

Major Trauma in NSW: 2019-20

A report from the NSW
Trauma Registry

December 2020



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Executive summary

In 2019-20, there were over 22,000 admissions for traumatic injuries in NSW, of which over 3,800 were considered major trauma and admitted to a trauma service. How the NSW trauma system responds to these patients is critical for their long-term outcome and quality of life and for reducing the overall financial and social cost of trauma to individuals and the community.

A key priority for the NSW Institute of Trauma and Injury Management (ITIM), within the Agency for Clinical Innovation, is to monitor the effectiveness of the NSW trauma system response for these major trauma patients. This group of patients places the greatest demand on the trauma system and other agencies and services, not simply for healthcare, but for a wide range of needs.

This report describes how the NSW trauma system responded to major trauma patients, from the time of injury and provision of pre-hospital services, through to in-hospital services provided at a NSW trauma service. The finding from the report assists ITIM in determining whether the NSW trauma system is functioning effectively, to ensure that the right patient arrived at the right hospital in a timely matter.

The report helps us understand the nature of the injuries sustained and how they occurred. The findings are used by various agencies concerned with minimising the likelihood and effects of traumatic injury and contributing to safety and injury prevention efforts. Data from the NSW Trauma Registry is used by ITIM to provide advice and feedback to clinicians and other stakeholders and enables research into patterns of service demand and staffing.¹ This data also supports benchmarking and performance improvement activities.

It is important to note that this report does not represent all injuries in NSW, nor does it represent the full work or caseload of trauma services in hospitals or the full set of data recorded in hospital trauma registries.

2019-20 report highlights for major trauma in NSW

- 3,855 major trauma patients resulted in 3,938 major trauma admissions.
- On average, major trauma patients were 52.1 years old.
- 9.7% of patients with an Injury Severity Score >12 died.
- Males were 2.4 times more likely to suffer major trauma than females.
- Females were more likely to die (12.3%) with an Injury Severity Score >12 than males (8.6%).
- Pedestrians were more likely to die (13.0%) than others involved in transport incidents.
- Overall, major trauma was caused more by falls (44.7%) than transport incidents (37.7%).
- 28.1% of all major trauma incidents occurred in a rural area.
- Metropolitan major trauma patients had most often suffered a fall (50.6%), whereas rural patients had suffered a transport incident (47.3%)
- Patients most commonly suffered 'three or more fractured ribs without flail' (24.0%).
- Patients most commonly injured their 'head or neck' (56.7%) or 'chest' (50.3%).
- Overall, 95.8% of the mandatory trauma data elements were completed.

Contents

Executive summary	iii
Monitoring the NSW trauma system.....	5
NSW trauma system	5
Mandate for trauma data	5
NSW Trauma Registry.....	5
NSW trauma services.....	6
Methodology	7
Inclusion criteria	7
Exclusion criteria	7
Data quality	8
Data privacy – reporting of small numbers	8
Metropolitan and rural categorisation	8
The Injury Severity Score and Abbreviated Injury Score	9
Revised Trauma Score.....	9
Major trauma patients.....	10
Introduction.....	10
Summary profile	10
Age and sex	12
Mechanism of injury	16
Transport incidents by place of occurrence	24
Time, day and month of injury	26
Injuries.....	28
Injury Severity Score	30
Pre-hospital time	32
Mode of transport	33
Major trauma admissions.....	35
Introduction.....	35
Overall burden of trauma.....	35
Facility overview	36
Admission type	37
Revised Trauma Score.....	37
Trauma team activation	38

Vital signs on arrival to the emergency department.....	40
Intensive care unit admissions	42
Length of stay.....	43
Procedures	45
Discharge destination of survivors.....	46
References	48
Glossary	49
Abbreviations.....	51
Acknowledgements	52
Appendices	53
Appendix 1: Data completeness.....	54
Appendix 2: Adult major trauma service summaries	58
Appendix 3: Paediatric major trauma service summaries.....	72
Appendix 4: Regional trauma service summaries	78
Appendix 5: Calculation of the Injury Severity Score.....	98
Appendix 6: Australian Statistical Geography Standard Remoteness Areas.....	99

List of tables

Table 1: Record of data exclusions	7
Table 2: Revised Trauma Score points system.....	9
Table 3: Summary statistics for major trauma and mortality	10
Table 4: Major trauma patients, injury and mortality by age group	12
Table 5: Type of injury	16
Table 6: Mechanism of injury by age.....	17
Table 7: Mechanism of injury by location	20
Table 8: Falls in detail	21
Table 9: Transport incidents in detail.....	22
Table 10: Assaults in detail	22
Table 11: All other mechanisms in detail.....	23
Table 12: Transport incidents by location of injury.....	24
Table 13: Road trauma in detail	24
Table 14: Other transport incidents in detail.....	25
Table 15: Top five injuries with an AIS severity >2	28
Table 16: Number of ISS body regions injured with an AIS severity >2.....	29
Table 17: Single body region versus polytrauma with an AIS severity >2.....	29
Table 18: Major trauma patients by ISS group	30
Table 19: Median time of injury to arrival at a designated trauma service	32

Table 20: Median time of injury to arrival at definitive care	32
Table 21: Mode of transport to definitive care	33
Table 22: Overview of trauma service admissions	36
Table 23: Number of admissions by type	37
Table 24: Overview of ICU and hospital length of stay	43
Table 25: ICU and hospital length of stay by ISS	43
Table 26: ICU and hospital length of stay by age	44
Table 27: Procedures performed by type	45
Table 28: Detailed data completeness by facility	55
Table 29: Trauma data profile, John Hunter Hospital	58
Table 30: Trauma data profile, Liverpool Hospital	60
Table 31: Trauma data profile, Royal North Shore Hospital	62
Table 32: Trauma data profile, Royal Prince Alfred Hospital	64
Table 33: Trauma data profile, St George Hospital	66
Table 34: Trauma data profile, St Vincent's Hospital	68
Table 35: Trauma data profile, Westmead Hospital	70
Table 36: Trauma data profile, John Hunter Children's Hospital	72
Table 37: Trauma data profile, Sydney Children's Hospital	74
Table 38: Trauma data profile, The Children's Hospital at Westmead	76
Table 39: Trauma data profile, Coffs Harbour Base Hospital	78
Table 40: Trauma data profile, Gosford Hospital	80
Table 41: Trauma data profile, Lismore Base Hospital	82
Table 42: Trauma data profile, Nepean Hospital	84
Table 43: Trauma data profile, Orange Base Hospital	86
Table 44: Trauma data profile, Port Macquarie Base Hospital	88
Table 45: Trauma data profile, Tamworth Hospital	90
Table 46: Trauma data profile, The Tweed Hospital	92
Table 47: Trauma data profile, Wagga Wagga Base Hospital	94
Table 48: Trauma data profile, Wollongong Hospital	96
Table 49: ISS calculation example	98

List of figures

Figure 1: Five-year trend in the number of major trauma patients	11
Figure 2: Five-year trend in the number of major trauma patients by facility type	11
Figure 3: Number of major trauma patients by age, sex and mortality	13
Figure 4: Age-specific injury rate by age and sex	13
Figure 5: Case fatality rate by age and sex (ISS >12)	14
Figure 6: Age-specific mortality rate by age and sex	14
Figure 7: Five-year trend of case fatality rate by facility type (ISS >12)	15
Figure 8: Mechanism of injury	16
Figure 9: Five-year trend in the number of falls and transport incidents	18
Figure 10: Mechanism of injury by age	18
Figure 11: Mechanism of injury as a percentage by age	19
Figure 12: Age-specific injury rate by mechanism of injury	19
Figure 13: Mechanism of injury by location	20
Figure 14: Mechanism of injury as a percentage by location	21
Figure 15: Number of patients by time of injury	26
Figure 16: Number of patients by day of injury	26
Figure 17: Number of patients by month of injury	27
Figure 18: All injuries by ISS body region	28
Figure 19: Number of major trauma patients by ISS group and sex	30
Figure 20: Case fatality rate by ISS and sex)	31
Figure 21: Mode of transport to definitive care when transported direct from the scene of injury, by injury location	33
Figure 22: Mode of transport to definitive care when transferred from another acute care facility, by injury location	34
Figure 23: Number of patients with an estimated ISS >5 by local health district	35
Figure 24: Average Revised Trauma Score by ISS group	37
Figure 25: Trauma team activation by admission type	38
Figure 26: Trauma team activation by ISS group	39
Figure 27: Initial systolic blood pressure on arrival to the ED and mortality	40
Figure 28: Initial Glasgow Coma Scale on arrival to the ED and mortality	40
Figure 29: Initial temperature on arrival to ED and mortality	41
Figure 30: ICU admission by ISS group	42
Figure 31: Procedures performed by ISS group	45
Figure 32: Five-year trend of procedures performed	46
Figure 33: Discharge destination of survivors	46
Figure 34: Discharge destination of survivors by ISS group	47
Figure 35: Overall data completeness by facility	54
Figure 36: Map of 2016 Remoteness areas for Australia	99

Monitoring the NSW trauma system

NSW trauma system

The primary function of the NSW trauma system is to facilitate and coordinate an organised multidisciplinary system response with the aim of reducing the burden of injury on patients, their families and the broader health system. The trauma system encompasses a continuum of care that provides traumatically injured patients with the greatest likelihood of returning to their pre-injury level of function within the community.

This continuum of care includes injury prevention, pre-hospital coordination and care, appropriate triage and transport, emergency department trauma care, trauma service team activation, surgical intervention, intensive, critical and general in-hospital care, rehabilitation services, allied health and medical care follow up.

The overall goal of the NSW trauma system is to decrease the incidence and severity of injury and to ensure optimal, accessible and equitable care to improve health outcomes for those who are injured. The main objective of the trauma system is to get the 'right patient to the right hospital at the right time, receiving the right care'. To meet this objective, designated trauma services need to have appropriate resources to meet the complex needs of the injured patient.

Mandate for trauma data

The *NSW Trauma Services Plan* outlines the role of ITIM, including monitoring and reporting on the performance of individual trauma services to ensure that performance is consistent with the standard of care and to manage a statewide clinical injury data collection process.²

The plan also positions ITIM to develop partnerships with injury stakeholders, such as the local health districts, NSW Ambulance, State Insurance Regulatory Authority, State Coroner, Clinical Excellence Commission and universities. These partnerships aim to build an improved critical mass for research and education across the spectrum of trauma prevention care and rehabilitation. The collection of trauma data is an important aspect of these activities.

To enable ITIM to achieve its monitoring and reporting role, NSW trauma services are required to contribute data as outlined in *Improving the Quality of Trauma Care in NSW: Trauma Services Model of Care*.³

NSW Trauma Registry

ITIM is responsible for managing the collection of data about moderate to critically injured people admitted to trauma services in NSW. Data collected is held securely in the NSW Trauma Registry.¹ Data in the registry is submitted from each of the designated NSW trauma services.

The NSW Trauma Registry contains de-identified patient records but does not hold data for every injured person admitted to hospital in NSW. Data is only included for patients with the greatest needs, that is the most seriously injured, who are treated at a designated NSW trauma service. This data is known as the NSW Trauma Minimum Data Set and forms the basis of data analysis and reporting activities at ITIM. As the scope of the current data collection is restricted to these designated hospitals, there may be some data for trauma admissions to other hospitals that are not included in the NSW Trauma Registry.

NSW trauma services

The NSW trauma system consists of seven adult major trauma services, three paediatric major trauma services and ten regional trauma services. All of the services contributed data to the NSW Trauma Registry used in this report.

Adult major trauma services

- John Hunter Hospital, Hunter New England Local Health District
- Liverpool Hospital, South Western Sydney Local Health District
- Royal North Shore Hospital, Northern Sydney Local Health District
- Royal Prince Alfred Hospital, Sydney Local Health District
- St George Hospital, South Eastern Sydney Local Health District
- St Vincent's Hospital, St Vincent's Health Network
- Westmead Hospital, Western Sydney Local Health District

Paediatric major trauma services

- John Hunter Children's Hospital, Hunter New England Local Health District
- Sydney Children's Hospital, Sydney Children's Hospital Network
- The Children's Hospital at Westmead, Sydney Children's Hospital Network

Regional trauma services

- Coffs Harbour Health Campus, Mid North Coast Local Health District
- Gosford Hospital, Central Coast Local Health District
- Lismore Base Hospital, Northern NSW Local Health District
- Nepean Hospital, Nepean Blue Mountains Local Health District
- Orange Health Service, Western NSW Local Health District
- Port Macquarie Base Hospital, Mid North Coast Local Health District
- Tamworth Hospital, Hunter New England Local Health District
- The Tweed Hospital, Northern NSW Local Health District
- Wagga Wagga Rural Referral Hospital, Murrumbidgee Local Health District
- Wollongong Hospital, Illawarra Shoalhaven Local Health District

Methodology

This report is compiled from data submitted by the reporting facilities to the NSW Trauma Registry in accordance with the inclusion and exclusion criteria detailed below. Data for this report was extracted from the NSW Trauma Registry on 14 December 2020.

Inclusion criteria

All major trauma patient records from the NSW Trauma Registry, where the date of injury occurred between 1 July 2019 and 30 June 2020, are included in this report.

Major trauma is defined as all patients of any age, who were admitted to a NSW trauma service within seven days of sustaining an injury, and who:

- had an Injury Severity Score (ISS) >12 (moderate to critically injured), or
- were admitted to an intensive care unit (irrespective of ISS) following injury, or
- died in hospital (irrespective of ISS) following injury.

As a result of these criteria, patient records submitted for inclusion in this report do not represent all injuries in NSW, nor do they represent the full work or caseload of trauma services in hospitals, nor the full set of data recorded in hospital trauma registries.

Exclusion criteria

The criteria for excluding a patient record from this report are as follows.

- Patients not admitted to a designated NSW trauma service.
- Patients admitted to a designated NSW trauma service greater than seven days after sustaining an injury.
- Patients who die with an isolated fractured neck of femur injury sustained from a fall from a standing height (<1m).*
- Patients aged 65 years or older who die with minor soft tissue injury only.†

Records have also been excluded from this report if the *Outcome (survived or died)* data element is missing or invalid data recorded in the registry.

Based on the criteria outlined above, a total of 46 records were excluded as outlined in Table 1.

Table 1: Record of data exclusions

Data criteria	Excluded	Remaining records
Data extracted (14 Dec 2020)		4002
Date of admission >7 days from injury	23	3979
Isolated neck of femur injuries (with outcome = died)	5	3974
Over 65 years old and died with minor soft tissue injury only	0	3974
Missing outcome	18	3956
Total remaining records		3956

* See [Glossary](#) for definition of an isolated fractured neck of femur injury.

† See [Glossary](#) for definition of a minor soft tissue injury.

Data quality

Data submitted to the NSW Trauma Registry is subject to rigorous checking and validation by ITIM and the reporting facilities. Missing or invalid data is flagged and returned to individual trauma services for completion and validation.

The average data completeness by the trauma facilities was 95.8%, an increase of 0.8% from 2018-19. A detailed breakdown of data completeness by trauma facility is available in [Appendix 1](#).

Data privacy – reporting of small numbers

The Australian Statistical Information Management Committee guidelines suggest that statistical results involving small numbers (<5) can be presented if the population from which they are drawn is more than 1000 people, as the likelihood of identifying an individual would be very small.⁴ This guideline is used for data reporting of small numbers by Health Stats NSW and the Agency for Clinical Innovation.⁵

For the purpose of this report, the demographic population is identified as either:

- those potentially injured within NSW (millions) when reporting on trauma patients as a whole, or
- those potentially injured within a facility's catchment area (thousands) when reporting on admissions to a trauma facility, such as in the facility summaries at Appendices 2-4.

The risk of a breach of data privacy is further mitigated by not aligning demographic information where the numbers are small (such as age groups in a regional area) with other potentially identifiable data fields such as the mechanism of injury or outcome.

Metropolitan and rural categorisation

Various data elements within the report are categorised as either 'metropolitan' or 'rural'. These categories are derived using the postcode of injury and the Australian Statistical Geography Standard (ASGS) Remoteness Areas (RA).⁶ The ASGS-RA is based on the *Accessibility and Remoteness Index of Australia* which defines locations in terms of remoteness, i.e. the physical distance of a location from the nearest urban centre (access to goods and services) based on population size.⁷

The ASGS-RA consists of five categories:

- major cities
- inner regional
- outer regional
- remote
- very remote.

For the purpose of this report, all locations with the ASGS-RA classification of 'major cities' are listed as 'metropolitan'. All other ASGS-RA classified locations are combined and listed as 'rural'. See [Appendix 6](#) for further information on the ASGS-RA categorisation of NSW.

The Injury Severity Score and Abbreviated Injury Score

One of the key criteria for inclusion in this report is an ISS >12. The ISS is an internationally recognised scoring system which correlates with mortality, morbidity and other measures of severity. The ISS is calculated based on an anatomical injury severity classification, the Abbreviated Injury Scale (AIS). The AIS classifies individual injuries by body region on a six-point severity scale from minor (1) to maximum (6 - currently untreatable injury). The NSW Trauma Registry uses the AIS 2005 (Update 2008) dictionary.⁸

The AIS is used by accredited staff at each hospital to score individual patient injuries and their severity. It provides a common tool for comparing and selecting patient records for inclusion in the NSW Trauma Registry. Scoring is undertaken retrospectively but usually within 24-48 hours after admission to allow for the identification of all injuries. On initial evaluation, these patients typically have abnormal vital signs or a significant anatomical injury.

Injuries are individually allocated to one of six body regions, and the severities of the top three injuries in different body regions are used to calculate the ISS. The ISS, along with the body regions and injury and severity codes, used in this calculation, are recorded in the NSW Trauma Registry (see [Appendix 5](#) for further detail).

The calculated ISS value ranges from 1-75. Serious to critically injured trauma patients are defined as those patients with an ISS >15, which is an internationally recognised indicator of serious injury.

In this report, the ISS is reported in ranges:

- 13-15 (moderate injury)
- 16-24 (serious injury)
- 25-40 (severe injury)
- 41-75 (critical injury).

Revised Trauma Score

The Revised Trauma Score is a physiological scoring system used as a predictor of mortality in trauma populations. It consists of data from the first set of vital signs obtained on arrival at the hospital, including the Glasgow Coma Scale, systolic blood pressure and respiratory rate. Each element is scored with a weighting as outlined in Table 2.⁹ Values for the Revised Trauma Score are in the range 0 to 7.8408. The lower the score, the higher the likelihood of death.

Table 2: Revised Trauma Score points system

Glasgow Coma Scale	Systolic blood pressure	Respiratory rate	Points
15-13	>89	10-29	4
12-9	76-89	>29	3
8-6	50-75	6-9	2
5-4	1-49	1-5	1
3	0	0	0

Revised Trauma Score = 0.9368 Glasgow Coma Scale + 0.7326 systolic blood pressure + 0.2908 respiratory rate

Major trauma patients

Introduction

The information in this section of the report is based on the number of major trauma patients who received care in a NSW trauma service (n=3,855), not the number of major trauma admissions (n=3,956), as some patients were treated in more than one NSW reporting facility. Trauma admission data (hospital activity) is discussed in detail in the [Major trauma admissions](#) section.

It should be noted that the number of major trauma patients recorded during 2019-20 has decreased from previous years. The COVID-19 pandemic and related public health orders had a significant impact across the health spectrum including major trauma.

Summary profile

During the period 1 July 2019 to 30 June 2020, there were 3,855 major trauma patients treated at NSW trauma services. Of these, 72% (n=2,533) were injured in a metropolitan location, and 310 died (case fatality rate for ISS >12 of 9.7%). The age-standardised injury rate was 43.7 per 100,000 persons, and the age-standardised death rate was 4.0 per 100,000 persons for all ISS.* The standardised mortality ratio† was 4.0, indicating that the proportion of deaths in major trauma patients during the reporting period was four times greater than that of the general Australian population (Table 3).

Table 3: Summary statistics for major trauma and mortality

Summary statistics	Value
Total number of patients injured overall	3855
Total number of patients injured with ISS >12	3182
Injury rate per 100,000 persons (age-standardised)	43.7 (95% CI 42.3 - 45.1)
Location of injury (metropolitan / rural)	2533 (72.0%) / 987 (28.0%)
Number of male / female patients	2705 (70.2%) / 1146 (29.7%)
Total number of deaths overall	392 (10.2%)
Total number of traumatic deaths on arrival	25 (0.6%)
Total number of deaths with ISS >12 (case fatality rate)	310 (9.7%)
Total number of deaths with ISS >12 excluding traumatic deaths on arrival	288 (9.1%)
Death rate per 100,000 persons (age-standardised) all ISS	4.0 (95% CI 3.6 - 4.5)
Standardised mortality ratio	4.0 (95% CI 3.5 - 4.4)
Average age (years)	52.1 (95% CI 51.3 - 52.9)
Average ISS (all ISS / ISS >12)	18.1 / 20.4

* See [Glossary](#) for definition of age-standardised rate. Annualised rate given as per 100,000 persons, standardised to the Australian population at 30 June 2001.¹⁰

† See [Glossary](#) for definition of the standardised mortality ratio. Standardised to the Australian population at 30 June 2001.¹⁰

Over the 2015-16 to 2019-20 financial years, the mean number of major trauma patients was 3,995, with 2019-20 being significantly below the mean (Figure 1). There are several contributing factors which may account for the 2019-20 decrease in presentations including the COVID-19 pandemic.

The largest proportional increase from 2018-19 compared to 2019-20 was seen in the paediatric trauma services (4.6%), compared to a reduction in regional trauma services (5.1%) and adult major trauma services (8.2%), as seen in Figure 2.

Figure 1: Five-year trend in the number of major trauma patients (n=19,973)

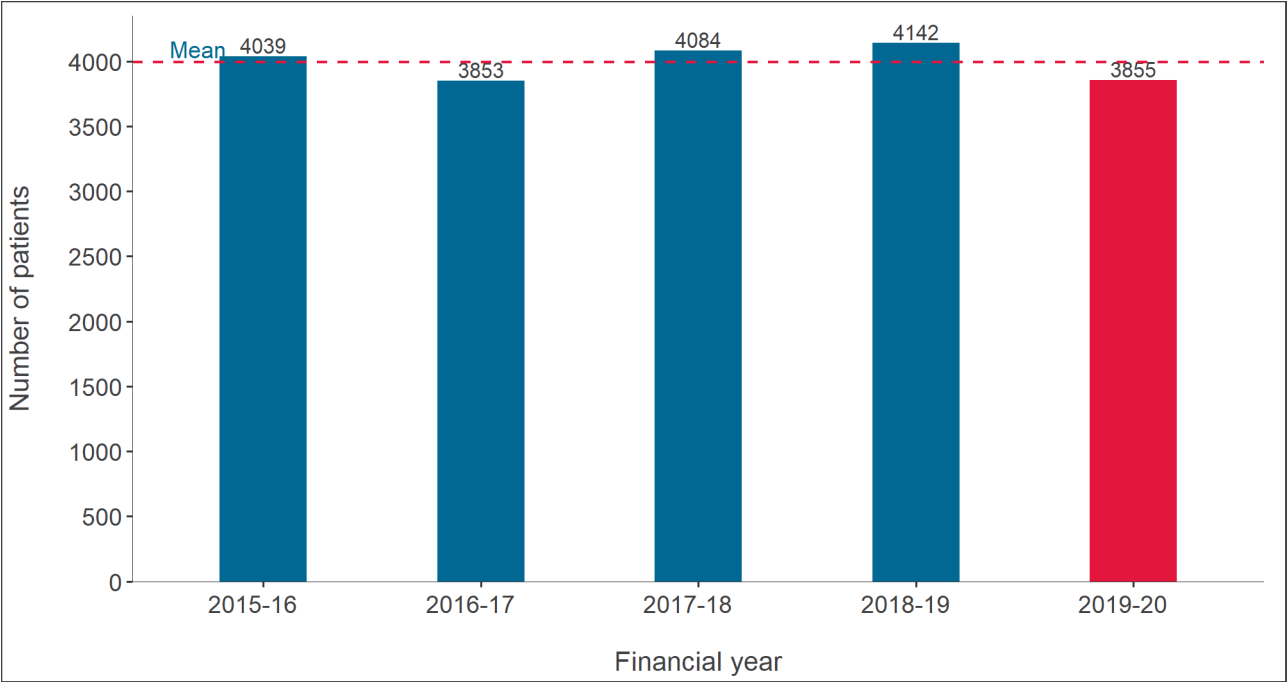
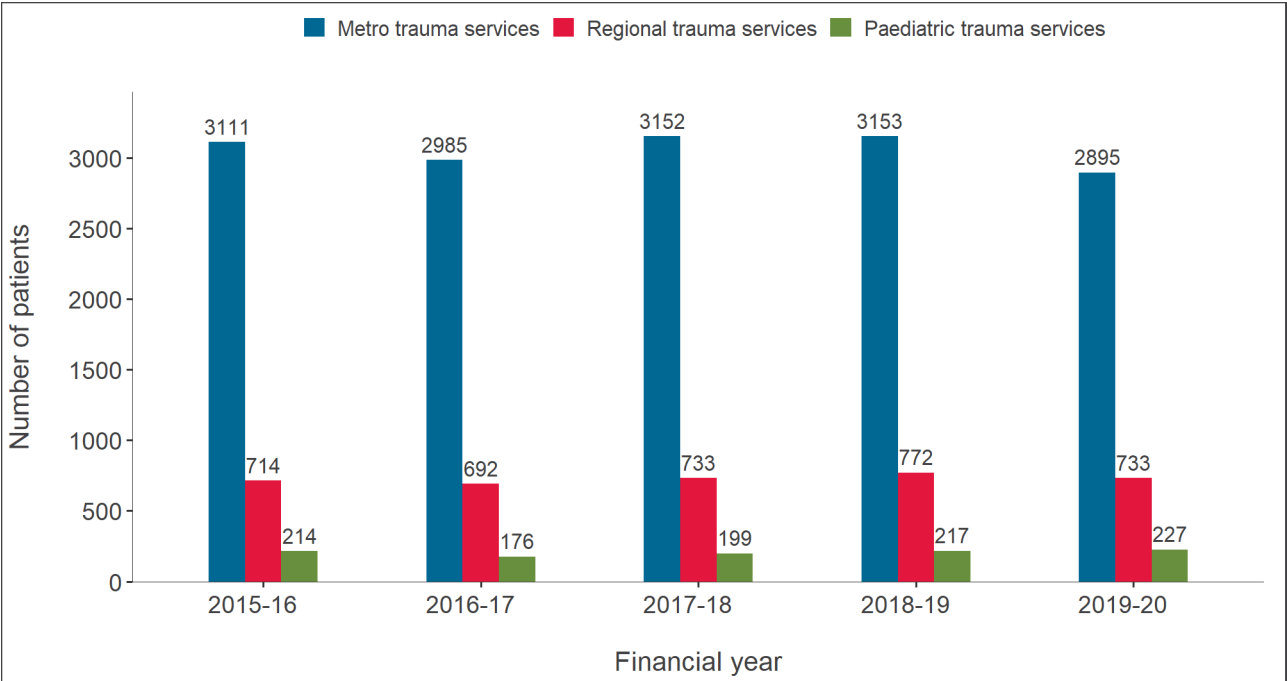


Figure 2: Five-year trend in the number of major trauma patients by facility type (n=19,973)



Age and sex

The average age of a major trauma patient in NSW during the reporting period was 52.1 years old. Table 4 outlines the age distribution, which demonstrates a sharp rise in the incidence of major trauma in the geriatric population,* especially those aged 75 years and older, as it has in previous years. The 75 years and older age group also had a higher case fatality rate for ISS >12 (17.8%, n=749) compared with the under 75 years age group (7.3%, n=2,433).

