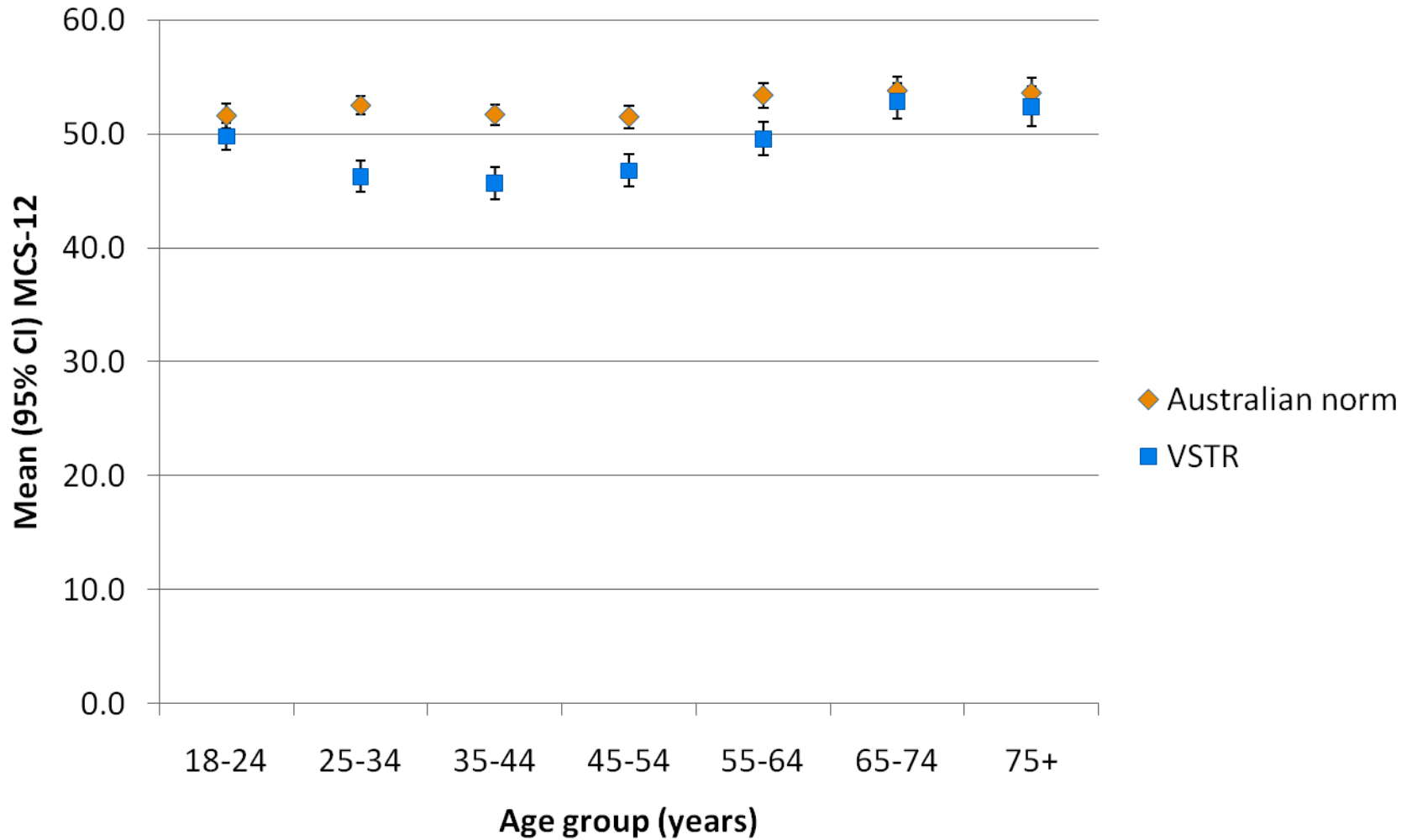
Profile of patients

Variable	Responders (n=2735, 83%)	Non-responders (n=564, 17%)
Age (mean (SD))	48.4 (21.7)	40.8 (18.5)
Male (%)	78.9	72.9
Road trauma (%)	49.7	41.6
Unintentional (%)	88.8	73.1
ISS (median (IQR))	20 (17-26)	19 (16-25)
Injury profile (%)		
Orthopaedic injuries only	28.9	23.8
Head and other injuries	25.5	21.3
Isolated head injury	24.2	23.1
Isolated chest/abdominal injuries	7.3	12.2
Spinal cord injury	2.2	2.8
Other injuries	11.9	16.8