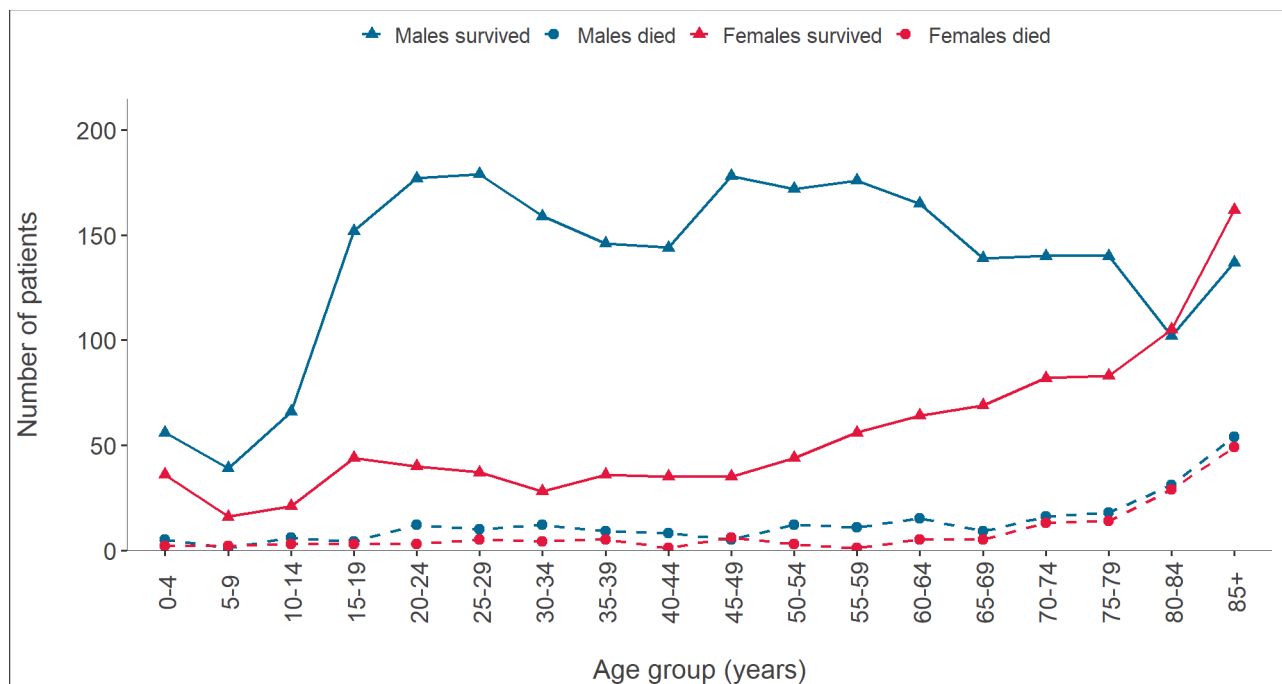
Table 4: Major trauma patients, injury and mortality by age group (n=3,855)

Age group (years)	Number of injured (% of total)	Cumulative number of injured (% of total)	Age-specific injury rate per 100,000	Age-specific death rate per 100,000	Case fatality rate (ISS >12)
0-4	99 (2.6%)	99 (2.6%)	20.0	1.4	7.2%
5-9	58 (1.5%)	157 (4.1%)	11.3	0.6	6.8%
10-14	96 (2.5%)	253 (6.6%)	19.2	1.8	11.2%
15-19	203 (5.3%)	456 (11.8%)	43.3	1.5	4.0%
20-24	232 (6%)	688 (17.8%)	42.9	2.8	7.2%
25-29	231 (6%)	919 (23.8%)	38.0	2.5	7.6%
30-34	203 (5.3%)	1122 (29.1%)	33.2	2.6	9.6%
35-39	196 (5.1%)	1318 (34.2%)	33.6	2.4	8.1%
40-44	189 (4.9%)	1507 (39.1%)	36.8	1.9	6.2%
45-49	224 (5.8%)	1731 (44.9%)	42.5	2.1	5.2%
50-54	231 (6%)	1962 (50.9%)	47.7	3.1	6.9%
55-59	244 (6.3%)	2206 (57.2%)	49.4	2.4	5.3%
60-64	249 (6.5%)	2455 (63.7%)	54.1	4.3	8.2%
65-69	222 (5.8%)	2677 (69.4%)	55.1	3.5	4.7%
70-74	252 (6.5%)	2929 (76.0%)	71.1	8.2	12.7%
75-79	255 (6.6%)	3184 (82.6%)	100.8	12.7	11.3%
80-84	267 (6.9%)	3451 (89.5%)	152.7	34.3	19.4%
85+	404 (10.5%)	3855 (100.0%)	225.6	57.5	20.9%

* Geriatric defined as aged 65 years and older.

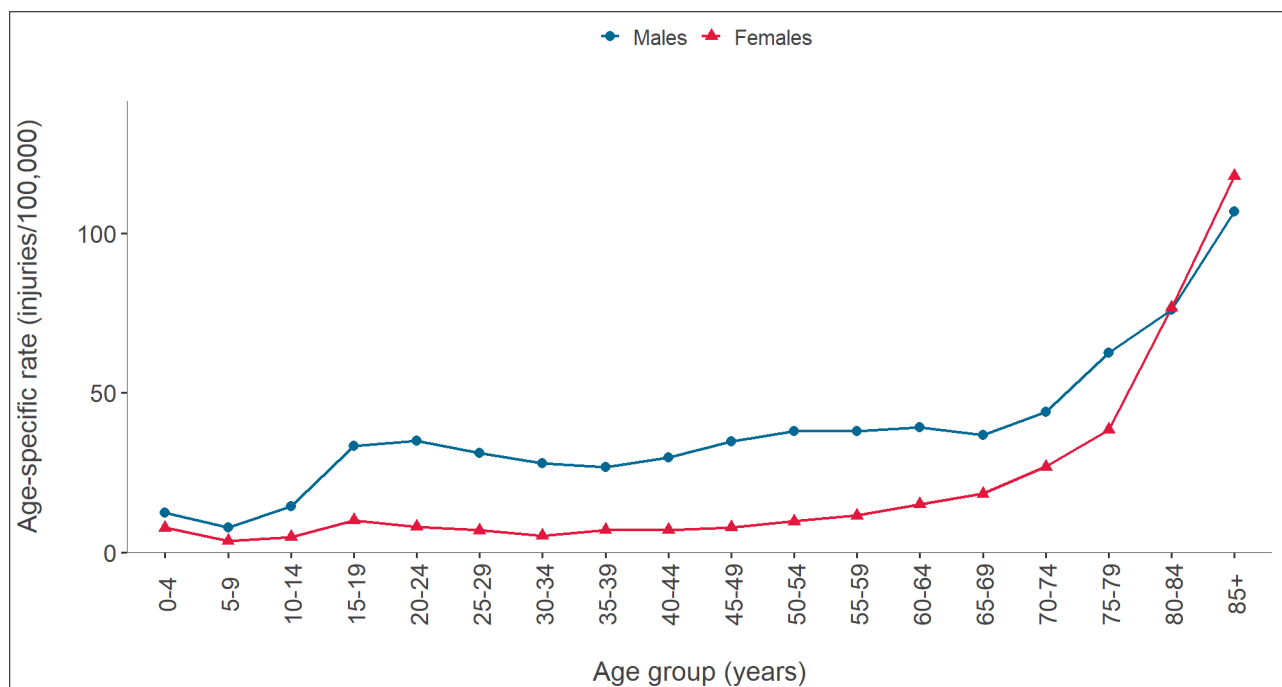
Males suffer more major trauma injuries (n=2,705) than females (n=1,146), except in the 85 years and over age group (Figure 3). Overall, males are 2.4 times more likely to be injured than females.

Figure 3: Number of major trauma patients by age, sex and mortality (n=3,851)



The age-specific injury rate* for males ranged from 7.8 to 109 per 100,000 persons, and in females ranged 4.9 to 120.4 per 100,000 persons (Figure 4).

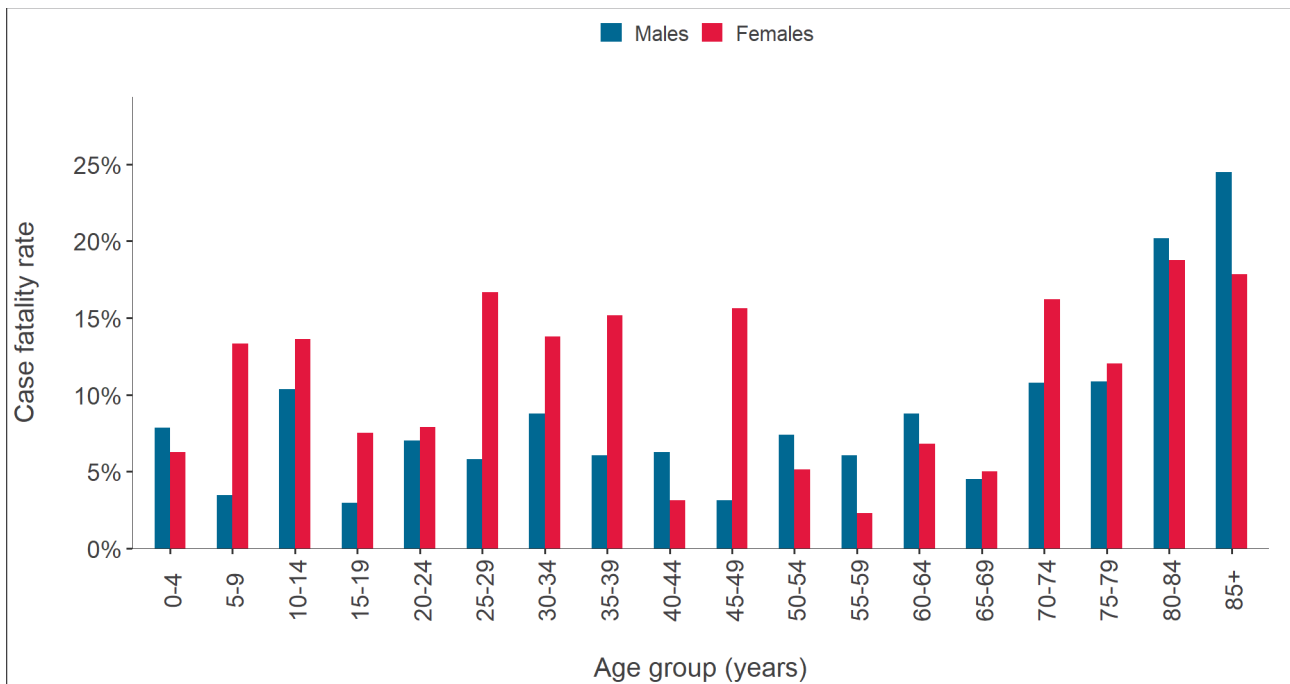
Figure 4: Age-specific injury rate by age and sex (n=3,855)



* See [Glossary](#) for definition of the age-specific rate, based on the estimated NSW population during the reporting period (end of December).¹¹

The case fatality rate for ISS >12 (n=3,178) was higher for females (12.3%, n=116) than for males (8.6%, n=193), with the overall case fatality rate being 9.7% (Figure 5).

Figure 5: Case fatality rate by age and sex (ISS >12) (n=3,178)



While females have a higher case fatality rate for ISS >12, males have a higher age-specific mortality rate per 100,000 persons (Figure 6).

Figure 6: Age-specific mortality rate by age and sex (n=3,851)

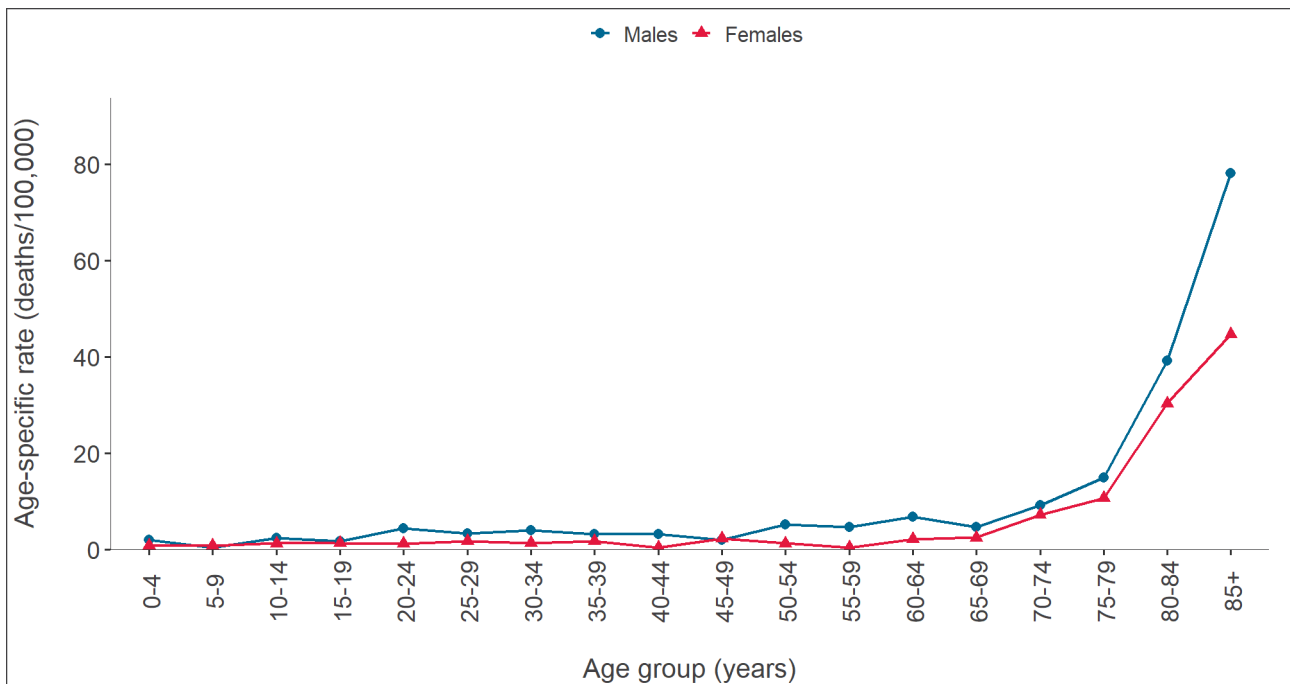
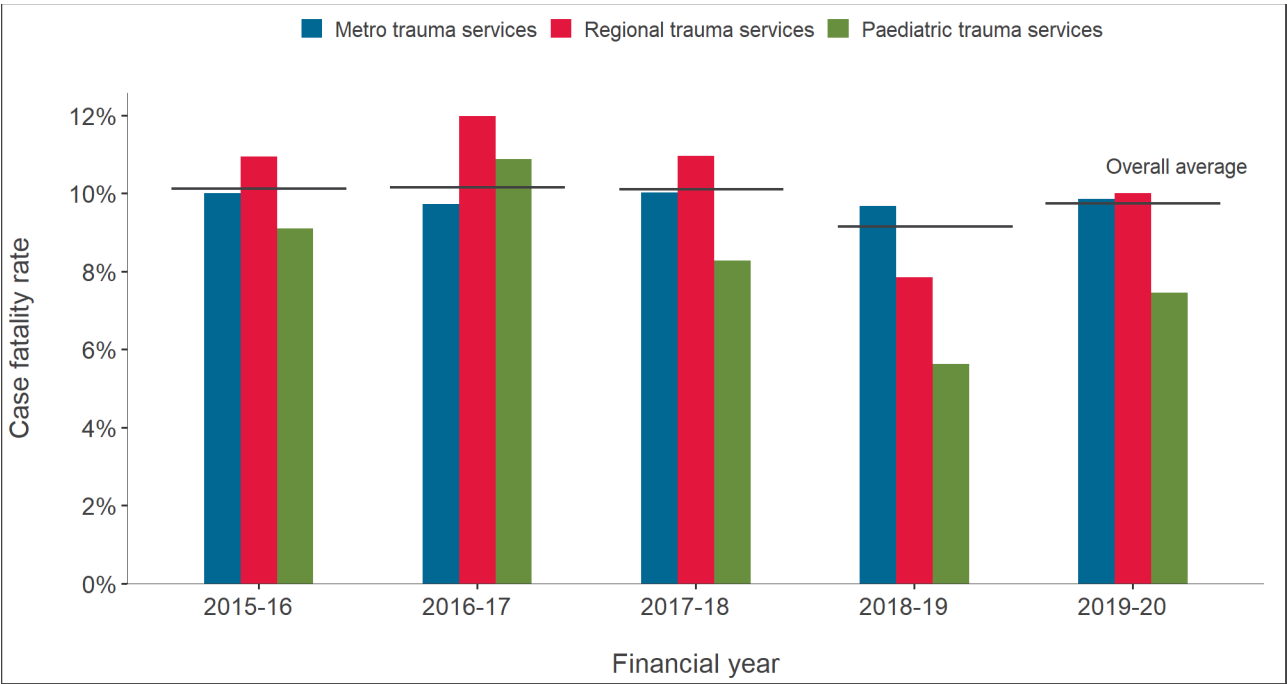


Figure 7 shows the five-year trend of case fatality rates (ISS >12) for the three facility types. Overall, the case fatality rate has decreased from 10.5% to 9.7% during the last five years.

Figure 7: Five-year trend of case fatality rate by facility type (ISS >12) (n=17,141)



Mechanism of injury

The vast majority of major trauma in NSW in the reporting period was caused by blunt injuries (95.6%), such as falls and transport incidents (Table 5).

Table 5: Type of injury (n=3,759)*

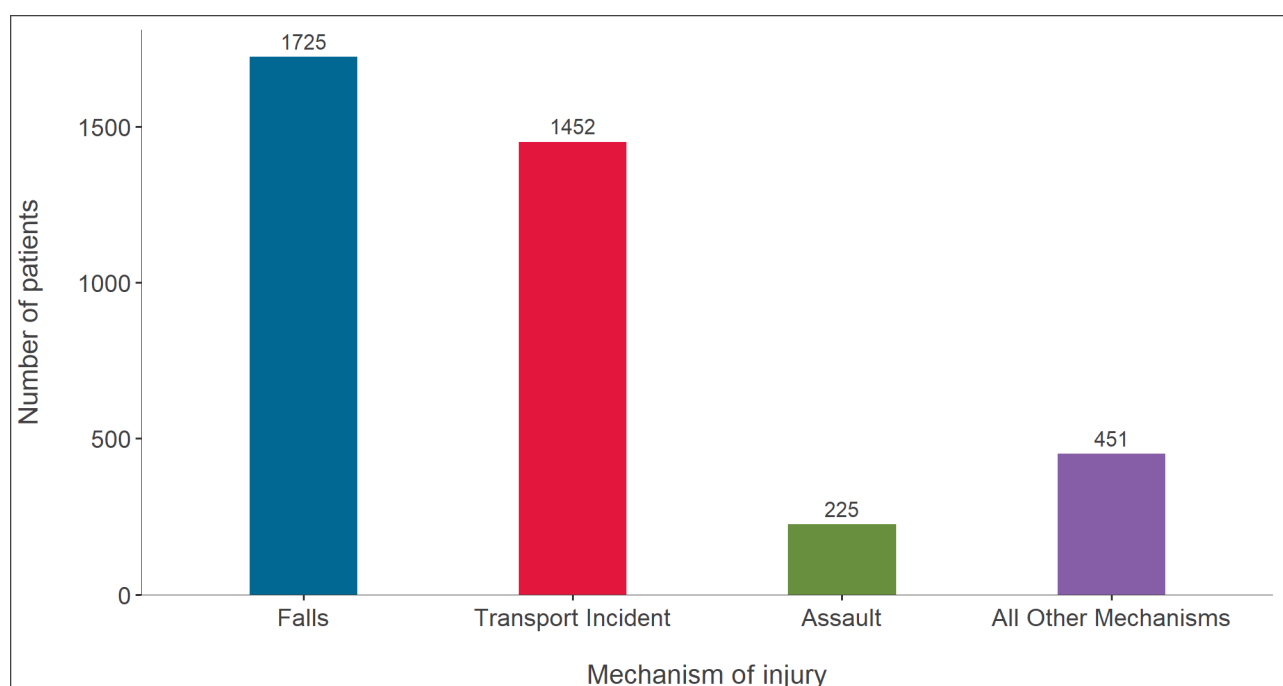
Type of injury	Number of patients (% of total)	Case fatality rate (ISS >12)
Blunt	3592 (95.6%)	9.1%
Penetrating	167 (4.4%)	14.8%

The top three mechanisms of major trauma were:

- falls (44.7%, n=1,725)
- transport incidents (37.7%, n=1,452) out of which 1,051 were road trauma incidents[†]
- assaults (5.8%, n=223).

All other mechanisms combined accounted for 11.7% (n=451) (Figure 8). The distribution of these mechanisms of injury by age group is demonstrated in Table 6.

Figure 8: Mechanism of injury (n=3,855)



* Only blunt and penetrating injury types are reported. Other injury types are recorded as 'N/A' or 'Unknown'.

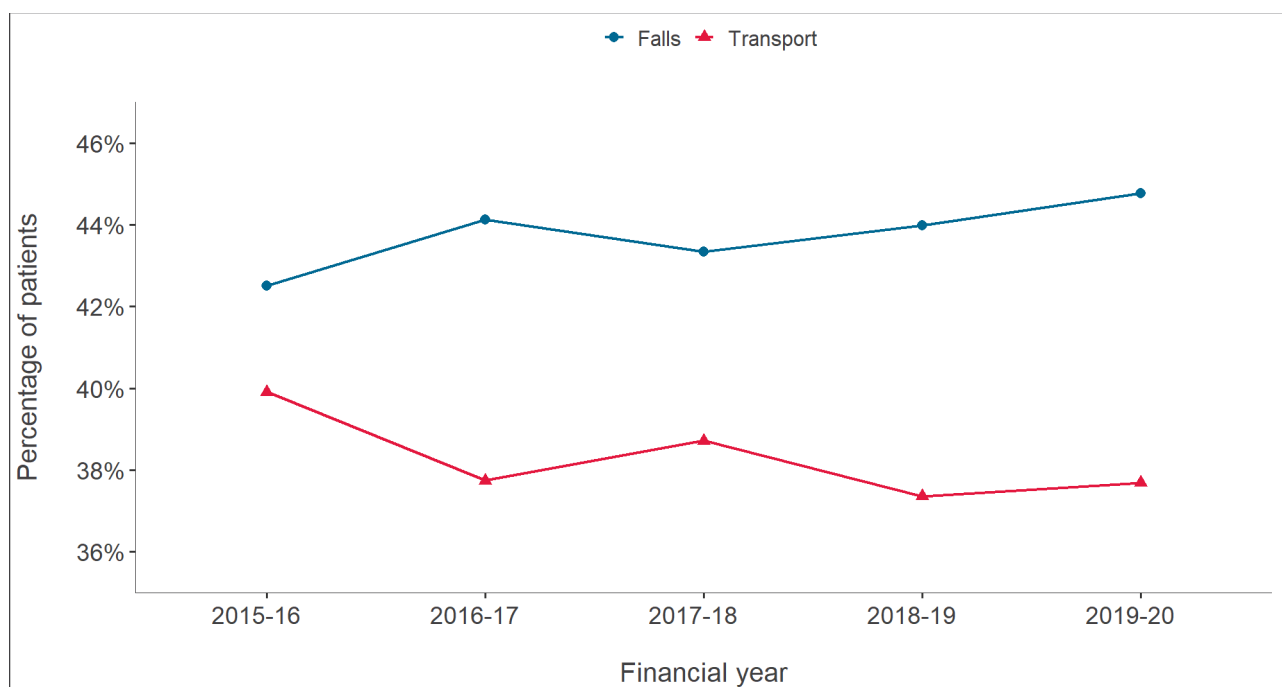
† See [Glossary](#) for the definition of road trauma.

Table 6: Mechanism of injury by age (n=3,855)

Age group	Number of patients (age-specific rate per 100,000)			
	Falls	Transport incident	Assault	All other mechanisms
0-4	45 (9.0)	19 (3.8)	8 (1.6)	27 (5.4)
5-9	22 (4.3)	26 (5.1)	0 (0.0)	10 (2.0)
10-14	17 (3.5)	61 (12.5)	3 (0.6)	15 (3.1)
15-19	38 (8.0)	122 (25.8)	18 (3.8)	25 (5.3)
20-24	53 (9.5)	117 (21.1)	22 (4.0)	40 (7.2)
25-29	46 (7.5)	105 (17.1)	26 (4.2)	54 (8.8)
30-34	38 (6.3)	93 (15.4)	35 (5.8)	37 (6.1)
35-39	39 (6.9)	80 (14.1)	32 (5.6)	45 (7.9)
40-44	44 (8.7)	94 (18.6)	18 (3.6)	33 (6.5)
45-49	64 (12.1)	112 (21.2)	17 (3.2)	31 (5.9)
50-54	75 (15.7)	117 (24.5)	10 (2.1)	29 (6.1)
55-59	92 (18.6)	100 (20.2)	15 (3.0)	37 (7.5)
60-64	112 (25.0)	110 (24.5)	7 (1.6)	20 (4.5)
65-69	130 (33.0)	73 (18.5)	3 (0.8)	16 (4.1)
70-74	171 (50.0)	62 (18.1)	5 (1.5)	14 (4.1)
75-79	176 (73.0)	68 (28.2)	3 (1.2)	8 (3.3)
80-84	215 (127.8)	46 (27.3)	1 (0.6)	5 (3.0)
85+	348 (198.6)	47 (26.8)	2 (1.1)	7 (4.0)
Total	1725	1452	225	453

Figure 9 shows the overall five-year trend of increasing falls and the decreasing transport incidents resulting in major trauma, although there is variability from year to year.

Figure 9: Five-year trend in the number of falls and transport incidents (n=19,971)



The greatest burden of major trauma for people aged 65 years and older is falls (74.3%, n=1,040) which is similar to last year whilst for those aged under 65 years it is transport incidents (47%, n=1,156).

The highest incidence of assaults is in the 30-34 years age group (n=35) closely followed by the 35-39 years age group (n=32). See Table 6 and Figures 10-12.

Figure 10: Mechanism of injury by age (n=3,855)

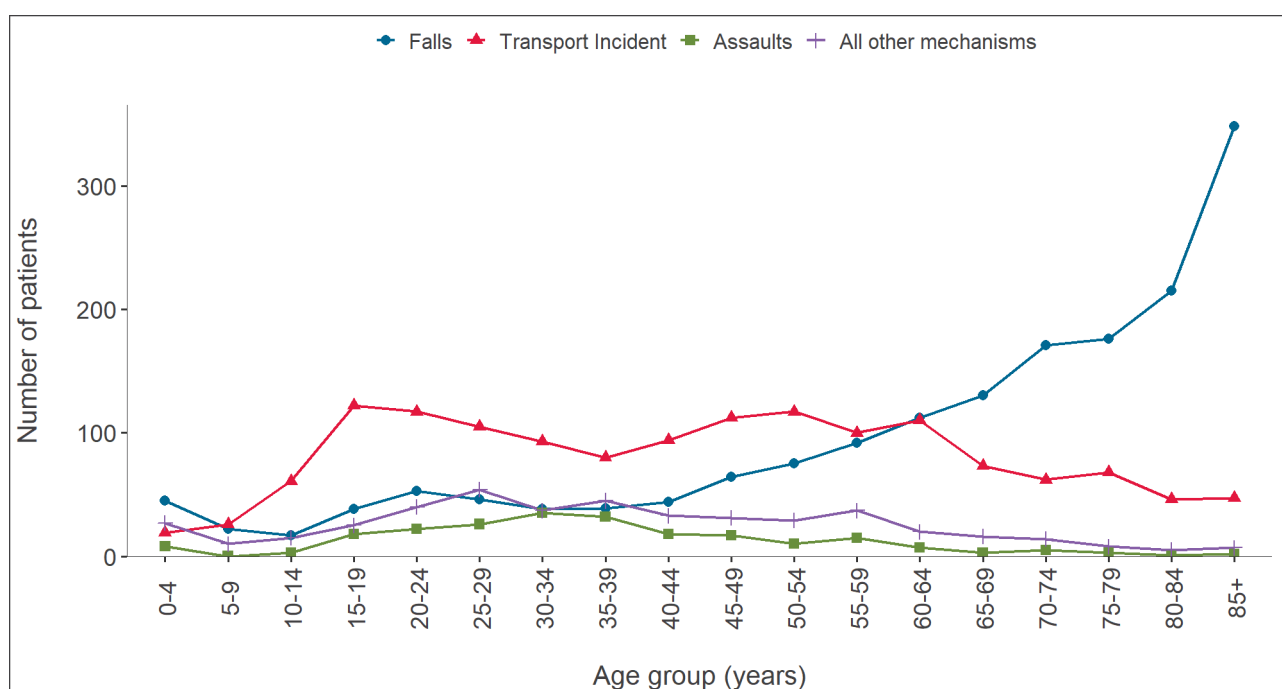


Figure 11: Mechanism of injury as a percentage by age (n=3,855)

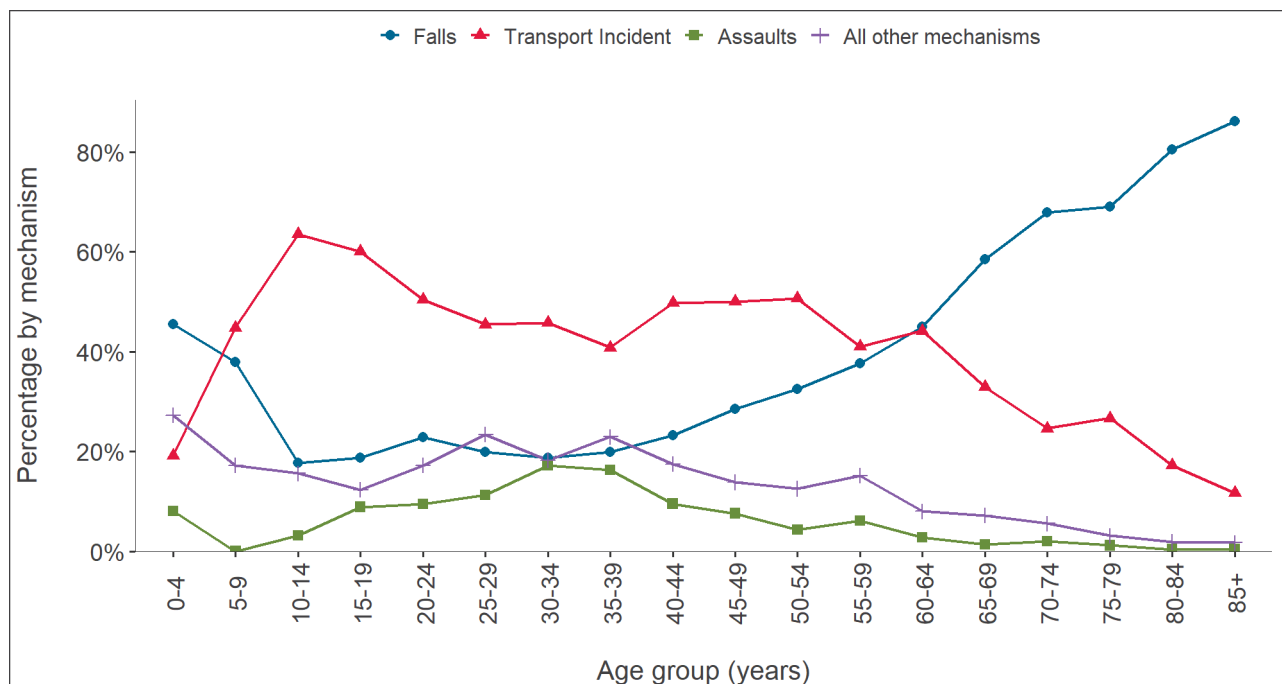
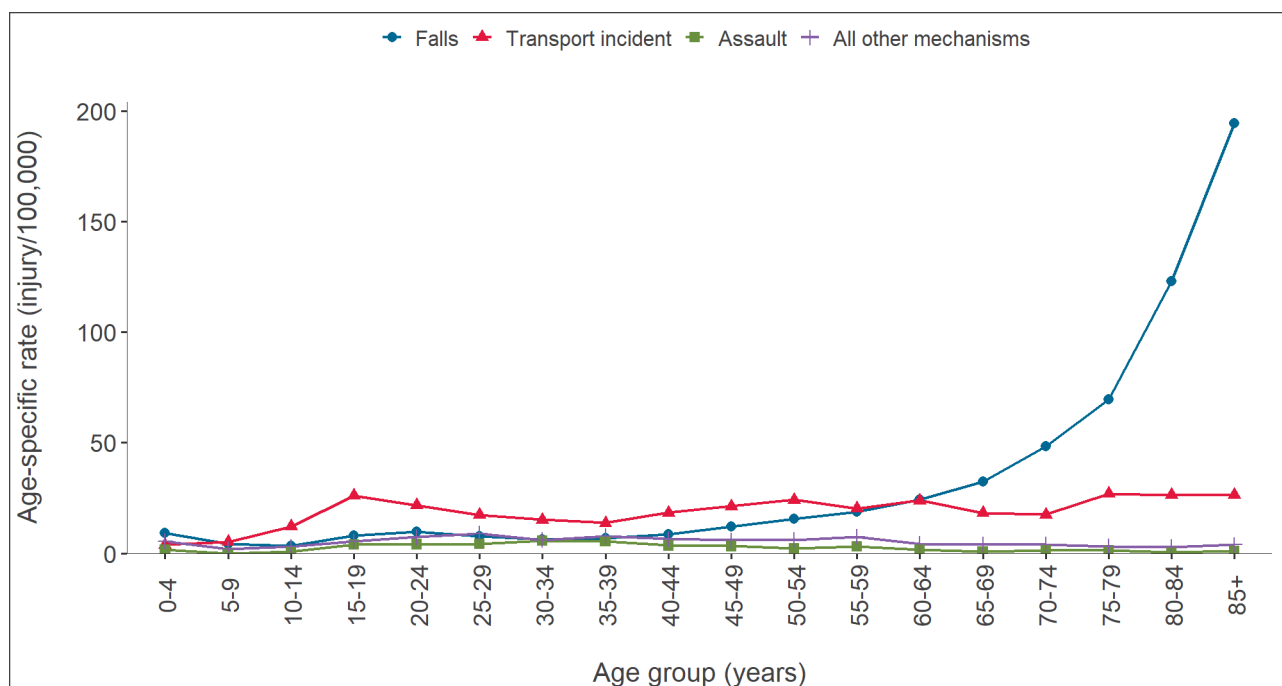


Figure 12: Age-specific injury rate by mechanism of injury (n=3,855)



Falls were responsible for 50.7% of the injuries in the metropolitan area, compared to 34.7% in rural areas. Transport incidents accounted for a higher percentage of injuries in rural areas, 47.3%, than in metropolitan areas, 32.6% (Table 7, Figures 13-14).

Table 7: Mechanism of injury by location (n=3,518)

Mechanism of injury	Metropolitan (% of metropolitan)	Rural (% of rural)
Falls	1282 (50.7%)	342 (34.7%)
Transport incident	824 (32.6%)	467 (47.3%)
Assault	140 (5.5%)	56 (5.7%)
All other mechanisms	285 (11.3%)	122 (12.4%)
Total	2531 (71.9%)	987 (28.1%)

Figure 13: Mechanism of injury by location (n=3,518)

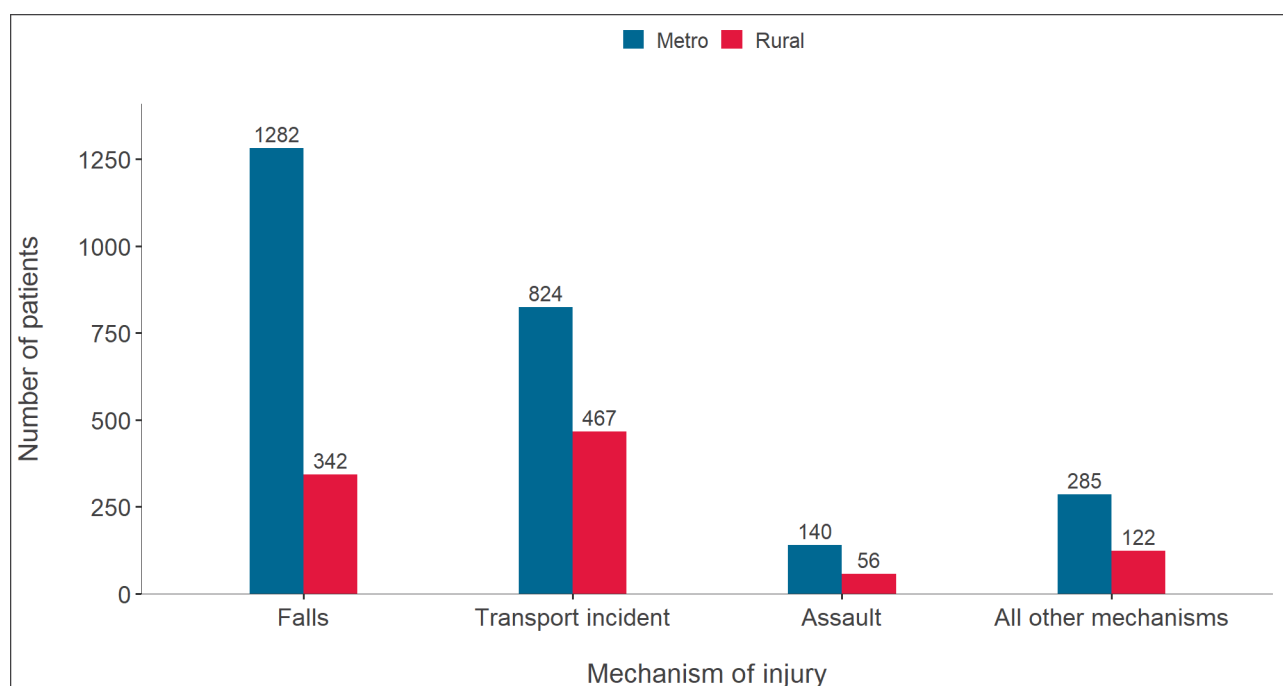
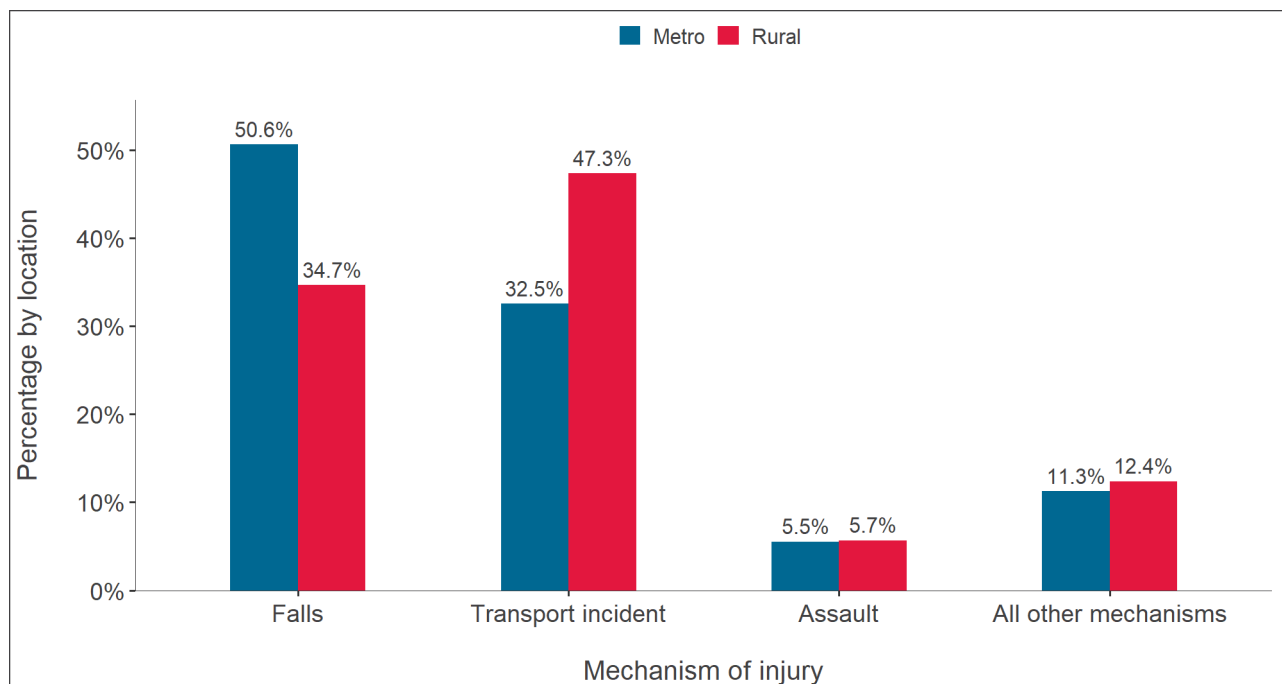


Figure 14: Mechanism of injury as a percentage by location (n=3,518)



The mechanisms of injury are outlined in more detail in Tables 8-11.

Falls from a standing height (lowest level, <1m) accounted for the greatest burden of all heights. They accounted for 59.7% of all falls, 26.7% of all trauma mechanisms, 26.5% of all trauma deaths, and had case fatality rate for ISS >12 of 13.2% (Table 8).

Table 8: Falls in detail (n=1,725)

Mechanism	Number injured (% of all mechanisms)	Number of deaths, ISS >12 (case fatality rate)	Percentage of all trauma deaths
Low fall (<1m)	1030 (26.7%)	104 (13.2%)	26.5%
Medium fall (1-5m)	520 (13.5%)	26 (5.6%)	6.6%
High fall (>5m)	87 (2.3%)	8 (10.0%)	2.0%
Unspecified fall	88 (2.3%)	15 (23.1%)	3.8%
Total	1725 (44.8%)	153 (11.0%)	39.0%

Pedestrian trauma had the highest case fatality rate for ISS >12 (11.9%) well above other forms of transport incidents. Pedestrian deaths were 4.8% of all the trauma deaths (Table 9).

Table 9: Transport incidents in detail (n=1,452)

Mechanism	Number injured (% of all mechanisms)	Number of deaths, ISS >12 (case fatality rate)	Percentage of all trauma deaths
Car occupant	488 (12.7%)	28 (6.7%)	7.1%
Motorcycle rider	418 (10.8%)	12 (3.1%)	3.1%
Pedal cyclist	226 (5.9%)	9 (4.3%)	2.3%
Pedestrian	175 (4.5%)	19 (11.9%)	4.8%
All other transport	145 (3.8%)	8 (6.2%)	2.0%
Total	1452 (37.7%)	76 (5.8%)	19.4%

The most common mechanisms of injury in the assault group were assaults involving bodily force (n=75, 1.9% of all mechanisms), assault by knife (n=56, 1.5%) and assault by blunt object (n=23, 0.6%). Assault by firearm remains low with only eleven recorded cases (0.3%) (Table 10).

Table 10: Assaults in detail (n=225)

Mechanism	Number injured (% of all mechanisms)	Number of deaths, ISS >12 (case fatality rate)	Percentage of all trauma deaths
Assault by bodily force	75 (1.9%)	3 (5.0%)	0.8%
All other assaults	60 (1.6%)	2 (4.3%)	0.5%
Assault by knife	56 (1.5%)	6 (13.3%)	1.5%
Assault by blunt object	23 (0.6%)	1 (5.9%)	0.3%
Assault by firearm	11 (0.3%)	2 (20.0%)	0.5%
Total	225 (5.8%)	14 (7.9%)	3.6%

Of the other mechanisms of injury, self-harm was the most common (n=186, 4.8%). Drownings and 'Other' had the highest case fatality rate for ISS >12 in the 'all other mechanisms' group at 26.7% and 19.4% respectively (Table 11).

Table 11: All other mechanisms in detail (n=451)

Mechanism	Number injured (% of all mechanisms)	Number of deaths, ISS >12 (case fatality rate)	Percentage of all trauma deaths
Self-Harm	186 (4.8%)	50 (40.0%)	12.8%
Inanimate mechanical forces	105 (2.7%)	2 (2.5%)	0.5%
Other	54 (1.4%)	7 (19.4%)	1.8%
Burns	48 (1.2%)	4 (16.7%)	1.0%
Animate mechanical forces	37 (1.0%)	0 (0.0%)	0.0%
Drownings	21 (0.5%)	4 (26.7%)	1.0%
Total	451 (11.7%)	67 (17.1%)	17.1%

Transport incidents by place of occurrence

In order to provide a greater analysis of the burden road trauma has on the health system, a 'place of occurrence' code qualifier was applied to all transport incidents resulting in two categories: road trauma; and other transport incidents. For the purpose of this report, road trauma is defined as a transport incident which occurred on a street, highway or other paved roadway.*

Road trauma accounts for 27.3% (n=1,051) of all mechanisms of injury, the second highest behind falls at 44.7% (n=1,725). The rate of 'road trauma' and 'other transport incidents' were higher in rural areas, 29.2% and 18.2% respectively, than in metropolitan areas, 25.8% and 6.7% respectively (Table 12).

Table 12: Transport incidents by location of injury (n=1,452)

Mechanism of injury	Metropolitan (% of metropolitan)	Rural (% of rural)	Unknown location (% of unknown)
Road trauma	654 (25.8%)	288 (29.2%)	109 (32.5%)
Other transport incidents	170 (6.7%)	179 (18.1%)	179 (18.1%)
Total	824	467	161

Injuries to car occupants remains the highest mechanism of injury in the road trauma group (n=463, 12.0%) with pedestrians having the highest case fatality rate for ISS >12 (10.9%), well above other forms of road trauma (Table 13).

Table 13: Road trauma in detail (n=1,051)

Mechanism	Number injured (% of all mechanisms)	Number of deaths, ISS >12 (case fatality rate)	Percentage of all trauma deaths
Car occupant	463 (12.0%)	25 (6.4%)	6.4%
Motorcycle rider	271 (7.0%)	11 (4.4%)	2.8%
Pedal cyclist	152 (3.9%)	8 (5.6%)	2.0%
Pedestrian	139 (3.6%)	14 (10.9%)	3.6%
All other road transport	26 (0.7%)	4 (17.4%)	1.0%
Total	1051 (27.3%)	62 (6.6%)	15.8%

* See [Glossary](#) for a detailed definition of 'road trauma' and 'other transport incident'.

The most common mechanisms in the 'other transport incidents' group were motorcycle riders (n=147), other land transport incidents (n=97), pedal cyclists (n=74), and pedestrians (n=36). Of the 'other land transport' incident group, animal-rider or animal-drawn vehicle were the most common (n=68) followed by all-terrain vehicle (including quad bike) incidents (n=28) (Table 14).

Other transport incidents include incidents being reported as occurring NOT on a street, highway or other paved roadway.