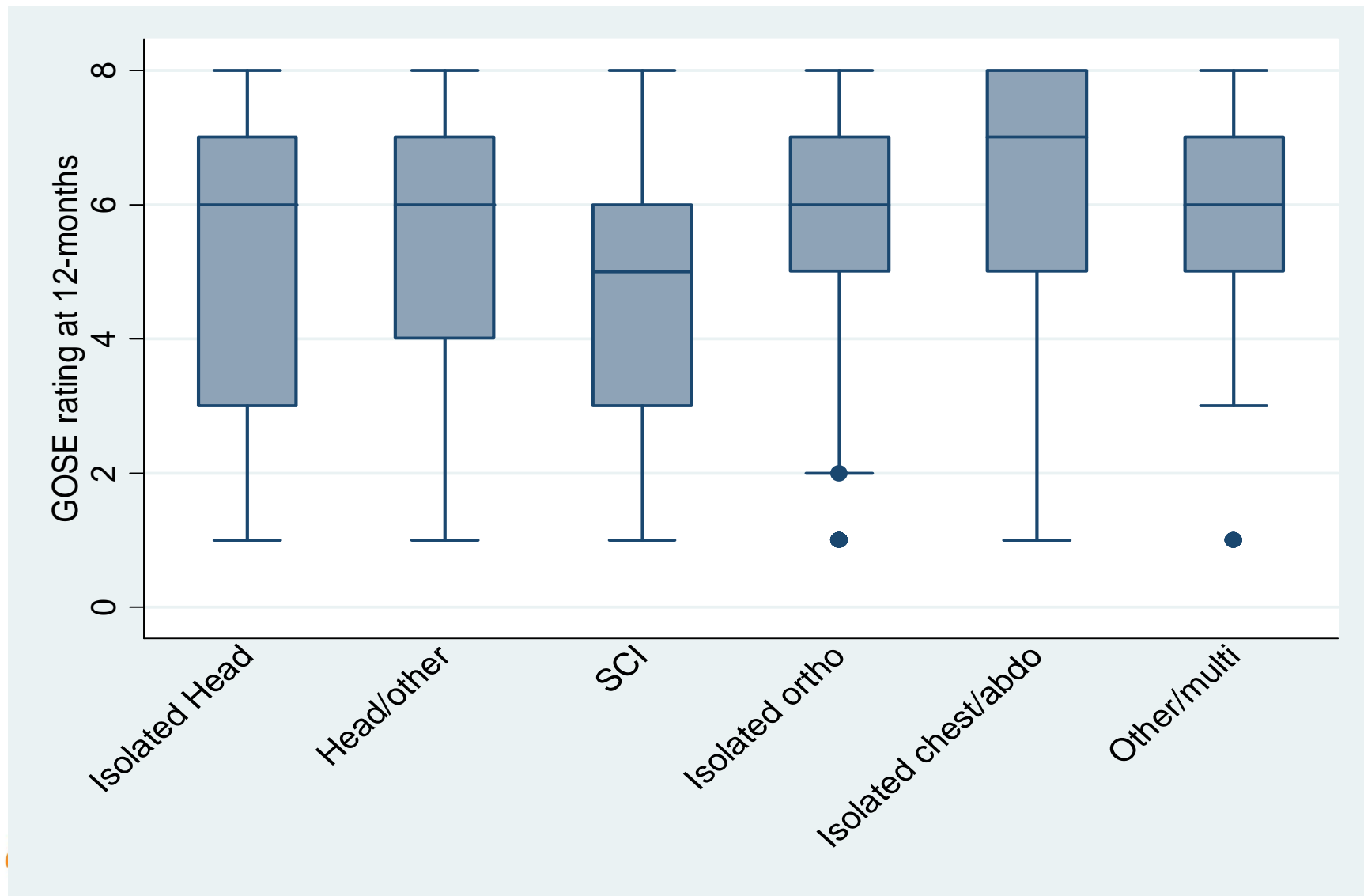
Physical health scores at 12-months



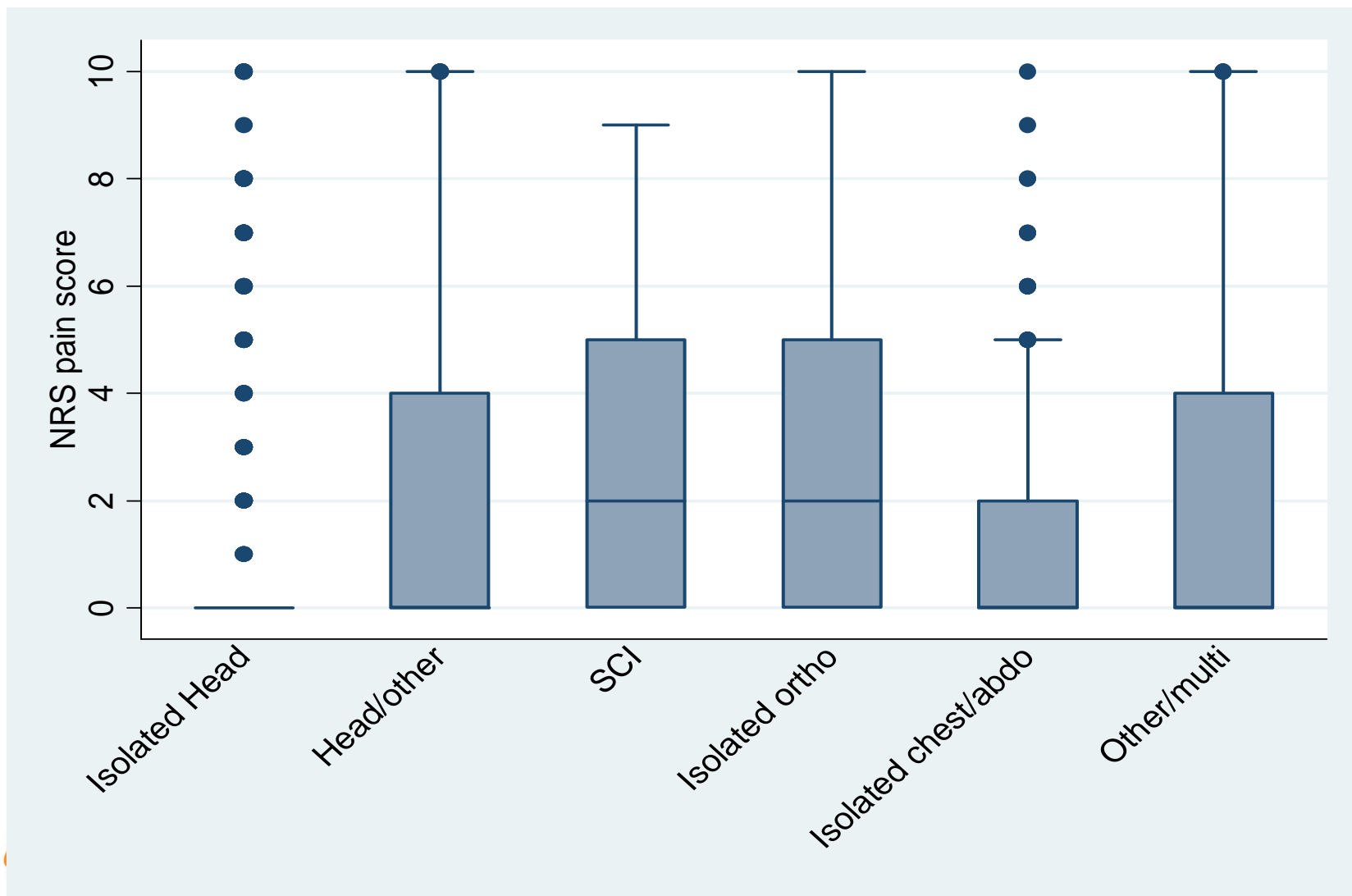
Mental health scores at 12-months



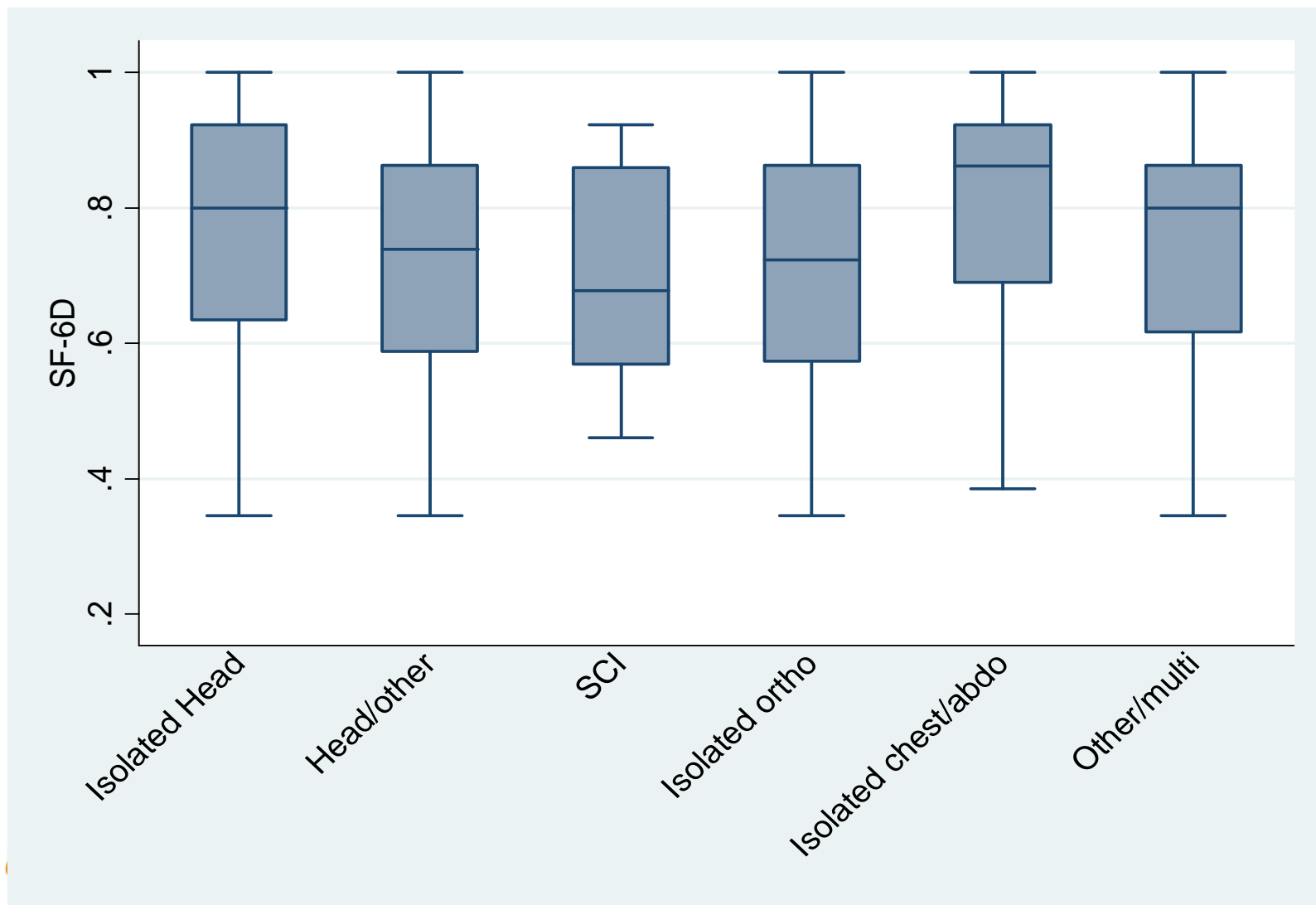
Functional outcomes at 12-months



Pain at 12-months



SF-6D at 12-months



Return to work or study

Injury group	Working prior to injury (%)	Returned to work (%)
Isolated head injury	43.8	72.2
Head and other injuries	65.7	57.9
Spinal cord injury	74.2	37.2
Orthopaedic injuries only	71.6	69.2
Isolated chest/abdominal	67.0	79.0
Other/multi-trauma	71.3	67.3

What have we learned?

What worked?

- Telephone interview
- Staged follow-up
- GOSE
- SF-12
- Evening/weekends

What didn't work?

- Mail-out
- Reliance on health status as primary outcome measure