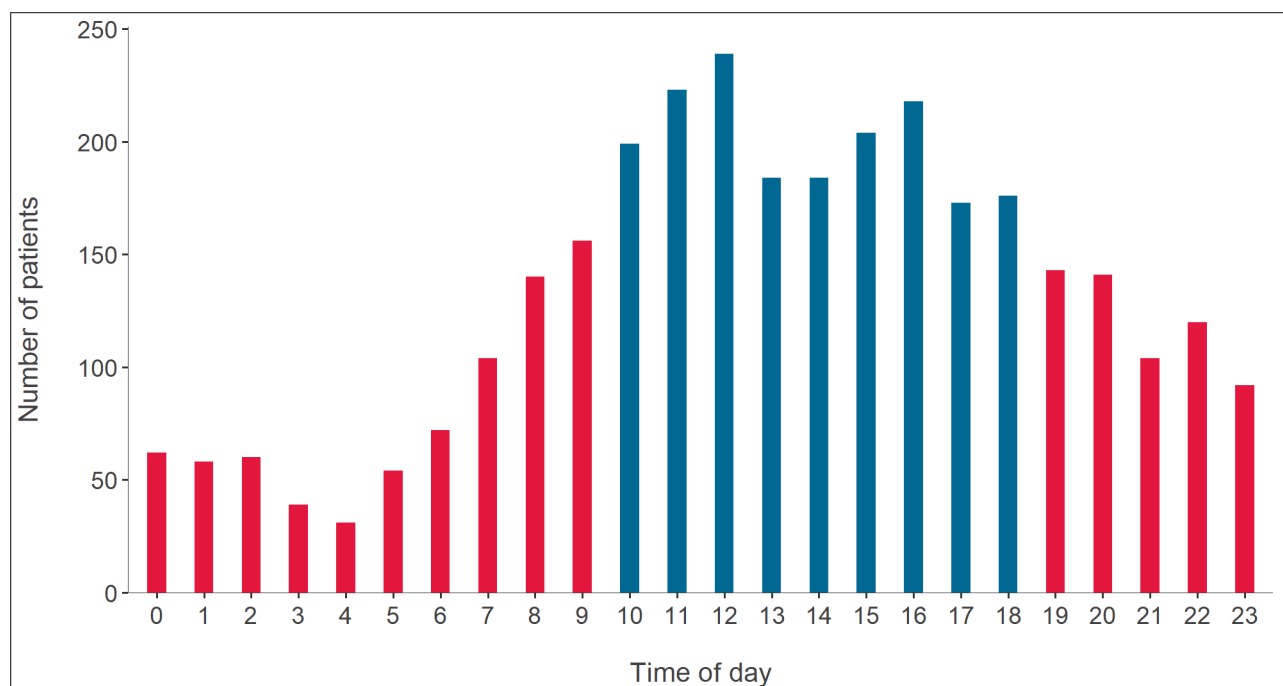
Table 14: Other transport incidents in detail (n=401)

Mechanism	Number injured (% of all mechanisms)	Number of deaths, ISS >12 (case fatality rate)	Percentage of all trauma deaths
Motorcycle rider	147 (3.8%)	1 (0.7%)	0.3%
Other land transport accidents	97 (2.5%)	0 (0.0%)	0.0%
Pedal cyclist	74 (1.9%)	1 (1.4%)	0.3%
Pedestrian	36 (0.9%)	5 (16.1%)	1.3%
Car occupant	25 (0.6%)	3 (13.6%)	0.8%
Water transport accidents	15 (0.4%)	3 (25.0%)	0.8%
Air and space transport accidents	4 (0.1%)	0 (0.0%)	0.0%
Occupant of heavy transport vehicle	3 (0.1%)	1 (50.0%)	0.3%
Total	401 (10.4%)	14 (3.8%)	3.6%

Time, day and month of injury

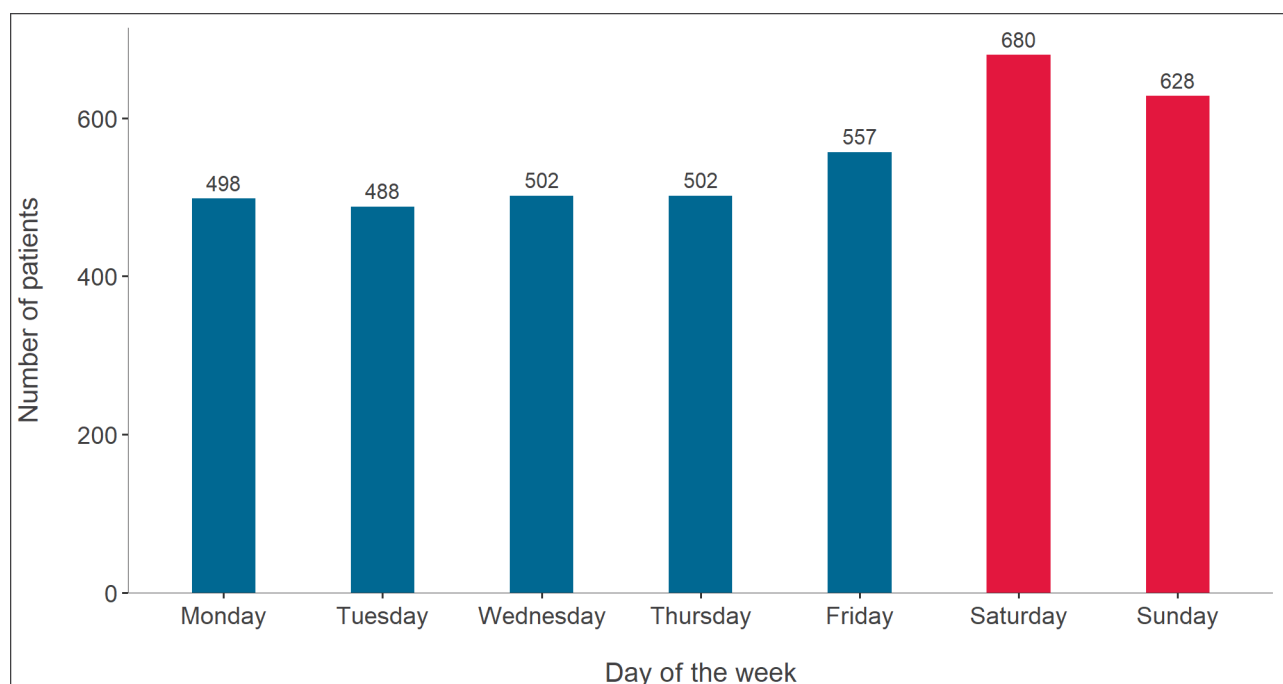
Of note is that 56.7% of patients (n=1,800) were injured between 10am and 6pm, which resulted in peak activity in the hospitals during the afternoon and evening (Figure 15).

Figure 15: Number of patients by time of injury (n=3,176)



The mean daily number of persons injured on a weekday was 509. The number of persons injured on weekends was higher, with a mean of 654 per day (Figure 16).*

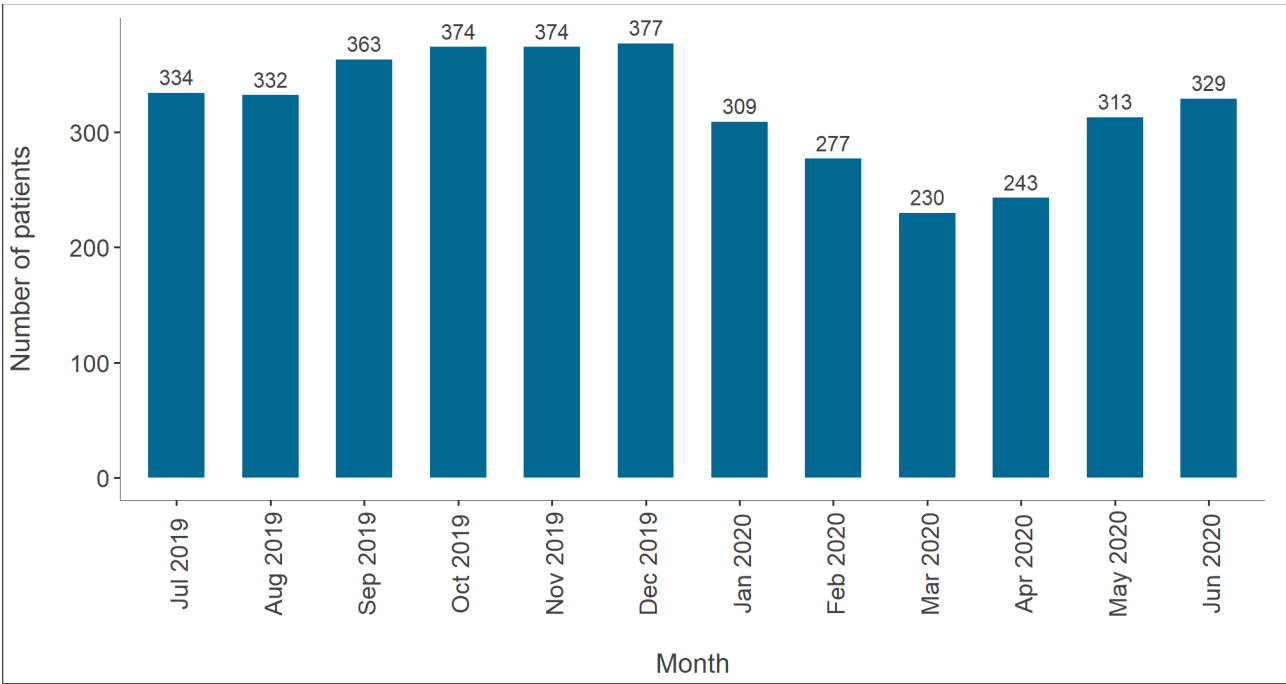
Figure 16: Number of patients by day of injury (n=3,855)



* In the reporting period there were 261 weekdays and 104 weekend days.

The mean monthly number of persons injured was 321. Note the reduction in presentations in 2020, during periods of public health order restrictions due to the COVID-19 pandemic (Figure 17).

Figure 17: Number of patients by month of injury (n=3,855)



Injuries

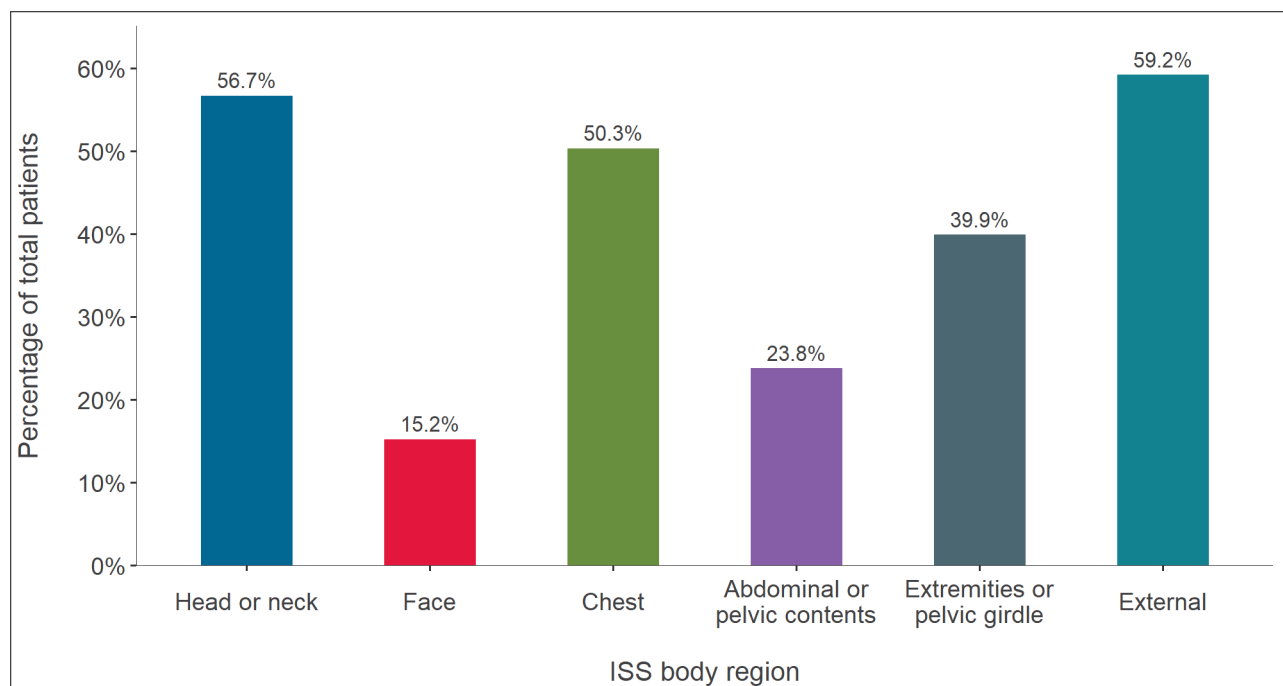
Three or more fractured ribs without a flail segment* continued to be the most common single serious injury sustained (24.3%, n=935) where the AIS severity was greater than two (Table 15). Head injuries occupied three of the top five injuries.

Table 15: Top five injuries with an AIS severity >2 (n=3,855)

Injury description (as per AIS dictionary)	AIS severity	Number of patients (% of total)
Fractured ≥3 ribs without flail, not further specified	3	935 (24.3%)
Cerebrum hematoma - subdural - small; moderate	4	398 (10.3%)
Base of skull fracture, not further specified	3	213 (5.5%)
Hemopneumothorax, not further specified	3	178 (4.6%)
Cerebrum hematoma – subdural – large; massive; extensive	5	171 (4.4%)

In addition, 56.7% of major trauma patients sustained injuries to the head or neck body region, with the chest region injured in 50.3% of major trauma patients (Figure 18).

Figure 18: All injuries by ISS body region (n=3,855)



* Flail is defined as three or more ribs fractured in more than one location and/or resulting in paradoxical chest movement.⁸

Most major trauma patients (73.4%) sustained serious injury (AIS severity >2) to only one ISS body region (Table 16).

Table 16: Number of ISS body regions injured with an AIS severity >2 (n=3,855)

Number of ISS body regions injured with an AIS severity >2	Number of patients - All ISS (% of total)	Number of patients (% of total) (ISS >12)
0	341 (8.8%)	0 (0.0%)
1	2828 (73.4%)	2498 (78.5%)
2	565 (14.7%)	563 (17.7%)
3	104 (2.7%)	104 (3.3%)
4	16 (0.4%)	16 (0.5%)
5	1 (0.0%)	1 (0.0%)

19.5% of major trauma patients sustained polytrauma, defined as sustaining serious injury (AIS severity >2) in two or more ISS body regions (Table 17).¹²

Table 17: Single body region versus polytrauma with an AIS severity >2 (n=3,514)

Body region	Number of patients - all ISS (% of total)	Case fatality rate (ISS >12)
Single body region	2828 (80.5%)	9.0%
Polytrauma	686 (19.5%)	12.6%

Injury Severity Score

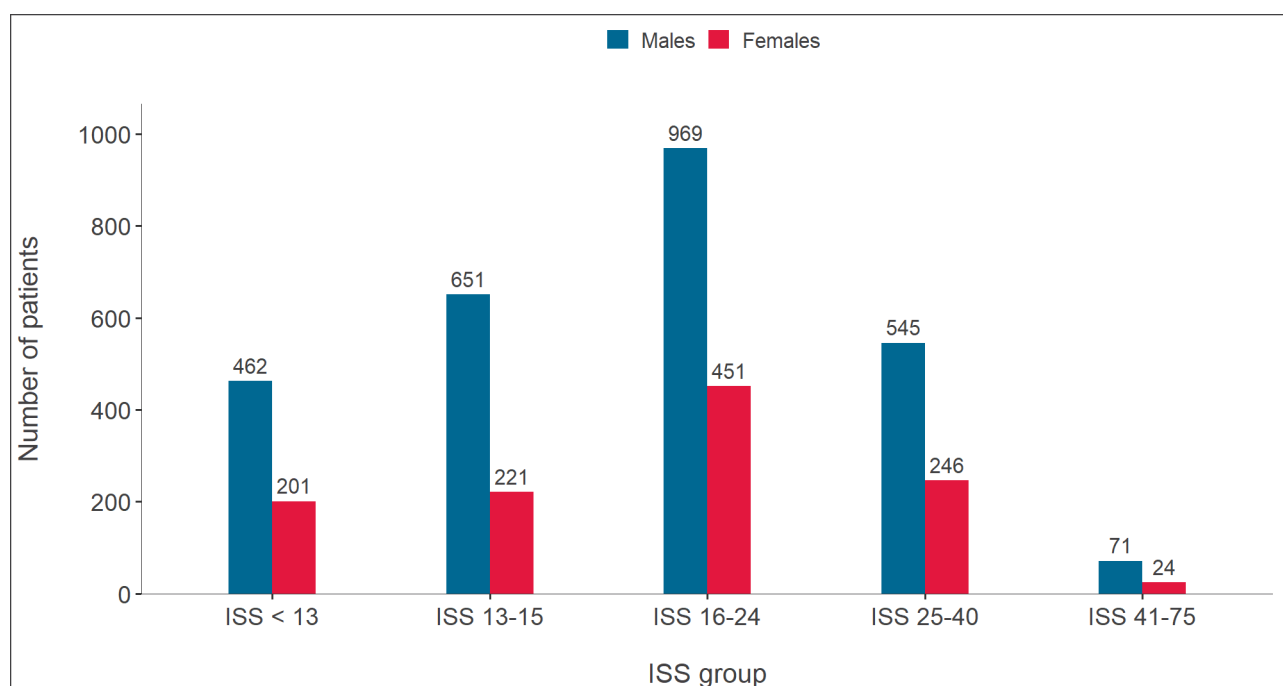
An ISS of greater than 12 is a key identifier of a major trauma patient. The ISS correlates with mortality – the higher the ISS, the higher the mortality rate (Table 18). It is important to note that ISS is only calculated on injuries sustained and does not include other potential contributors to mortality and morbidity, such as patient's age and comorbidities. The average ISS for all major trauma patients was 18.1. This increased to 20.4 when excluding those with an ISS less than 13.

Table 18: Major trauma patients by ISS group (n=3845)

ISS group	Number of patients (% of total)	Number of deaths (case fatality rate)
ISS <13	663 (17.2%)	75 (11.3%)
ISS 13-15	873 (22.7%)	13 (1.5%)
ISS 16-24	1421 (37.0%)	56 (3.9%)
ISS 25-40	793 (20.6%)	202 (25.5%)
ISS 41-75	95 (2.5%)	39 (41.1%)

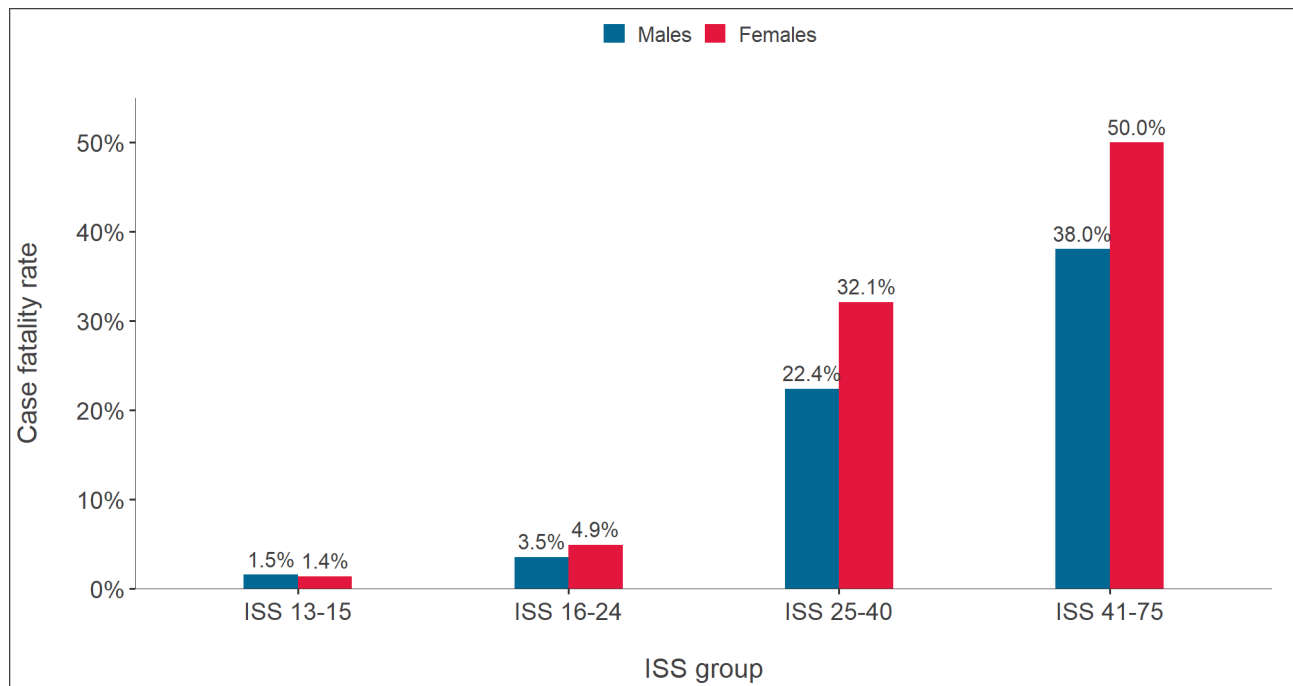
The serious injury category (ISS 16-24) contained the highest number of injured at 1,421 (37.0%), followed by the moderate injury category (ISS 13-15) with 873 (22.7%), and the severe injury category (ISS 25-40) with 793 (20.6%) (Figure 19).

Figure 19: Number of major trauma patients by ISS group and sex (n=3,841)



Females had a higher case fatality rate than males in ISS greater than 15 groups (Figure 20). Overall, the case fatality rates were higher in females than males (12.3% versus 8.6%) for ISS>12.

Figure 20: Case fatality rate by ISS and sex (n=3,178)



Pre-hospital time

The time from injury to arrival at a designated trauma service can have a significant impact on morbidity and mortality in the major trauma patient cohort. The regional population and geography of NSW are vastly spread, and this impacts on the variation in the time of arrival to a designated trauma service. Overall, patients who were injured in a metropolitan region arrived at a designated trauma service faster (85 mins) than those injured in a rural location (178 mins) (Table 19).

See the [Methodology](#) section of this report for more information regarding the definitions of metropolitan and rural.

Table 19: Median time of injury to arrival to a designated trauma service (n=3,635)

Location of injury	Direct from scene	Transferred from another hospital	Overall
Metropolitan	79 mins (n=2132)	565 mins (n=321)	85 mins (n=2453)
Rural	137 mins (n=592)	502 mins (n=274)	178 mins (n=866)
NSW overall	86 mins (n=2947)	515 mins (n=688)	100 mins (n=3635)

A number of major trauma patients (5.2%, n=200) who arrived at a designated trauma service needed to be transferred to a higher level of care for specialised treatment. While vital, this transfer prolongs the time before the required (definitive) care can be provided, such as specialised surgery, interventional radiology or paediatric services. Overall, 849 major trauma patients were transferred from another acute care facility, with the median time of injury to definitive care being 556 minutes (Table 20).*

Table 20: Median time of injury to arrival to definitive care (n=3,661)

Location of injury	Direct from scene	Transferred from another hospital	Overall
Metropolitan	79 mins (n=2071)	554 mins (n=386)	86.5 mins (n=2457)
Rural	141 mins (n=525)	590 mins (n=360)	206 mins (n=885)
NSW overall	86 mins (n=2812)	556 mins (n=849)	104 mins (n=3661)

* See [Glossary](#) for definition of definitive care

Mode of transport

Major trauma patients are transported to a designated trauma service from either the scene of the injury or from another hospital. Road ambulance was by far the most common mode of transport (75.3%), with helicopter, fixed wing aircraft, and private transport also used (Table 21, Figures 21-22).

Table 21: Mode of transport to definitive care (n=3,661)

Transport mode	Direct from scene of injury	Transfer from another acute care facility	Total
Road ambulance	2220 (78.9%)	544 (64.1%)	2764 (75.5%)
Helicopter	367 (13.1%)	165 (19.4%)	532 (14.5%)
Private vehicle	172 (6.1%)	7 (0.8%)	179 (4.9%)
Unknown	44 (1.6%)	26 (3.1%)	70 (1.9%)
Other	5 (0.2%)	10 (1.2%)	15 (0.4%)
Fixed wing aircraft	4 (0.1%)	97 (11.4%)	101 (2.8%)
Total	2812	849	3661

Figure 21: Mode of transport to definitive care when transported direct from the scene of injury, by injury location (n=2,596)

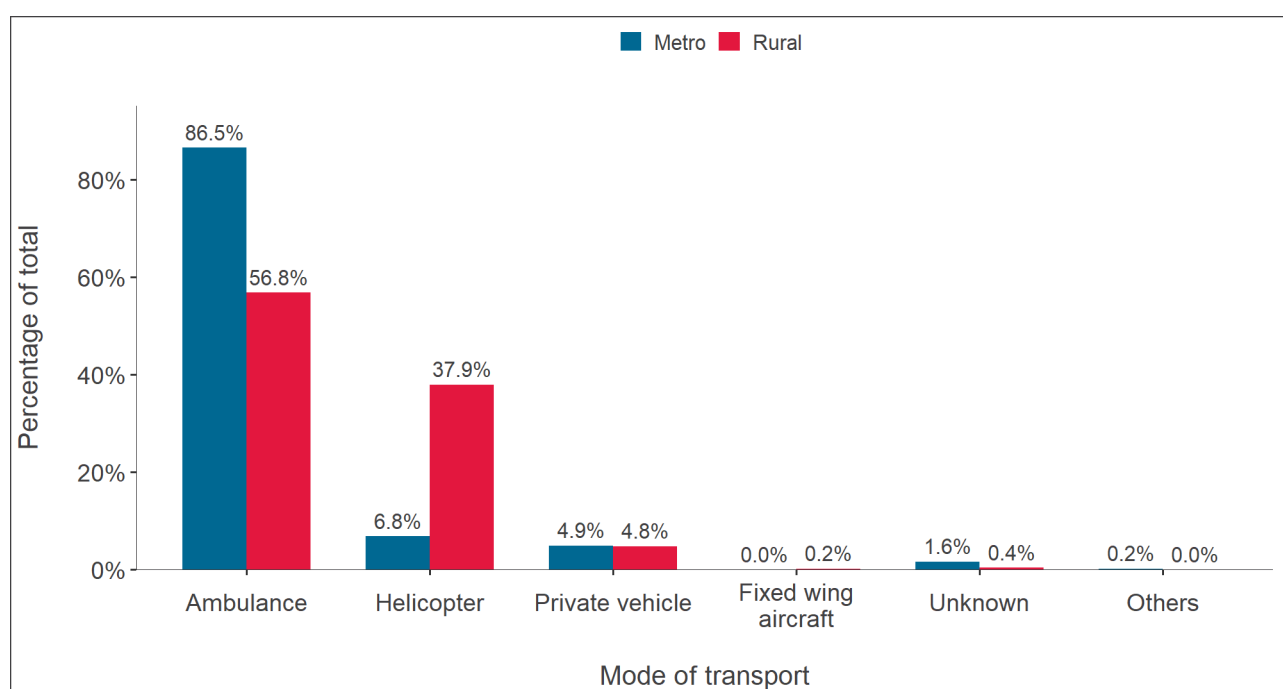
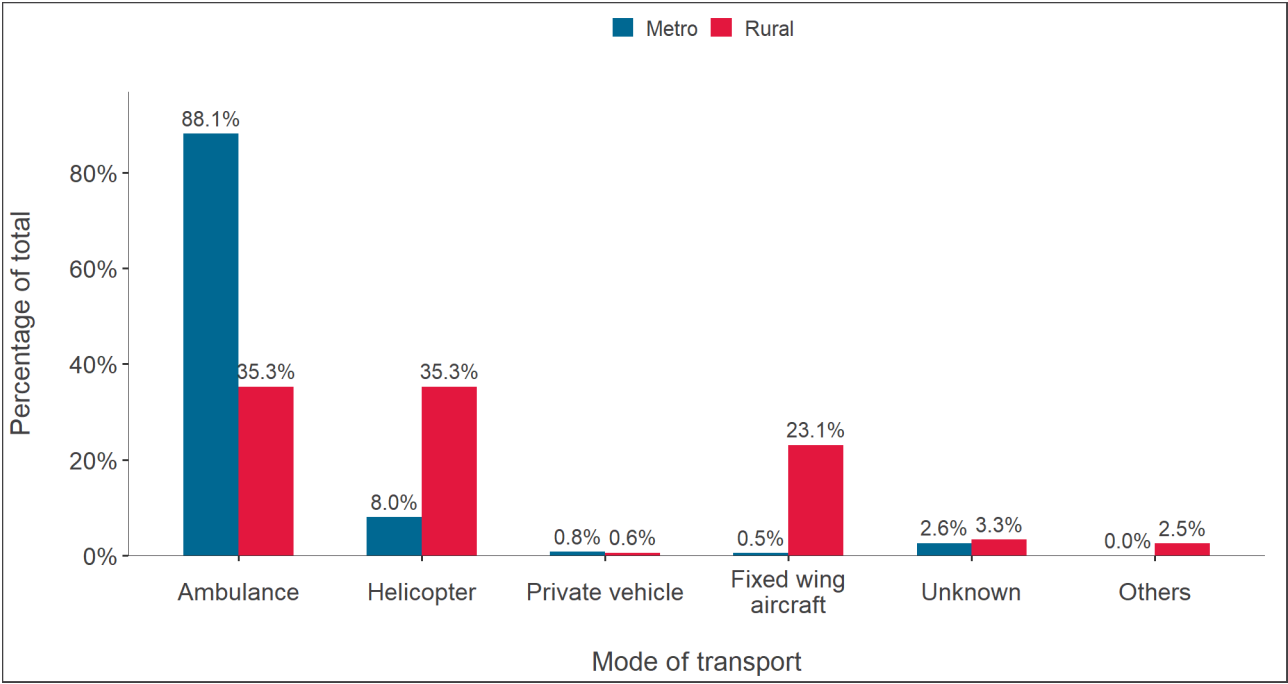


Figure 22: Mode of transport to definitive care when transferred from another acute care facility, by injury location (n=746)



Major trauma admissions

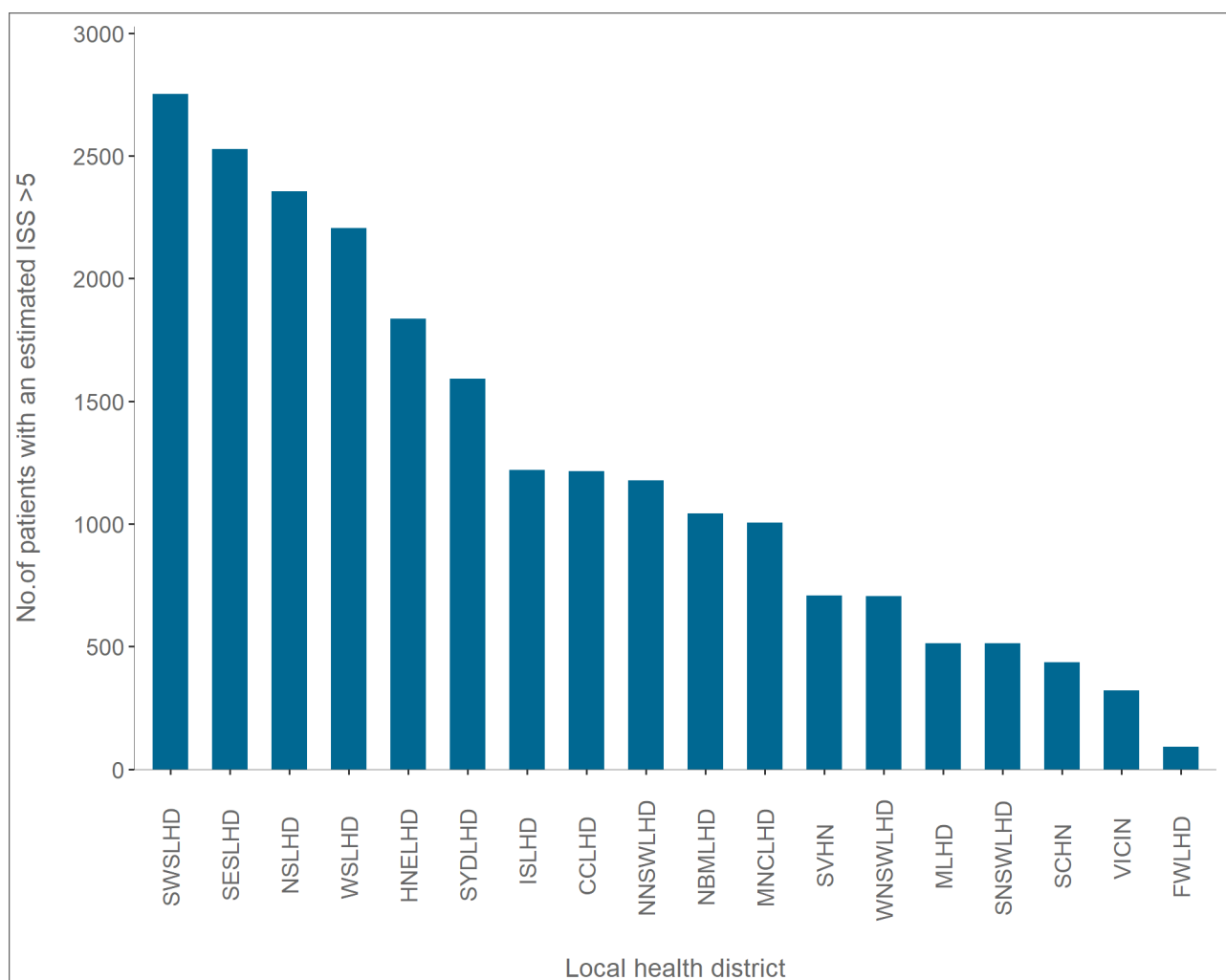
Introduction

The information in this section of the report is based on the number of major trauma patients admitted to NSW trauma services (n=3,956), not the number of major trauma patients (n=3,855), as some patients were treated in more than one NSW reporting facility. Trauma patient data is discussed in detail in the [Major trauma patients section](#).

Overall burden of trauma

Major trauma patients are an important cohort, but only represent a fraction of all trauma patients who are admitted to facilities across NSW. Based on data from the Admitted Patient Data Collection and using an International Classification of Diseases (ICD) to AIS mapping tool, 22,203 patients with an estimated ISS >5 were admitted to a NSW health facility during the reporting period (Figure 23).^{13,14} This demonstrates the significant burden that trauma, as a whole, places on the health system.

Figure 23: Number of patients with an estimated ISS >5 by local health district (n=22,203)



Facility overview

Table 22 provides an overview of the major trauma admissions for each designated trauma service together with averages from the three trauma service types.

Table 22: Overview of trauma service admissions (n=3,956)

Facility	Number of admissions	Number of admissions (ISS >12)	Average age	Average ISS	Case fatality rate (ISS >12) excluding traumatic DOA
Adult major trauma services	2909	2418	54.6	18	9.2%
John Hunter Hospital	596	563	53.2	20	7.5%
Liverpool Hospital	432	296	56.2	16	10.8%
Royal North Shore Hospital	362	311	54.0	19	9.7%
Royal Prince Alfred Hospital	336	292	54.6	18	7.6%
St George Hospital	421	322	56.5	17	9.1%
St Vincent's Hospital	218	169	52.3	16	12.0%
Westmead Hospital	544	465	54.4	17	10.0%
Paediatric major trauma services	227	188	7.7	20	6.0%
John Hunter Children's Hospital	43	39	8.1	20	2.6%
Sydney Children's Hospital	75	61	7.3	19	6.7%
The Children's Hospital at Westmead	109	88	7.9	20	7.0%
Regional trauma services	820	674	54.2	17	8.5%
Coffs Harbour Base Hospital	94	81	50.8	18	9.9%
Gosford Hospital	70	63	54.6	16	6.3%
Lismore Base Hospital	55	49	52.7	20	10.2%
Nepean Hospital	146	77	59.9	12	3.9%
Orange Base Hospital	114	105	50.4	17	1.9%
Port Macquarie Base Hospital	58	51	54.5	19	5.9%
Tamworth Hospital	76	62	51.4	16	11.3%
The Tweed Hospital	28	25	52.9	18	12.0%
Wagga Wagga Base Hospital	92	81	51.9	17	9.9%
Wollongong Hospital	87	80	59.4	19	17.9%

Admission type

Most major trauma patients (77%, n=3,044) were admitted to a trauma service direct from the scene of injury. However, there were differences in the admission type between adult and paediatric patient groups (Table 23).

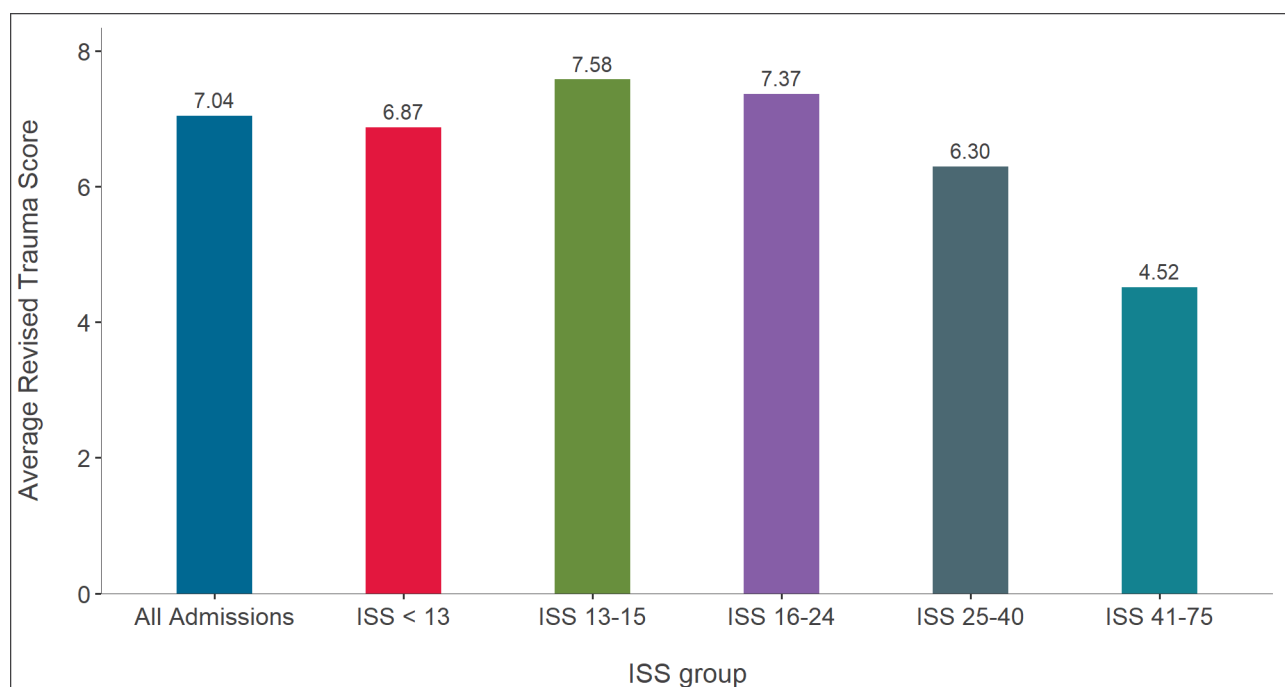
Table 23: Number of admissions by type (n=3,956)

Admission type	Number of admissions (paediatric / adult)	Percentage of admissions (paediatric / adult)
Direct from scene	189 / 2855	57.8% / 78.7%
Transfer from acute care facility	138 / 759	42.2% / 20.9%
Unknown and others	0 / 15	0.0% / 0.4%

Revised Trauma Score

The Revised Trauma Score* is an early (<24 hours) indicator of trauma outcomes. The lower the score, the higher the likelihood of death. There was a negative correlation between the Revised Trauma Score and ISS, showing that the higher the ISS, the lower the Revised Trauma Score. The average Revised Trauma Score was 7.04 (Figure 24).

Figure 24: Average Revised Trauma Score by ISS group (n=3,627)

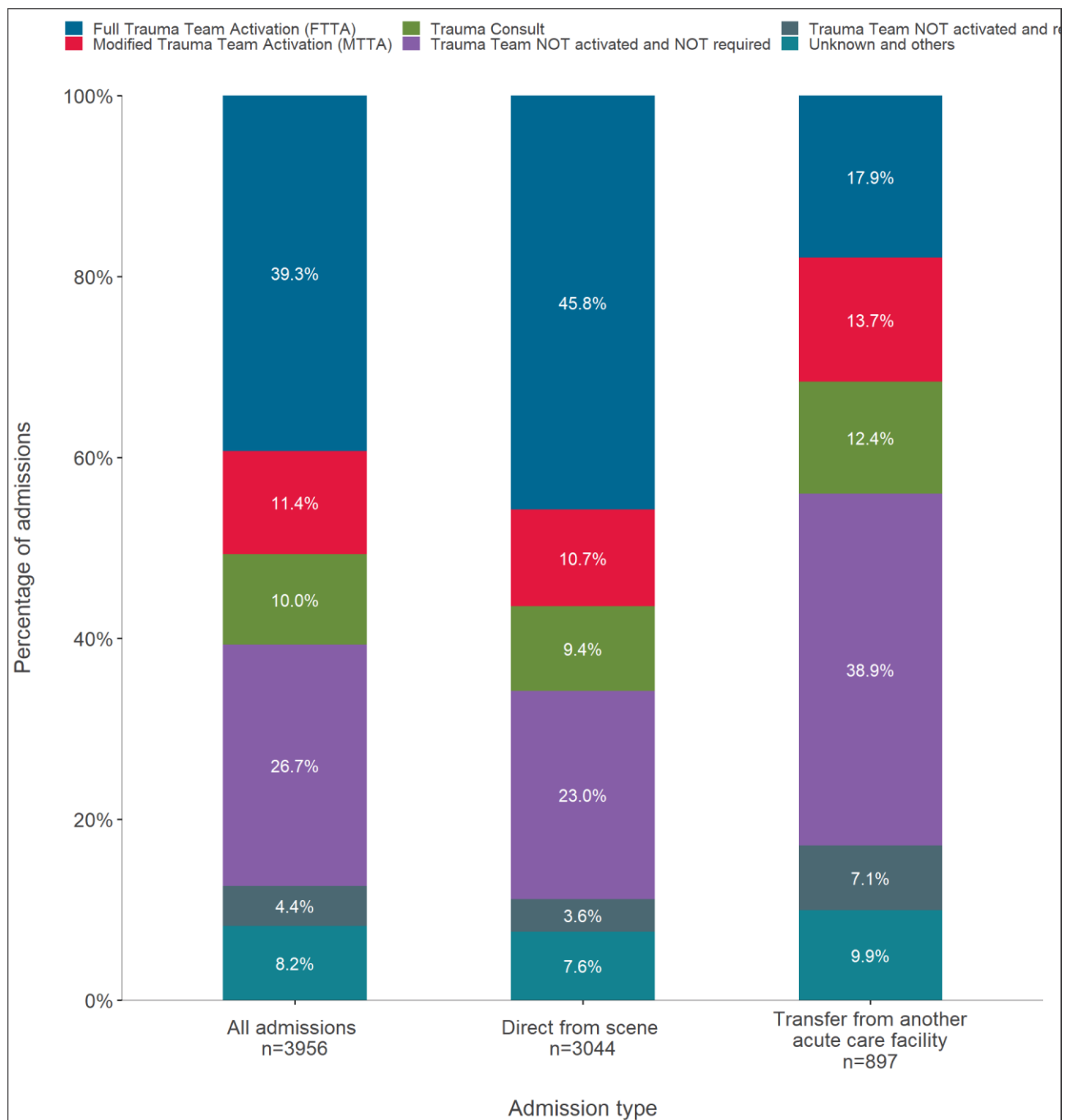


* See [Glossary](#) for a definition of the Revised Trauma Score.⁹

Trauma team activation

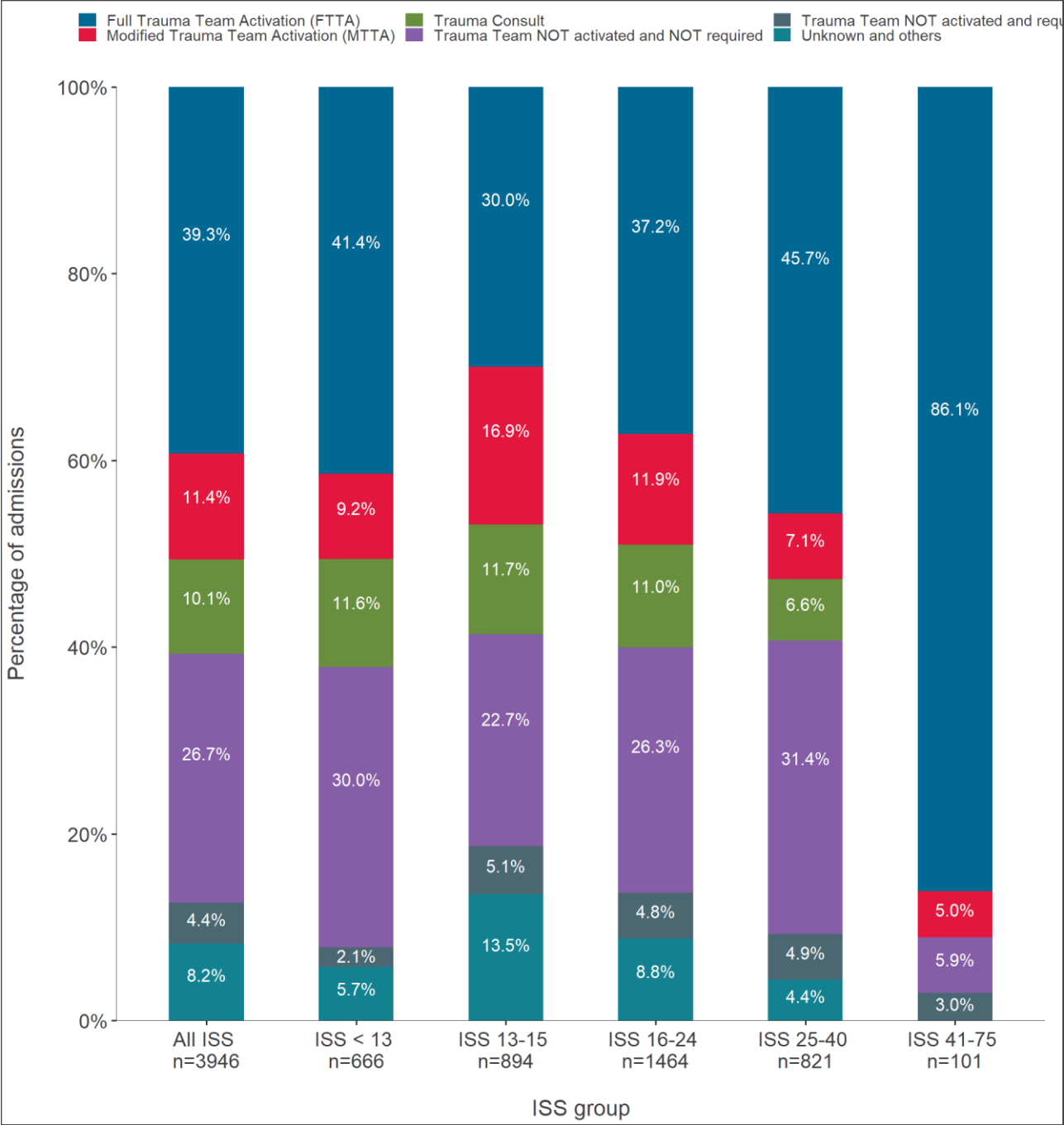
Major trauma patients require rapid, thorough and systematic assessment and resuscitation. This is conducted on arrival by a multidisciplinary team known as a trauma team. The activation of the trauma team is based on a locally derived set of criteria including the mechanism of injury and physiological parameters. 45.8% of patients who arrived at a trauma service direct from scene received a full trauma team activation compared to 17.9% of those who were transferred from another acute care facility (Figure 25).

Figure 25: Trauma team activation by admission type (n=3,956)



As expected, the activation of the trauma team increased with severity of injury with 30% (n=268) of the ISS 13-15 group receiving a full trauma team activation compared to 86.1% (n=87) of the ISS 41-75 group (Figure 26).

Figure 26: Trauma team activation by ISS group (n=3,946)



Vital signs on arrival to the emergency department

The initial vital signs on arrival to the emergency department (ED) are useful indicators of injury severity and predictors of death. Major trauma patients who presented with hypotension (systolic blood pressure <100mmHg), a Glasgow Coma Scale <13 or hypothermia (temperature <35°C) represented a higher proportion of those who died compared to all patients (Figures 27-29).