- FIM, modified FIM
- AQoL
- Pre-injury status in hospital

Benefits

- Population-based monitoring of a complex patient group
- Relatively inexpensive
- Very good follow-up rates
- Will enable comparisons across time, across patient groups
- Identification of patients at risk of poor outcome
- Potentially drive improvements in delivery of acute and rehabilitation care

What are the alternatives?

- Sample
 - Representative sample difficult
 - Complex patient group
- Use data from compensation systems
 - $\approx 50\%$ compensable and care is different for this group
- Use data from rehabilitation settings
 - $\approx 30\%$ of major trauma patients are admitted to inpatient rehabilitation centres

Where are we going?

- Population-based follow-up paediatric major trauma
- Addition of 24-month post-injury time point
- Addition of the EQ-5D
- Establishing risk-adjustment models for non-fatal outcomes
- Linkage with compensable data
- GBD2005 and international comparisons

Acknowledgements

- Peter Cameron & John McNeil
- Mimi Morgan, Andrew Hannaford, Ann Sutherland & Sue McLellan
- Steering Committee
- Data collectors and trauma coordinators at all participating hospitals
- All follow-up staff
- The VSTR is funded and approved by the Department of Human Services and TAC



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**This project is proudly supported by the
Transport Accident Commission**

A Victorian
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