Figure 27: Initial systolic blood pressure on arrival to the ED and mortality (n=3,740)

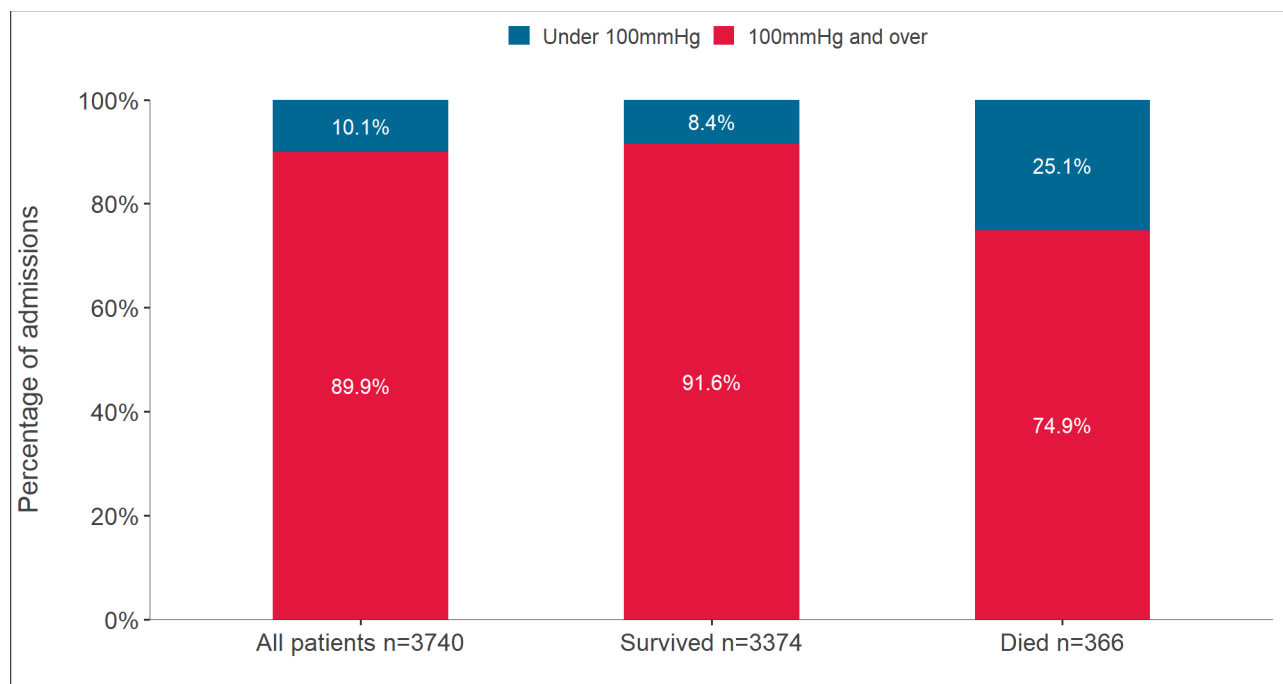


Figure 28: Initial Glasgow Coma Scale on arrival to the ED and mortality (n=3,703)

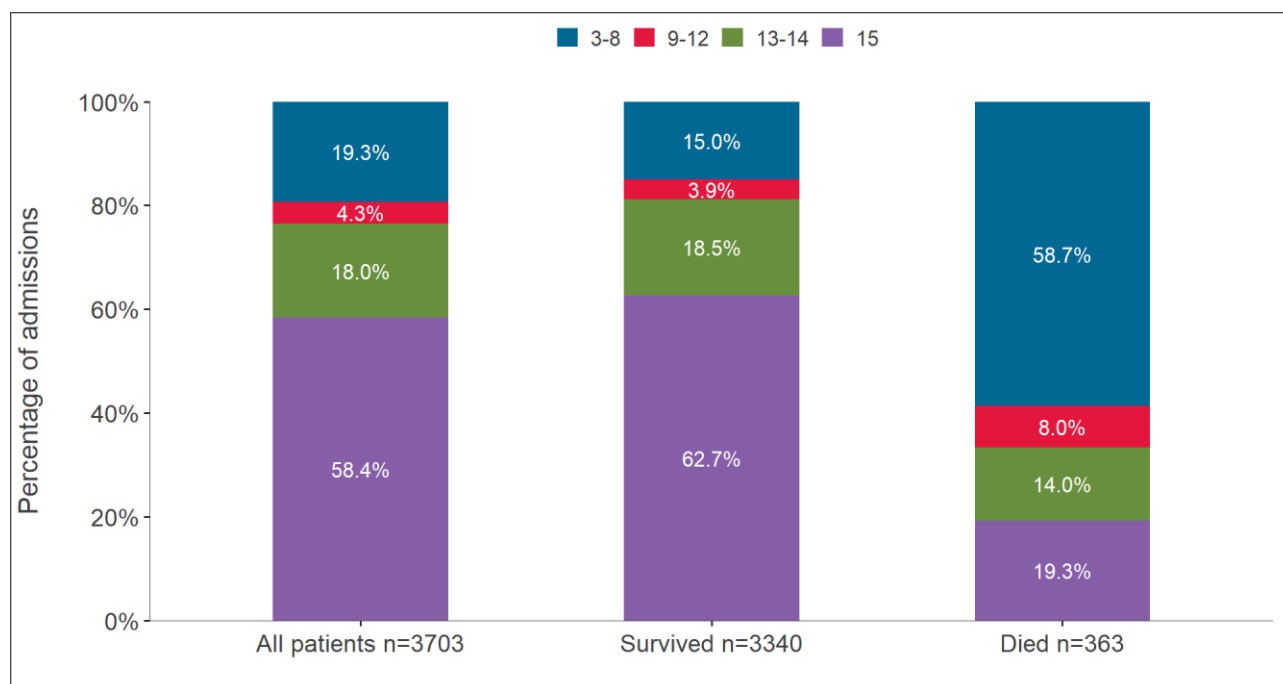
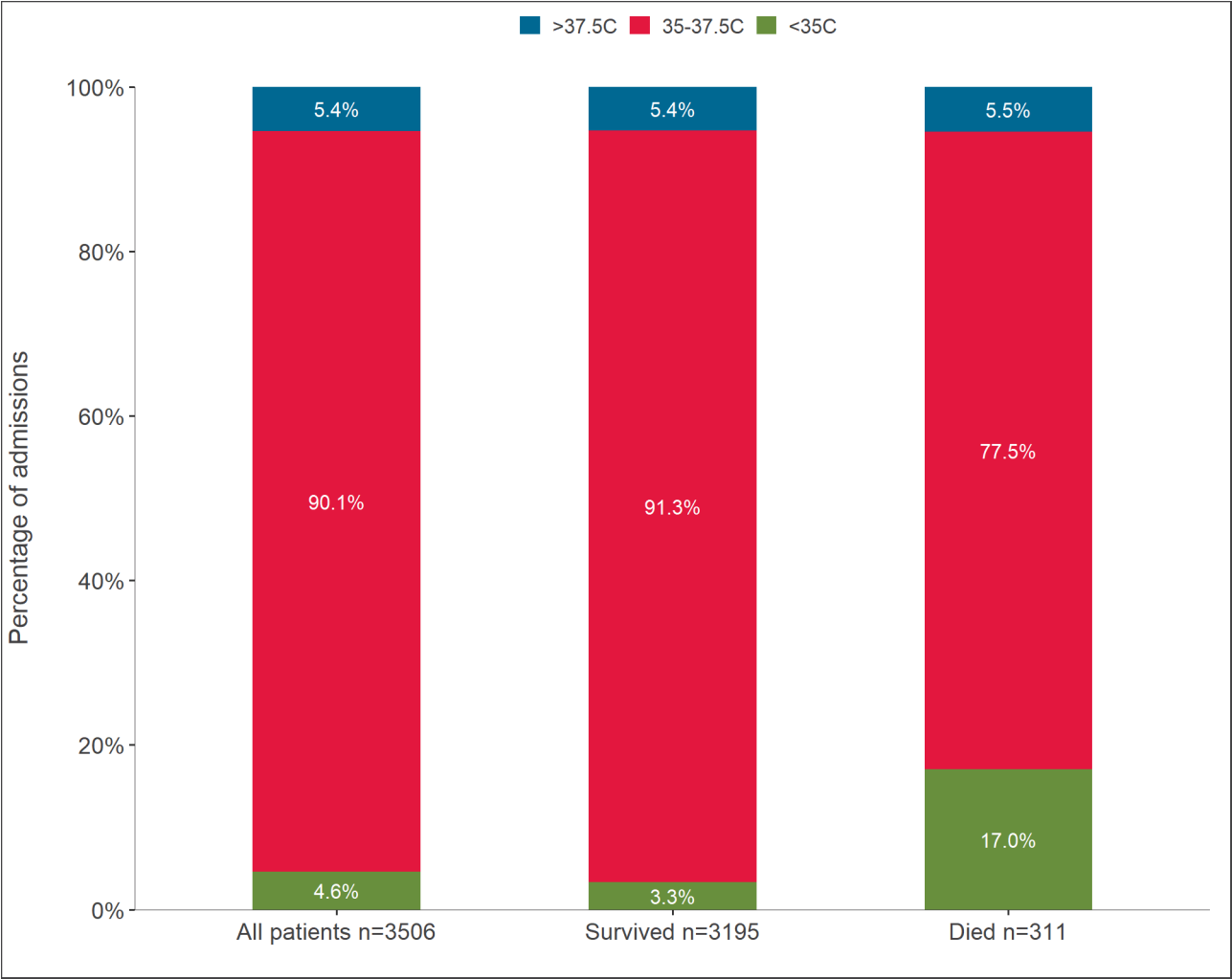


Figure 29: Initial temperature on arrival to ED and mortality (n=3,506)

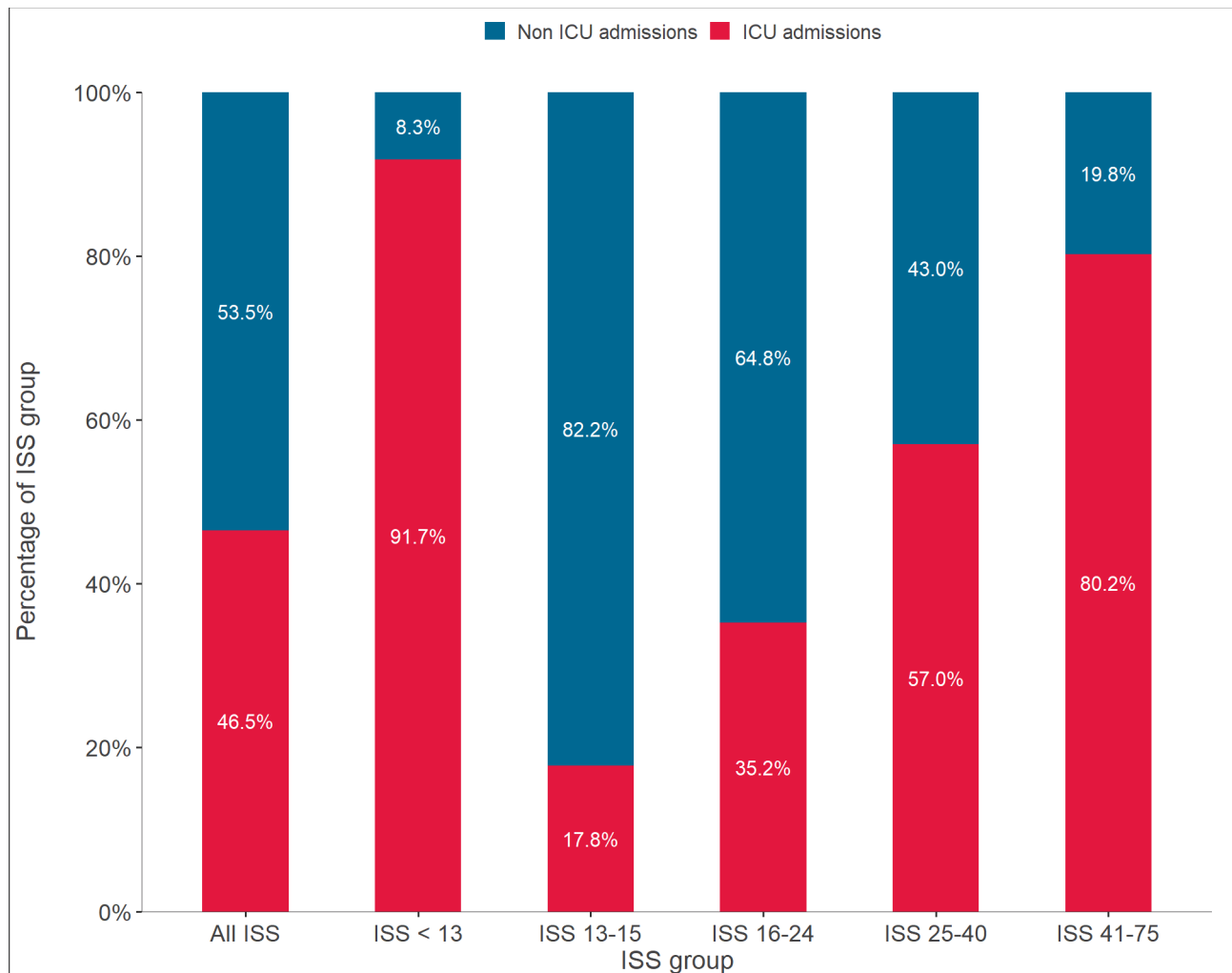


Intensive care unit admissions

Overall, 46.5% (n=1,835) of major trauma patients received an intensive care unit (ICU) admission, with the percentage increasing with the level of injury severity (Figure 30). This is slightly down from 47.3% the previous year. While the number of ICU admissions may be explained by the level of severity of injury, the complexity of injury and other factors such as comorbidities may also influence the requirement for ICU admission.

It is important to note that the ISS <13 group is only included in the report if they have been admitted to ICU or died, hence the high proportion of ICU admissions in this group.

Figure 30: ICU admission by ISS group (n=3,946)



Length of stay

The length of stay (LOS) in hospital, particularly the LOS in an ICU, is an indicator of the severity and complexity of the injury. The average hospital LOS for major trauma patients was 11.3 days (Table 24).

Table 24: Overview of ICU and hospital length of stay (n=3,948)

LOS description	Number of patients	Average days	Median days
ICU LOS	1833	4.6	2.0
Total hospital LOS	3948	11.3	6.0

The average ICU LOS increased with severity, with ISS 13-15 group being 2.9 days and ISS 41-75 group being 13.1 days. A similar increasing pattern was shown in the hospital length of stay, as expected (Table 25).

Table 25: ICU and hospital length of stay by ISS (n=3,948)

ISS group	Average ICU LOS	Median ICU LOS	Average hospital LOS	Median hospital LOS
ISS <13	2.4	1.0	10.9	7.0
ISS 13-15	2.9	2.0	7.5	5.0
ISS 16-24	4.5	2.0	11.2	6.0
ISS 25-40	6.6	3.0	15.0	7.0
ISS 41-75	13.1	8.0	21.6	12.0

No considerable change was observed in the median values of ICU LOS and hospital LOS across different age groups (Table 26).

Table 26: ICU and hospital length of stay by age (n=3,948)

Age group	Average ICU LOS	Median ICU LOS	Average hospital LOS	Median hospital LOS
0-4	5.9	2.0	9.7	4.0
5-9	8.8	1.0	10.6	4.0
10-14	3.3	1.0	7.1	4.0
15-19	6.1	2.0	13.1	6.0
20-24	3.9	2.0	10.2	5.0
25-29	5.1	2.0	12.7	6.0
30-34	3.8	1.0	12.7	5.0
35-39	3.8	2.0	9.6	6.0
40-44	4.4	2.0	10.9	5.0
45-49	4.8	3.0	11.9	6.0
50-54	6.2	2.0	10.9	5.5
55-59	4.6	2.0	11.5	6.0
60-64	4.5	2.0	10.7	7.0
65-69	5.0	2.5	12.9	7.0
70-74	3.9	2.0	11.0	8.0
75-79	3.9	2.0	13.3	8.0
80-84	3.7	2.0	11.9	7.0
85+	3.1	2.0	10.3	6.0

Procedures

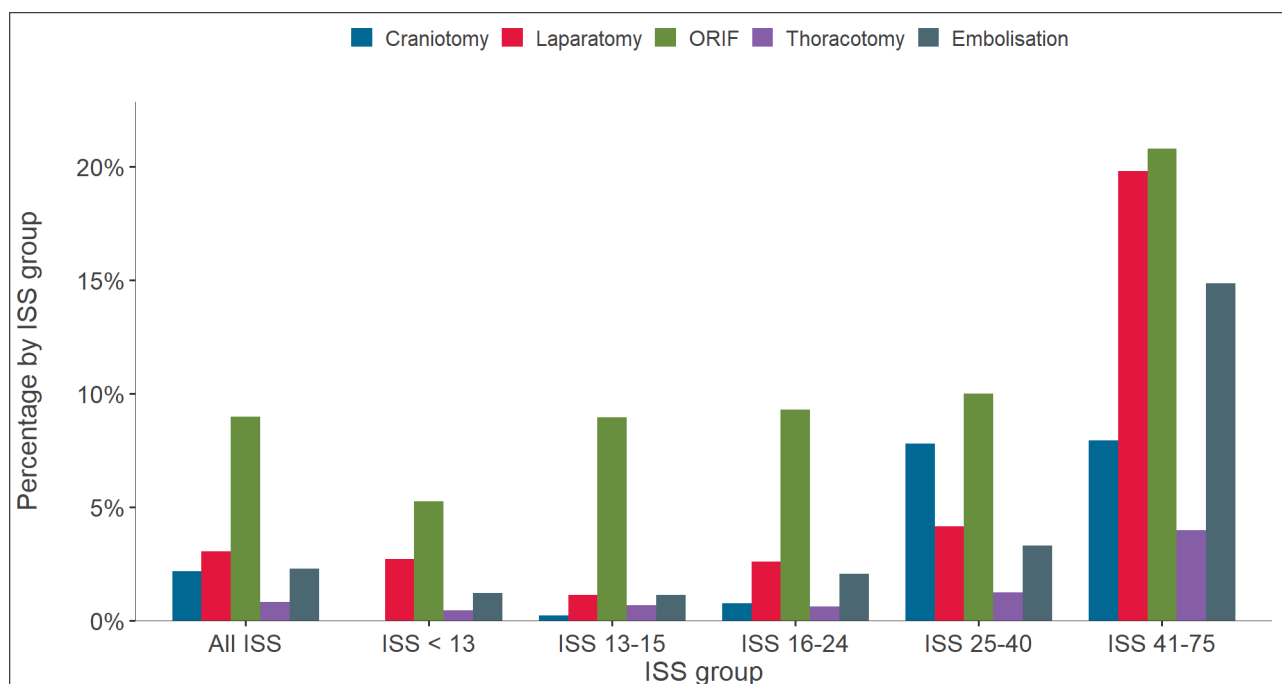
Despite the serious nature of the injuries sustained by major trauma patients, the number of surgical or interventional radiology procedures performed was very low. There were 682 procedures performed on patients (15.6% of all admissions). The highest percentage of procedures were performed in the ISS 41-75 group (Table 27, Figure 31).

Table 27: Procedures performed by type (n=619)

Procedure	Number of procedures	Percentage of total admissions
Open reduction internal fixation	354	8.9%
Laparotomy	120	3.0%
Embolisation	90	2.3%
Craniotomy	85	2.1%
Thoracotomy	33	0.8%
Total	682	15.6%

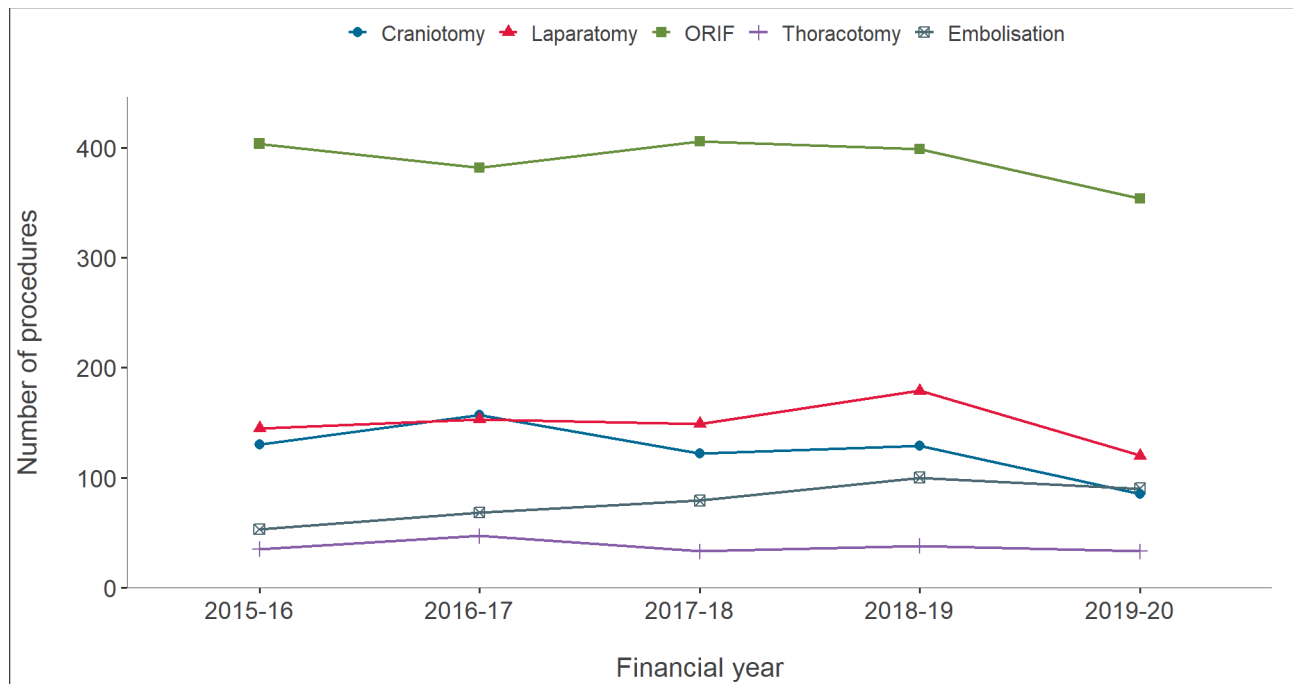
An increase in the proportion of laparotomy, open reduction internal fixation and embolisation procedures performed is noted in the ISS 41-75 group (Figure 31).

Figure 31: Procedures performed by ISS group (n=681)



Over the last five years, there has not been a substantial change in the number of procedures performed, with only embolisation procedures showing a notable increase (Figure 32).

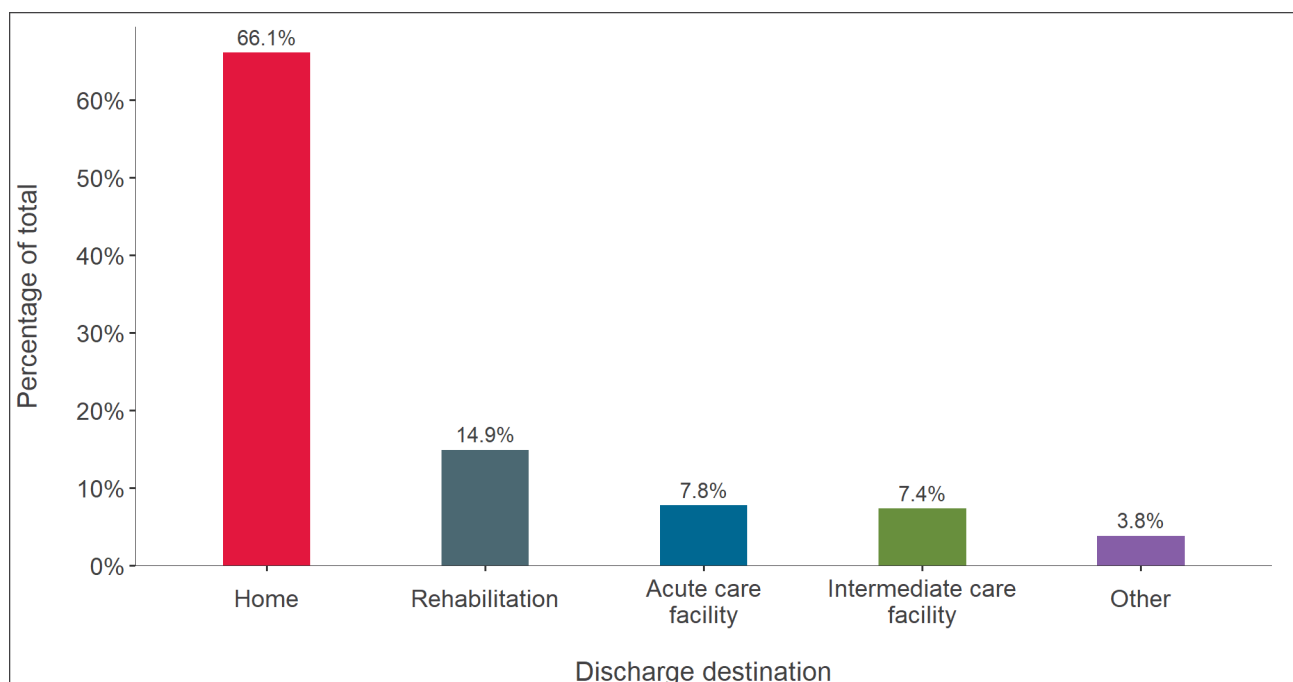
Figure 32: Five-year trend of procedures performed (n=3,890)



Discharge destination of survivors

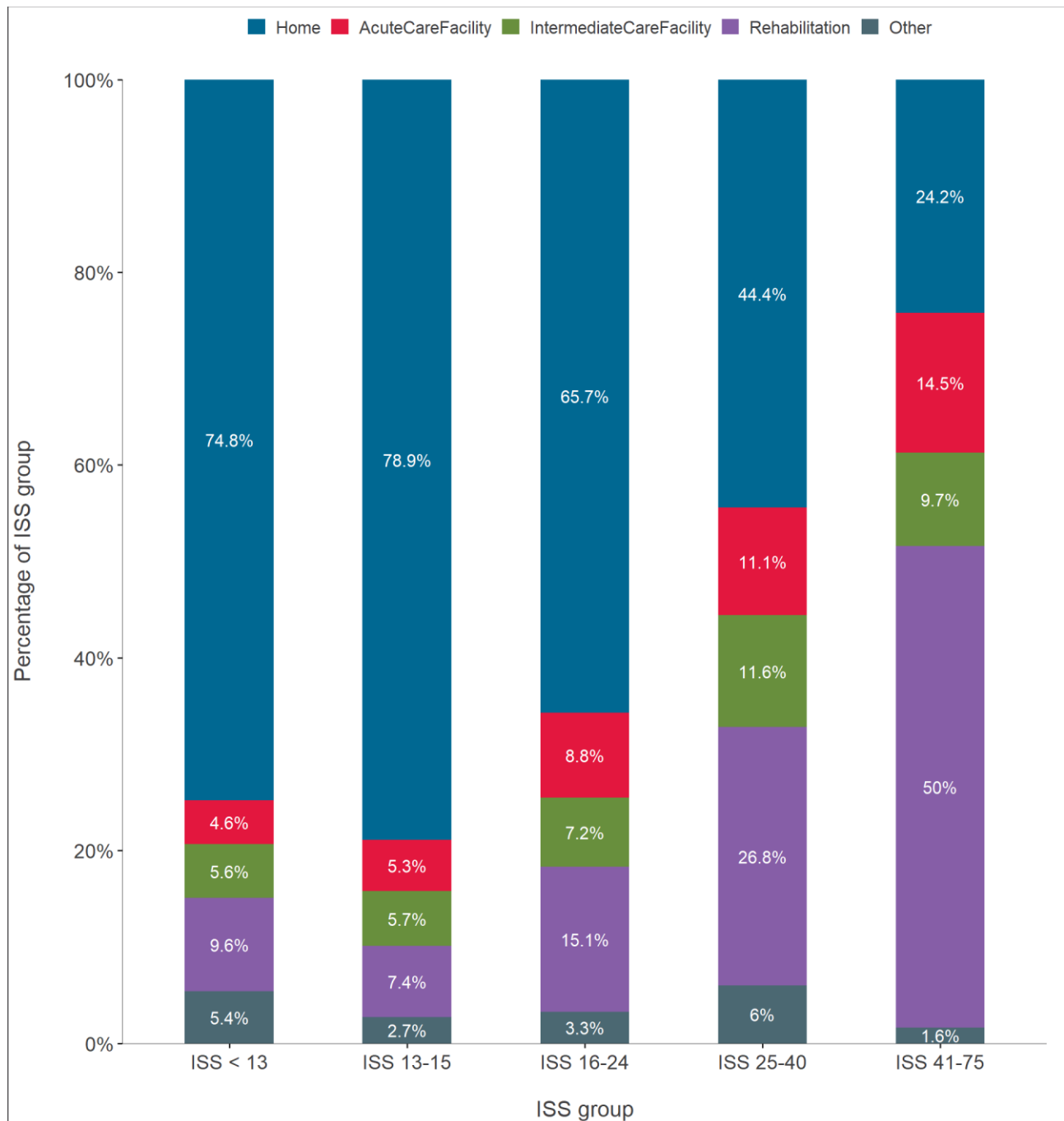
Survivors of major trauma (n=3,559) were discharged to various locations, with the home being the most common (66.1%) followed by rehabilitation (14.9%). 'Other' incorporates locations such as board and care, burns centre, foster care, residential institution, missing and unknown (Figure 33).

Figure 33: Discharge destination of survivors (n=3,559)



Overall, the rate of discharge home decreased as the injury severity increased, coinciding with an increase in the rate of discharge to rehabilitation services (Figure 34).

Figure 34: Discharge destination of survivors by ISS group (n=3,561)



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Glossary

Abbreviated Injury Scale (AIS) is an anatomically based, consensus-derived, global severity scoring system that classifies each injury by body region, according to its relative importance on a six-point ordinal scale. The AIS is the basis for the Injury Severity Score (ISS) calculation of the multiply injured patient.

Age-specific rate is an annualised rate given as per 100,000 persons, based on the estimated NSW population during the reporting period (end of December). Source: Australian Bureau of Statistics. Australian Demographic Statistics, Catalogue No. 3101.0. Canberra: ABS.¹¹

Age-standardised rate is an annualised rate given as per 100,000 persons, standardised to the Australian population at 30 June 2001. Source: Australian Bureau of Statistics. Standard Population for Use in Age-Standardisation Table. Australian Demographic Statistics, Mar 2013. Catalogue No. 3101. Canberra: ABS, Dec 2013.¹⁰

Case fatality rate is the proportion of deaths for a designated population expressed as a percentage. The NSW Trauma Minimum Data Set does not include all survivors with an ISS of less than or equal to 12. The case fatality rate in this report is only calculated on patients with an ISS of greater than 12 and will be expressed as 'case fatality rate for ISS >12'.

Definitive care is defined as the hospital providing the highest level of care to meet all the clinical needs of the patient. Many patients receive definitive care at regional trauma services, but a small number of patients are transferred to a major trauma service (higher level) for specialised care.

Geriatric population is defined as those aged 65 years or older.

Location of injury is defined as either metropolitan or rural based on the recorded postcode of injury. The process used to define the two categories is outlined in the [Methodology](#) section.

Injury Severity Score (ISS) assesses the combined effects of the multiply injured patient and is based on an anatomical injury severity classification, the AIS. The ISS is an internationally recognised scoring system which correlates with mortality, morbidity and other measures of severity. The ISS is calculated as the sum of the squares of the highest AIS code in each of the three most severely injured ISS body regions.

ISS body regions consist of six anatomical regions as defined in the AIS dictionary:

- head or neck
- face
- chest
- abdominal or pelvic contents
- extremities or pelvic girdle
- external.

Isolated fractured neck of femur is defined as the AIS codes 853161.3 and 853162.3 and where no other injury is recorded.

Major trauma is defined as all patients of any age, who were admitted to a designated NSW trauma service within seven days of sustaining an injury, and:

- had an ISS >12 (moderate to critically injured), or
- were admitted to an intensive care unit (irrespective of ISS) following injury, or

- died in hospital (irrespective of ISS) following injury, except those with an isolated fractured neck of femur injury sustained from a fall from a standing height (<1m) and those aged 65 years or older who die with minor soft tissue injury only.

Major trauma services can provide the full spectrum of care for major and moderately injured patients, from initial resuscitation through to rehabilitation and discharge. There are currently seven adult and three paediatric designated major trauma services in NSW.

Mechanism of injury refers to the mechanisms whereby energy is transferred from the environment to the person.

Minor soft tissue injury is defined as a superficial injury including abrasions, contusions, and lacerations (AIS codes: 910000.1; 910200.1; 910400.1; 910600.1, 810099.1, 810202.1, 810402.1, 810600.1, 810602.1, 710099.1, 710202.1, 710402.1, 710600.1, 710602.1, 510099.1, 510202.1, 510402.1, 510600.1, 510602.1, 410099.1, 410202.1, 410402.1, 410600.1, 410602.1, 310099.1, 310202.1, 310402.1, 310600.1, 310602.1, 210099.1, 210202.1, 210402.1, 210600.1, 210602.1).

Not further specified is an injury descriptor used in AIS coding where detailed information is lacking including injury type or severity.

Other transport incident is defined as a patient involved in an accident involving a device designed primarily for, or being used at the time primarily for, conveying persons or goods from one place to another (ICD 10 codes: V00 – V99 inclusive) that did not meet place of occurrence road trauma criteria.

Polytrauma is defined as serious injury (AIS severity >2) in two or more ISS body regions.

Regional trauma services can provide all aspects of care to patients with minor to moderate trauma, and definitive care to a limited number of major trauma patients in collaboration with the major trauma service. A regional trauma service provides initial assessment, stabilisation, definitive care and initiates transfer to a major trauma service when a patient requires services not available at the regional trauma service. There are currently ten designated regional trauma services in NSW.

Road trauma is defined as a patient involved in an accident involving a device designed primarily for, or being used at the time primarily for, conveying persons or goods from one place to another (ICD 10 codes: V00 – V89 inclusive) AND had a street, highway and other paved roadways as the place of occurrence of the external cause (ICD 10 codes: Y92.4 inclusive).

Revised Trauma Score is a physiological scoring system used for predicting death. It consists of the first set of vital signs data obtained on the patient after arrival at hospital including Glasgow Coma Scale, systolic blood pressure and respiratory rate. Values for the Revised Trauma Score are in the range 0 to 7.8408. The lower the score, the higher the likelihood of death.⁹

Standardised mortality ratio is a ratio between the observed number of deaths in a study population and the number of deaths that would be expected, based on the age or ISS specific rates in a standard population and the age or ISS distribution of the study population.

Traumatic death on arrival is defined as a patient presenting to the emergency department with no recordable pulse or blood pressure (pulse rate = 0; systolic blood pressure = 0), no motor response elicited during the Glasgow Coma Scale (GCS) assessment (GCS motor score = 1), and the post emergency disposition recorded as 'died'.

Abbreviations

AIS	Abbreviated Injury Scale
ASGS-RA	Australian Statistical Geography Standard Remoteness Areas
CCLHD	Central Coast Local Health District
DBP	Diastolic blood pressure
DOA	Dead on arrival
ED	Emergency department
FWLHD	Far West Local Health District
GCS	Glasgow Coma Scale
HNELHD	Hunter New England Local Health District
ICD	International Classification of Diseases
ICU	Intensive care unit
ISLHD	Illawarra Shoalhaven Local Health District
ISS	Injury Severity Score
ITIM	NSW Institute of Trauma and Injury Management
JH&FMHN	Justice Health & Forensic Mental Health Service Network
LOS	Length of stay
MLHD	Murrumbidgee Local Health District
MNCLHD	Mid North Coast Local Health District
NBMLHD	Nepean Blue Mountains Local Health District
NNSWLHD	Northern New South Wales Local Health District
NSLHD	Northern Sydney Local Health District
PH	Prehospital
REF	Referral
RTS	Revised Trauma Score
SaO ₂	Arterial oxygen saturation
SBP	Systolic blood pressure
SCHN	Sydney Children's Hospital Network
SESLHD	South Eastern Sydney Local Health District
SLHD	Sydney Local Health District
SNSWLHD	Southern New South Wales Local Health District
SVHN	St. Vincent's Health Network Local Health District
SWSLHD	South Western Sydney Local Health District
WNSWLHD	Western New South Wales Local Health District
WSLHD	Western Sydney Local Health District

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Appendices

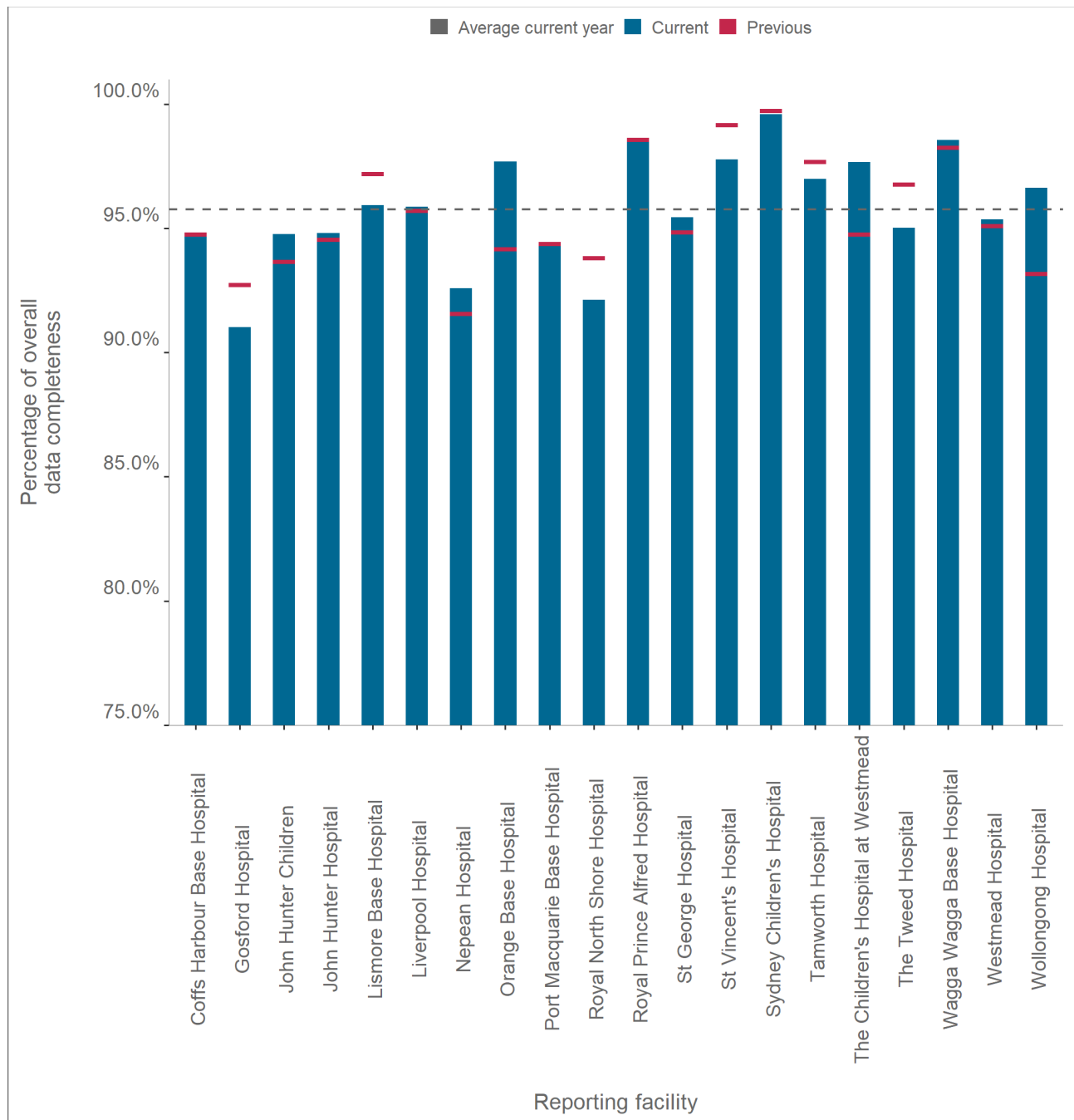
List of appendices

- [Appendix 1: Data completeness](#)
- [Appendix 2: Adult major trauma service summaries](#)
- [Appendix 3: Paediatric major trauma service summaries](#)
- [Appendix 4: Regional trauma service summaries](#)
- [Appendix 5: Calculation of the Injury Severity Score](#)
- [Appendix 6: Australian Statistical Geography Standard Remoteness Areas](#)

Appendix 1: Data completeness

High levels of data accuracy and entry completion, as entered by the trauma facilities, is crucial in enabling accurate and thorough data analysis as part of a broader trauma quality assurance program. The average overall data completion of mandatory elements was 95.8% (increase of 0.8% from last year), with completion rates ranging from 91.0% to 99.6% (Figure 35).

Figure 35: Overall data completeness by facility (n=4,254)



A detailed breakdown of data completion by facility, showing each mandatory data element can be seen in Table 28.

Table 28: Detailed data completeness by facility

Legend colour guide (Percentage complete)																					
100%		80-99%				60-79%				Less than 60%											
Facility		Coffs Harbour Base Hospital	Gosford Hospital	John Hunter Children	John Hunter Hospital	Lismore Base Hospital	Liverpool Hospital	Nepean Hospital	Orange Base Hospital	Port Macquarie Base Hospital	Royal North Shore Hospital	Royal Prince Alfred Hospital	St George Hospital	St Vincent's Hospital	Sydney Children's Hospital	Tamworth Hospital	The Children's Hospital at Westmead	The Tweed Hospital	Wagga Wagga Base Hospital	Westmead Hospital	Wollongong Hospital
Trauma ID																					
Age																					
Gender																					
Post code home																					
Post code injury																					
Injury date																					
Injury time																					
Primary cause of injury																					
Injury type																					
Injury place																					
Injury activity																					
Fall height																					
Scene agency																					
Scene mode																					
PH agency run no.																					
PH agency call received date																					
PH agency call received time																					
PH agency arrive at patient date																					
PH agency arrive at patient time																					
PH agency depart location date																					
PH agency depart location time																					
Admission date																					
Admission time																					

Facility	Coffs Harbour Base Hospital	Gosford Hospital	John Hunter Children	John Hunter Hospital	Lismore Base Hospital	Liverpool Hospital	Nepean Hospital	Orange Base Hospital	Port Macquarie Base Hospital	Royal North Shore Hospital	Royal Prince Alfred Hospital	St George Hospital	St Vincent's Hospital	Sydney Children's Hospital	Tamworth Hospital	The Children's Hospital at Westmead	The Tweed Hospital	Wagga Wagga Base Hospital	Westmead Hospital	Wollongong Hospital
System access																				
ED arrival date																				
ED arrival time																				
ED depart date																				
ED depart time																				
Trauma response																				
Post ED disposition																				
Intubated																				
Intubated method																				
Resp assisted																				
Resp assisted type																				
Paralytic agent																				
Sedation																				
ED vitals-heart rate																				
ED vitals-resp rate																				
ED vitals-DBP																				
ED vitals-SBP																				
ED vitals-temp																				
ED vitals-SAO2																				
ED vitals-GCS eye																				
ED vitals-GCS verbal																				
ED vitals-GCS motor																				
ED vitals-GCS total																				
ED vitals-RTS total																				
Ref hospital 1 arrival date																				
Ref hospital 1 arrival time																				
Ref hospital 1 transfer rationale																				
Ref hospital 1 procedures																				
Ref hospital 2 arrival date																				
Ref hospital 2 arrival time																				
Ref hospital 2 transfer rationale																				

Facility	Coffs Harbour Base Hospital	Gosford Hospital	John Hunter Children	John Hunter Hospital	Lismore Base Hospital	Liverpool Hospital	Nepean Hospital	Orange Base Hospital	Port Macquarie Base Hospital	Royal North Shore Hospital	Royal Prince Alfred Hospital	St George Hospital	St Vincent's Hospital	Sydney Children's Hospital	Tamworth Hospital	The Children's Hospital at Westmead	The Tweed Hospital	Wagga Wagga Base Hospital	Westmead Hospital	Wollongong Hospital
Ref hospital 2 procedures																				
Inter facility 1 transfer agency																				
Inter facility 1 mode																				
Inter facility 2 transfer agency																				
Inter facility 2 mode																				
Location tracking depts																				
Location tracking arrival dates																				
Location tracking arrival times																				
Procedure start dates																				
Procedure start times																				
Location tracking depart dates																				
Location tracking depart times																				
AIS codes																				
ISS																				
Outcome discharge disposition																				
Location of death																				
Discharge date																				
Discharge time																				
ICU length of stay																				
Hospital length of stay																				
Discharge destination																				
Discharge facility																				
Trauma and injury severity score																				
Record complete flag																				
Extrication minutes																				

Appendix 2: Adult major trauma service summaries

Table 29: Trauma data profile, John Hunter Hospital

Description	Facility	Peer
Total admissions	596	415.6
Mean monthly admissions	49.7	34.6
Case fatality rate (ISS >12 excl. traumatic DOA)	7.5%	9.2%
Sex		
Male / Female	407 / 189	291 / 124
Age ranges		
Mean age	53.2	54.6
0-4	0 (0%)	2.3 (0.6%)
5-9	0 (0%)	0.3 (0.1%)
10-14	0 (0%)	0.9 (0.2%)
15-19	28 (4.7%)	20.3 (4.9%)
20-24	59 (9.9%)	29.3 (7%)
25-29	44 (7.4%)	27.9 (6.7%)
30-34	38 (6.4%)	23.3 (5.6%)
35-39	32 (5.4%)	23.9 (5.7%)
40-44	31 (5.2%)	22.4 (5.4%)
45-49	29 (4.9%)	26.9 (6.5%)
50-54	36 (6%)	26.4 (6.4%)
55-59	47 (7.9%)	27.6 (6.6%)
60-64	49 (8.2%)	26.7 (6.4%)
65-69	29 (4.9%)	25.3 (6.1%)
70-74	40 (6.7%)	28.1 (6.8%)
75-79	45 (7.6%)	29.6 (7.1%)
80-84	36 (6%)	29.3 (7%)
85+	53 (8.9%)	45.3 (10.9%)
Injury Severity Score		
Mean ISS	20.3	18.3
ISS <13	30 (5.1%)	69.1 (16.7%)
ISS 13-15	129 (21.8%)	91 (22%)
ISS 16-24	268 (45.2%)	158.6 (38.2%)
ISS 25-40	144 (24.3%)	84.3 (20.3%)
ISS 41-75	22 (3.7%)	11.6 (2.8%)
Mechanism of injury		
Assault	31 (5.2%)	25 (6%)
Falls	215 (36.1%)	188.6 (45.4%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	135 (66.5%)	116 (73.6%)
Road trauma	199 (33.4%)	121.6 (29.3%)
Other transport incident	93 (15.6%)	35.1 (8.5%)
All other injuries	58 (9.7%)	45.3 (10.9%)

Description	Facility	Peer
Injury type		
Blunt	562 (94.3%)	390.7 (94%)
Penetrating	19 (3.2%)	17.1 (4.1%)
Unknown	15 (2.5%)	7.7 (1.9%)
Admission type		
Direct admission	436 (73.2%)	323.6 (77.9%)
Transfer in	158 (26.5%)	90.6 (21.8%)
Unknown	2 (0.3%)	1.4 (0.3%)
Arrival modes		
Ambulance	401 (67.3%)	310.4 (74.7%)
Helicopter	130 (21.8%)	49.6 (11.9%)
Other (private vehicle, fixed wing aircraft, unknown)	65 (10.9%)	55.6 (13.4%)
Revised Trauma Score		
Mean overall	7.1	7
ISS <13	6.2	6.9
ISS 13-15	7.5	7.6
ISS 16-24	7.4	7.3
ISS 25-40	6.6	6.2
ISS 41-75	5.3	4.5
Hospital length of stay		
Total bed days	5980	5198.6
Mean overall	10	12.5
ISS <13	8.4	11.4
ISS 13-15	8.2	7.9
ISS 16-24	9.7	12.4
ISS 25-40	11.2	17.7
ISS 41-75	20.2	21.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	906 (189)	941.1 (201.9)
Mean overall	4.8	
ISS <13	1.4	2.4
ISS 13-15	2.8	2.6
ISS 16-24	4.4	4.8
ISS 25-40	5.9	6.9
ISS 41-75	8.2	10.4
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	605 (132)	589.7 (114.6)
Mean overall	4.6	5.1
ISS <13	1.9	2.8
ISS 13-15	2.2	2.9
ISS 16-24	4	5.2
ISS 25-40	5.9	6.4
ISS 41-75	6.6	9.1

Table 30: Trauma data profile, Liverpool Hospital

Description	Facility	Peer
Total admissions	432	415.6
Mean monthly admissions	36	34.6
Case fatality rate (ISS >12 excl. traumatic DOA)	10.8%	9.2%
Sex		
Male / Female	289 / 143	291 / 124
Age ranges		
Mean age	56.2	54.6
0-4	5 (1.2%)	2.3 (0.6%)
5-9	0 (0%)	0.3 (0.1%)
10-14	1 (0.2%)	0.9 (0.2%)
15-19	21 (4.9%)	20.3 (4.9%)
20-24	32 (7.4%)	29.3 (7%)
25-29	20 (4.6%)	27.9 (6.7%)
30-34	25 (5.8%)	23.3 (5.6%)
35-39	26 (6%)	23.9 (5.7%)
40-44	20 (4.6%)	22.4 (5.4%)
45-49	29 (6.7%)	26.9 (6.5%)
50-54	25 (5.8%)	26.4 (6.4%)
55-59	19 (4.4%)	27.6 (6.6%)
60-64	14 (3.2%)	26.7 (6.4%)
65-69	26 (6%)	25.3 (6.1%)
70-74	38 (8.8%)	28.1 (6.8%)
75-79	35 (8.1%)	29.6 (7.1%)
80-84	42 (9.7%)	29.3 (7%)
85+	54 (12.5%)	45.3 (10.9%)
Injury Severity Score		
Mean ISS	16.7	18.3
ISS <13	132 (30.8%)	69.1 (16.7%)
ISS 13-15	81 (18.9%)	91 (22%)
ISS 16-24	135 (31.5%)	158.6 (38.2%)
ISS 25-40	69 (16.1%)	84.3 (20.3%)
ISS 41-75	11 (2.6%)	11.6 (2.8%)
Mechanism of injury		
Assault	21 (4.9%)	25 (6%)
Falls	211 (48.8%)	188.6 (45.4%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	146 (74.9%)	116 (73.6%)
Road trauma	120 (27.8%)	121.6 (29.3%)
Other transport incident	40 (9.3%)	35.1 (8.5%)
All other injuries	40 (9.3%)	45.3 (10.9%)

Description	Facility	Peer
Injury type		
Blunt	418 (96.8%)	390.7 (94%)
Penetrating	14 (3.2%)	17.1 (4.1%)
Unknown	0 (0%)	7.7 (1.9%)
Admission type		
Direct admission	337 (78%)	323.6 (77.9%)
Transfer in	94 (21.8%)	90.6 (21.8%)
Unknown	1 (0.2%)	1.4 (0.3%)
Arrival modes		
Ambulance	312 (72.2%)	310.4 (74.7%)
Helicopter	39 (9%)	49.6 (11.9%)
Other (private vehicle, fixed wing aircraft, unknown)	81 (18.8%)	55.6 (13.4%)
Revised Trauma Score		
Mean overall	7	7
ISS <13	7	6.9
ISS 13-15	7.7	7.6
ISS 16-24	7.2	7.3
ISS 25-40	6.1	6.2
ISS 41-75	4.7	4.5
Hospital length of stay		
Total bed days	5046	5198.6
Mean overall	11.8	12.5
ISS <13	10.9	11.4
ISS 13-15	7.6	7.9
ISS 16-24	10.9	12.4
ISS 25-40	18.9	17.7
ISS 41-75	19.7	21.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	936 (289)	941.1 (201.9)
Mean overall		
ISS <13	2.2	2.4
ISS 13-15	1.8	2.6
ISS 16-24	3	4.8
ISS 25-40	6.1	6.9
ISS 41-75	8.9	10.4
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	416 (88)	589.7 (114.6)
Mean overall	4.7	5.1
ISS <13	3	2.8
ISS 13-15	2	2.9
ISS 16-24	4.5	5.2
ISS 25-40	5.4	6.4
ISS 41-75	10.3	9.1

Table 31: Trauma data profile, Royal North Shore Hospital

Description	Facility	Peer
Total admissions	362	415.6
Mean monthly admissions	30.2	34.6
Case fatality rate (ISS >12 excl. traumatic DOA)	9.7%	9.2%
Sex		
Male / Female	242 / 119	291 / 124
Age ranges		
Mean age	54	54.6
0-4	6 (1.7%)	2.3 (0.6%)
5-9	0 (0%)	0.3 (0.1%)
10-14	4 (1.1%)	0.9 (0.2%)
15-19	19 (5.2%)	20.3 (4.9%)
20-24	27 (7.5%)	29.3 (7%)
25-29	29 (8%)	27.9 (6.7%)
30-34	13 (3.6%)	23.3 (5.6%)
35-39	20 (5.5%)	23.9 (5.7%)
40-44	17 (4.7%)	22.4 (5.4%)
45-49	25 (6.9%)	26.9 (6.5%)
50-54	19 (5.2%)	26.4 (6.4%)
55-59	18 (5%)	27.6 (6.6%)
60-64	29 (8%)	26.7 (6.4%)
65-69	15 (4.1%)	25.3 (6.1%)
70-74	20 (5.5%)	28.1 (6.8%)
75-79	23 (6.4%)	29.6 (7.1%)
80-84	37 (10.2%)	29.3 (7%)
85+	41 (11.3%)	45.3 (10.9%)
Injury Severity Score		
Mean ISS	19.5	18.3
ISS <13	51 (14.1%)	69.1 (16.7%)
ISS 13-15	57 (15.7%)	91 (22%)
ISS 16-24	137 (37.8%)	158.6 (38.2%)
ISS 25-40	111 (30.7%)	84.3 (20.3%)
ISS 41-75	6 (1.7%)	11.6 (2.8%)
Mechanism of injury		
Assault	6 (1.7%)	25 (6%)
Falls	178 (49.2%)	188.6 (45.4%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	97 (71.3%)	116 (73.6%)
Road trauma	103 (28.5%)	121.6 (29.3%)
Other transport incident	22 (6.1%)	35.1 (8.5%)
All other injuries	53 (14.6%)	45.3 (10.9%)

Description	Facility	Peer
Injury type		
Blunt	330 (91.2%)	390.7 (94%)
Penetrating	6 (1.7%)	17.1 (4.1%)
Unknown	26 (7.2%)	7.7 (1.9%)
Admission type		
Direct admission	250 (69.1%)	323.6 (77.9%)
Transfer in	111 (30.7%)	90.6 (21.8%)
Unknown	1 (0.3%)	1.4 (0.3%)
Arrival modes		
Ambulance	255 (70.4%)	310.4 (74.7%)
Helicopter	33 (9.1%)	49.6 (11.9%)
Other (private vehicle, fixed wing aircraft, unknown)	74 (20.4%)	55.6 (13.4%)
Revised Trauma Score		
Mean overall	7.1	7
ISS <13	7.2	6.9
ISS 13-15	7.6	7.6
ISS 16-24	7.5	7.3
ISS 25-40	6.3	6.2
ISS 41-75	5.5	4.5
Hospital length of stay		
Total bed days	7518	5198.6
Mean overall	20.8	12.5
ISS <13	19	11.4
ISS 13-15	8.3	7.9
ISS 16-24	19.6	12.4
ISS 25-40	29.6	17.7
ISS 41-75	17.5	21.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	1225 (218)	941.1 (201.9)
Mean overall	5.6	
ISS <13	3.3	2.4
ISS 13-15	1.7	2.6
ISS 16-24	5.1	4.8
ISS 25-40	8.1	6.9
ISS 41-75	7.3	10.4
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	612 (107)	589.7 (114.6)
Mean overall	5.7	5.1
ISS <13	4	2.8
ISS 13-15	3	2.9
ISS 16-24	6.2	5.2
ISS 25-40	6.8	6.4
ISS 41-75	3.5	9.1

Table 32: Trauma data profile, Royal Prince Alfred Hospital

Description	Facility	Peer
Total admissions	336	415.6
Mean monthly admissions	28	34.6
Case fatality rate (ISS >12 excl. traumatic DOA)	7.6%	9.2%
Sex		
Male / Female	224 / 112	291 / 124
Age ranges		
Mean age	54.6	54.6
0-4	2 (0.6%)	2.3 (0.6%)
5-9	2 (0.6%)	0.3 (0.1%)
10-14	0 (0%)	0.9 (0.2%)
15-19	10 (3%)	20.3 (4.9%)
20-24	21 (6.2%)	29.3 (7%)
25-29	25 (7.4%)	27.9 (6.7%)
30-34	20 (6%)	23.3 (5.6%)
35-39	19 (5.7%)	23.9 (5.7%)
40-44	21 (6.2%)	22.4 (5.4%)
45-49	27 (8%)	26.9 (6.5%)
50-54	16 (4.8%)	26.4 (6.4%)
55-59	28 (8.3%)	27.6 (6.6%)
60-64	22 (6.5%)	26.7 (6.4%)
65-69	23 (6.8%)	25.3 (6.1%)
70-74	18 (5.4%)	28.1 (6.8%)
75-79	24 (7.1%)	29.6 (7.1%)
80-84	22 (6.5%)	29.3 (7%)
85+	36 (10.7%)	45.3 (10.9%)
Injury Severity Score		
Mean ISS	18.2	18.3
ISS < 13	44 (13.1%)	69.1 (16.7%)
ISS 13-15	74 (22%)	91 (22%)
ISS 16-24	145 (43.2%)	158.6 (38.2%)
ISS 25-40	64 (19%)	84.3 (20.3%)
ISS 41-75	9 (2.7%)	11.6 (2.8%)
Mechanism of injury		
Assault	20 (6%)	25 (6%)
Falls	181 (53.9%)	188.6 (45.4%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	103 (83.7%)	116 (73.6%)
Road trauma	85 (25.3%)	121.6 (29.3%)
Other transport incident	9 (2.7%)	35.1 (8.5%)
All other injuries	41 (12.2%)	45.3 (10.9%)

Description	Facility	Peer
Injury type		
Blunt	312 (92.9%)	390.7 (94%)
Penetrating	22 (6.5%)	17.1 (4.1%)
Unknown	2 (0.6%)	7.7 (1.9%)
Admission type		
Direct admission	261 (77.7%)	323.6 (77.9%)
Transfer in	75 (22.3%)	90.6 (21.8%)
Unknown	0 (0%)	1.4 (0.3%)
Arrival modes		
Ambulance	281 (83.6%)	310.4 (74.7%)
Helicopter	1 (0.3%)	49.6 (11.9%)
Other (private vehicle, fixed wing aircraft, unknown)	54 (16.1%)	55.6 (13.4%)
Revised Trauma Score		
Mean overall	7.1	7
ISS <13	6.7	6.9
ISS 13-15	7.8	7.6
ISS 16-24	7.4	7.3
ISS 25-40	6.4	6.2
ISS 41-75	4.3	4.5
Hospital length of stay		
Total bed days	3187	5198.6
Mean overall	9.5	12.5
ISS <13	9.8	11.4
ISS 13-15	6.2	7.9
ISS 16-24	8.7	12.4
ISS 25-40	13.5	17.7
ISS 41-75	19.4	21.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	649 (148)	941.1 (201.9)
Mean overall	4.4	
ISS <13	2.4	2.4
ISS 13-15	3.5	2.6
ISS 16-24	4	4.8
ISS 25-40	5.5	6.9
ISS 41-75	14	10.4
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	362 (77)	589.7 (114.6)
Mean overall	4.7	5.1
ISS <13	2.8	2.8
ISS 13-15	2	2.9
ISS 16-24	4.4	5.2
ISS 25-40	5.1	6.4
ISS 41-75	8.8	9.1

Table 33: Trauma data profile, St George Hospital

Description	Facility	Peer
Total admissions	421	415.6
Mean monthly admissions	35.1	34.6
Case fatality rate (ISS >12 excl. traumatic DOA)	9.1%	9.2%
Sex		
Male / Female	308 / 113	291 / 124
Age ranges		
Mean age	56.5	54.6
0-4	2 (0.5%)	2.3 (0.6%)
5-9	0 (0%)	0.3 (0.1%)
10-14	1 (0.2%)	0.9 (0.2%)
15-19	24 (5.7%)	20.3 (4.9%)
20-24	23 (5.5%)	29.3 (7%)
25-29	23 (5.5%)	27.9 (6.7%)
30-34	20 (4.8%)	23.3 (5.6%)
35-39	22 (5.2%)	23.9 (5.7%)
40-44	22 (5.2%)	22.4 (5.4%)
45-49	24 (5.7%)	26.9 (6.5%)
50-54	30 (7.1%)	26.4 (6.4%)
55-59	25 (5.9%)	27.6 (6.6%)
60-64	28 (6.7%)	26.7 (6.4%)
65-69	29 (6.9%)	25.3 (6.1%)
70-74	30 (7.1%)	28.1 (6.8%)
75-79	34 (8.1%)	29.6 (7.1%)
80-84	28 (6.7%)	29.3 (7%)
85+	56 (13.3%)	45.3 (10.9%)
Injury Severity Score		
Mean ISS	17.8	18.3
ISS <13	99 (23.5%)	69.1 (16.7%)
ISS 13-15	91 (21.6%)	91 (22%)
ISS 16-24	148 (35.2%)	158.6 (38.2%)
ISS 25-40	68 (16.2%)	84.3 (20.3%)
ISS 41-75	15 (3.6%)	11.6 (2.8%)
Mechanism of injury		
Assault	31 (7.4%)	25 (6%)
Falls	200 (47.5%)	188.6 (45.4%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	134 (75.7%)	116 (73.6%)
Road trauma	118 (28%)	121.6 (29.3%)
Other transport incident	31 (7.4%)	35.1 (8.5%)
All other injuries	41 (9.7%)	45.3 (10.9%)

Description	Facility	Peer
Injury type		
Blunt	398 (94.5%)	390.7 (94%)
Penetrating	16 (3.8%)	17.1 (4.1%)
Unknown	7 (1.7%)	7.7 (1.9%)
Admission type		
Direct admission	319 (75.8%)	323.6 (77.9%)
Transfer in	102 (24.2%)	90.6 (21.8%)
Unknown	0 (0%)	1.4 (0.3%)
Arrival modes		
Ambulance	312 (74.1%)	310.4 (74.7%)
Helicopter	61 (14.5%)	49.6 (11.9%)
Other (private vehicle, fixed wing aircraft, unknown)	48 (11.4%)	55.6 (13.4%)
Revised Trauma Score		
Mean overall	7	7
ISS <13	7.2	6.9
ISS 13-15	7.6	7.6
ISS 16-24	7.3	7.3
ISS 25-40	6	6.2
ISS 41-75	3.4	4.5
Hospital length of stay		
Total bed days	5711	5198.6
Mean overall	13.6	12.5
ISS <13	13.3	11.4
ISS 13-15	10.2	7.9
ISS 16-24	13.3	12.4
ISS 25-40	17.9	17.7
ISS 41-75	18.1	21.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	1196 (254)	941.1 (201.9)
Mean overall	4.7	
ISS <13	2.7	2.4
ISS 13-15	3.1	2.6
ISS 16-24	5.7	4.8
ISS 25-40	6.2	6.9
ISS 41-75	11.5	10.4
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	724 (134)	589.7 (114.6)
Mean overall	5.4	5.1
ISS <13	2.8	2.8
ISS 13-15	3.5	2.9
ISS 16-24	6.2	5.2
ISS 25-40	6	6.4
ISS 41-75	10.5	9.1

Table 34: Trauma data profile, St Vincent's Hospital

Description	Facility	Peer
Total admissions	218	415.6
Mean monthly admissions	18.2	34.6
Case fatality rate (ISS >12 excl. traumatic DOA)	12%	9.2%
Sex		
Male / Female	167 / 51	291 / 124
Age ranges		
Mean age	52.3	54.6
0-4	0 (0%)	2.3 (0.6%)
5-9	0 (0%)	0.3 (0.1%)
10-14	0 (0%)	0.9 (0.2%)
15-19	7 (3.2%)	20.3 (4.9%)
20-24	10 (4.6%)	29.3 (7%)
25-29	20 (9.2%)	27.9 (6.7%)
30-34	20 (9.2%)	23.3 (5.6%)
35-39	15 (6.9%)	23.9 (5.7%)
40-44	16 (7.3%)	22.4 (5.4%)
45-49	13 (6%)	26.9 (6.5%)
50-54	17 (7.8%)	26.4 (6.4%)
55-59	20 (9.2%)	27.6 (6.6%)
60-64	15 (6.9%)	26.7 (6.4%)
65-69	13 (6%)	25.3 (6.1%)
70-74	13 (6%)	28.1 (6.8%)
75-79	11 (5%)	29.6 (7.1%)
80-84	11 (5%)	29.3 (7%)
85+	17 (7.8%)	45.3 (10.9%)
Injury Severity Score		
Mean ISS	16.5	18.3
ISS <13	49 (22.5%)	69.1 (16.7%)
ISS 13-15	53 (24.3%)	91 (22%)
ISS 16-24	82 (37.6%)	158.6 (38.2%)
ISS 25-40	31 (14.2%)	84.3 (20.3%)
ISS 41-75	3 (1.4%)	11.6 (2.8%)
Mechanism of injury		
Assault	23 (10.6%)	25 (6%)
Falls	103 (47.2%)	188.6 (45.4%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	49 (75.4%)	116 (73.6%)
Road trauma	60 (27.5%)	121.6 (29.3%)
Other transport incident	3 (1.4%)	35.1 (8.5%)
All other injuries	29 (13.3%)	45.3 (10.9%)

Description	Facility	Peer
Injury type		
Blunt	203 (93.1%)	390.7 (94%)
Penetrating	12 (5.5%)	17.1 (4.1%)
Unknown	3 (1.4%)	7.7 (1.9%)
Admission type		
Direct admission	216 (99.1%)	323.6 (77.9%)
Transfer in	2 (0.9%)	90.6 (21.8%)
Unknown	0 (0%)	1.4 (0.3%)
Arrival modes		
Ambulance	202 (92.7%)	310.4 (74.7%)
Helicopter	0 (0%)	49.6 (11.9%)
Other (private vehicle, fixed wing aircraft, unknown)	16 (7.3%)	55.6 (13.4%)
Revised Trauma Score		
Mean overall	7.2	7
ISS <13	6.9	6.9
ISS 13-15	7.4	7.6
ISS 16-24	7.6	7.3
ISS 25-40	6.5	6.2
ISS 41-75	3.4	4.5
Hospital length of stay		
Total bed days	2188	5198.6
Mean overall	10.1	12.5
ISS <13	7.2	11.4
ISS 13-15	5	7.9
ISS 16-24	12.5	12.4
ISS 25-40	12.5	17.7
ISS 41-75	58.3	21.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	469 (97)	941.1 (201.9)
Mean overall		
ISS <13	2.3	2.4
ISS 13-15	3	2.6
ISS 16-24	6.2	4.8
ISS 25-40	6.9	6.9
ISS 41-75	22.3	10.4
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	339 (75)	589.7 (114.6)
Mean overall	4.5	5.1
ISS <13	2.6	2.8
ISS 13-15	2.8	2.9
ISS 16-24	3.5	5.2
ISS 25-40	7.1	6.4
ISS 41-75	21	9.1

Table 35: Trauma data profile, Westmead Hospital

Description	Facility	Peer
Total admissions	544	415.6
Mean monthly admissions	45.3	34.6
Case fatality rate (ISS >12 excl. traumatic DOA)	10%	9.2%
Sex		
Male / Female	403 / 141	291 / 124
Age ranges		
Mean age	54.4	54.6
0-4	1 (0.2%)	2.3 (0.6%)
5-9	0 (0%)	0.3 (0.1%)
10-14	0 (0%)	0.9 (0.2%)
15-19	33 (6.1%)	20.3 (4.9%)
20-24	33 (6.1%)	29.3 (7%)
25-29	34 (6.2%)	27.9 (6.7%)
30-34	27 (5%)	23.3 (5.6%)
35-39	33 (6.1%)	23.9 (5.7%)
40-44	30 (5.5%)	22.4 (5.4%)
45-49	41 (7.5%)	26.9 (6.5%)
50-54	42 (7.7%)	26.4 (6.4%)
55-59	36 (6.6%)	27.6 (6.6%)
60-64	30 (5.5%)	26.7 (6.4%)
65-69	42 (7.7%)	25.3 (6.1%)
70-74	38 (7%)	28.1 (6.8%)
75-79	35 (6.4%)	29.6 (7.1%)
80-84	29 (5.3%)	29.3 (7%)
85+	60 (11%)	45.3 (10.9%)
Injury Severity Score		
Mean ISS	17.9	18.3
ISS <13	79 (14.5%)	69.1 (16.7%)
ISS 13-15	152 (27.9%)	91 (22%)
ISS 16-24	195 (35.8%)	158.6 (38.2%)
ISS 25-40	103 (18.9%)	84.3 (20.3%)
ISS 41-75	15 (2.8%)	11.6 (2.8%)
Mechanism of injury		
Assault	43 (7.9%)	25 (6%)
Falls	232 (42.6%)	188.6 (45.4%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	148 (72.5%)	116 (73.6%)
Road trauma	166 (30.5%)	121.6 (29.3%)
Other transport incident	48 (8.8%)	35.1 (8.5%)
All other injuries	55 (10.1%)	45.3 (10.9%)

Description	Facility	Peer
Injury type		
Blunt	512 (94.1%)	390.7 (94%)
Penetrating	31 (5.7%)	17.1 (4.1%)
Unknown	1 (0.2%)	7.7 (1.9%)
Admission type		
Direct admission	446 (82%)	323.6 (77.9%)
Transfer in	92 (16.9%)	90.6 (21.8%)
Unknown	6 (1.1%)	1.4 (0.3%)
Arrival modes		
Ambulance	410 (75.4%)	310.4 (74.7%)
Helicopter	83 (15.3%)	49.6 (11.9%)
Other (private vehicle, fixed wing, unknown)	51 (9.4%)	55.6 (13.4%)
Revised Trauma Score		
Mean - overall	6.8	7
ISS <13	6.3	6.9
ISS 13-15	7.5	7.6
ISS 16-24	7.1	7.3
ISS 25-40	5.9	6.2
ISS 41-75	4.3	4.5
Hospital length of stay		
Total bed days	6760	5198.6
Mean overall	12.4	12.5
ISS <13	9.4	11.4
ISS 13-15	8	7.9
ISS 16-24	13.8	12.4
ISS 25-40	17.3	17.7
ISS 41-75	21.4	21.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	1207 (218)	941.1 (201.9)
Mean overall	5.5	
ISS <13	2.3	2.4
ISS 13-15	3.3	2.6
ISS 16-24	6.1	4.8
ISS 25-40	8.4	6.9
ISS 41-75	10.9	10.4
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	1070 (189)	589.7 (114.6)
Mean overall	5.7	5.1
ISS <13	2.5	2.8
ISS 13-15	3.2	2.9
ISS 16-24	6.1	5.2
ISS 25-40	7.7	6.4
ISS 41-75	9.9	9.1

Appendix 3: Paediatric major trauma service summaries

Table 36: Trauma data profile, John Hunter Children's Hospital

Description	Facility	Peer
Total admissions	43	75.7
Mean monthly admissions	3.6	6.3
Case fatality rate (ISS >12 excl. traumatic DOA)	2.6%	5.4%
Sex		
Male / Female	34 / 9	53 / 22
Age ranges		
Mean age	8.1	7.7
0-4	13 (30.2%)	25.7 (33.9%)
5-9	9 (20.9%)	17.7 (23.3%)
10-14	19 (44.2%)	26.7 (35.2%)
15-19	2 (4.7%)	5.7 (7.5%)
Injury Severity Score		
Mean ISS	20.5	20.3
ISS <13	4 (9.3%)	13 (17.2%)
ISS 13-15	5 (11.6%)	9.3 (12.3%)
ISS 16-24	22 (51.2%)	26.3 (34.8%)
ISS 25-40	10 (23.3%)	23 (30.4%)
ISS 41-75	2 (4.7%)	4 (5.3%)
Mechanism of injury		
Assault	1 (2.3%)	3 (4%)
Falls	10 (23.3%)	22.7 (30%)
Road trauma	10 (23.3%)	19.7 (26%)
Other transport incident	16 (37.2%)	14 (18.5%)
All other injuries	6 (14%)	16.3 (21.6%)
Injury type		
Blunt	39 (90.7%)	62.3 (82.4%)
Penetrating	1 (2.3%)	5.7 (7.5%)
Unknown	3 (7%)	7.7 (10.1%)
Admission type		
Direct admission	26 (60.5%)	37.3 (49.3%)
Transfer in	17 (39.5%)	38.3 (50.7%)
Arrival modes		
Ambulance	21 (48.8%)	42 (55.5%)
Helicopter	6 (14%)	9.3 (12.3%)
Other (private vehicle, fixed wing aircraft, unknown)	16 (37.2%)	24.3 (32.2%)

Description	Facility	Peer
Revised Trauma Score		
Mean overall	6.6	6
ISS <13	7.3	5.7
ISS 13-15	7.4	6.5
ISS 16-24	6.9	6.7
ISS 25-40	6.1	5.5
ISS 41-75	0	3.6
Hospital length of stay		
Total bed days	530	843.3
Mean overall	12.3	11.1
ISS <13	3.8	6
ISS 13-15	9.8	7.8
ISS 16-24	5.9	8.2
ISS 25-40	8	14.1
ISS 41-75	128.5	37.7
ICU length of stay		
ICU total bed days (number of ICU admissions)	273 (27)	309.7 (49.7)
Mean overall	10.1	6.2
ISS <13	1	1.7
ISS 13-15	0.7	3.2
ISS 16-24	2.2	3.4
ISS 25-40	3.9	8.1
ISS 41-75	213	34.2
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	185 (11)	230.7 (37)
Mean overall	16.8	6.2
ISS <13	2	2.6
ISS 13-15	0	4.4
ISS 16-24	1.6	4
ISS 25-40	4.2	6
ISS 41-75	158	22.8

Table 37: Trauma data profile, Sydney Children's Hospital

Description	Facility	Peer
Total admissions	75	75.7
Mean monthly admissions	6.2	6.3
Case fatality rate (ISS >12 excl. traumatic DOA)	6.7%	5.4%
Sex		
Male / Female	56 / 19	53 / 22
Age ranges		
Mean age	7.3	7.7
0-4	28 (37.3%)	25.7 (33.9%)
5-9	19 (25.3%)	17.7 (23.3%)
10-14	23 (30.7%)	26.7 (35.2%)
15-19	5 (6.7%)	5.7 (7.5%)
Injury Severity Score		
Mean ISS	19.6	20.3
ISS <13	14 (18.7%)	13 (17.2%)
ISS 13-15	12 (16%)	9.3 (12.3%)
ISS 16-24	22 (29.3%)	26.3 (34.8%)
ISS 25-40	26 (34.7%)	23 (30.4%)
ISS 41-75	1 (1.3%)	4 (5.3%)
Mechanism of injury		
Assault	3 (4%)	3 (4%)
Falls	33 (44%)	22.7 (30%)
Road trauma	15 (20%)	19.7 (26%)
Other transport incident	12 (16%)	14 (18.5%)
All other injuries	12 (16%)	16.3 (21.6%)
Injury type		
Blunt	67 (89.3%)	62.3 (82.4%)
Penetrating	5 (6.7%)	5.7 (7.5%)
Unknown	3 (4%)	7.7 (10.1%)
Admission type		
Direct admission	21 (28%)	37.3 (49.3%)
Transfer in	54 (72%)	38.3 (50.7%)
Arrival modes		
Ambulance	36 (48%)	42 (55.5%)
Helicopter	6 (8%)	9.3 (12.3%)
Other (private vehicle, fixed wing aircraft, unknown)	33 (44%)	24.3 (32.2%)

Description	Facility	Peer
Revised Trauma Score		
Mean overall	6.1	6
ISS <13	6.1	5.7
ISS 13-15	6.4	6.5
ISS 16-24	6.5	6.7
ISS 25-40	5.9	5.5
ISS 41-75	0	3.6
Hospital length of stay		
Total bed days	719	843.3
Mean overall	9.6	11.1
ISS <13	4.6	6
ISS 13-15	9.2	7.8
ISS 16-24	5.6	8.2
ISS 25-40	16.1	14.1
ISS 41-75	1	37.7
ICU length of stay		
ICU total bed days (number of ICU admissions)	215 (43)	309.7 (49.7)
Mean overall	5	6.2
ISS <13	1.1	1.7
ISS 13-15	6.6	3.2
ISS 16-24	3.2	3.4
ISS 25-40	8.8	8.1
ISS 41-75	0	34.2
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	159 (33)	230.7 (37)
Mean overall	4.8	6.2
ISS <13	1.8	2.6
ISS 13-15	7	4.4
ISS 16-24	3.5	4
ISS 25-40	6.1	6
ISS 41-75	1	22.8

Table 38: Trauma data profile, The Children's Hospital at Westmead

Description	Facility	Peer
Total admissions	109	75.7
Mean monthly admissions	9.1	6.3
Case fatality rate (ISS >12 excl. traumatic DOA)	5.8%	5.4%
Sex		
Male / Female	70 / 39	53 / 22
Age ranges		
Mean age	7.9	7.7
0-4	36 (33%)	25.7 (33.9%)
5-9	25 (22.9%)	17.7 (23.3%)
10-14	38 (34.9%)	26.7 (35.2%)
15-19	10 (9.2%)	5.7 (7.5%)
Injury Severity Score		
Mean ISS	20.8	20.3
ISS <13	21 (19.3%)	13 (17.2%)
ISS 13-15	11 (10.1%)	9.3 (12.3%)
ISS 16-24	35 (32.1%)	26.3 (34.8%)
ISS 25-40	33 (30.3%)	23 (30.4%)
ISS 41-75	9 (8.3%)	4 (5.3%)
Mechanism of injury		
Assault	5 (4.6%)	3 (4%)
Falls	25 (22.9%)	22.7 (30%)
Road trauma	34 (31.2%)	19.7 (26%)
Other transport incident	14 (12.8%)	14 (18.5%)
All other injuries	31 (28.4%)	16.3 (21.6%)
Injury type		
Blunt	81 (74.3%)	62.3 (82.4%)
Penetrating	11 (10.1%)	5.7 (7.5%)
Unknown	17 (15.6%)	7.7 (10.1%)
Admission type		
Direct admission	65 (59.6%)	37.3 (49.3%)
Transfer in	44 (40.4%)	38.3 (50.7%)
Arrival modes		
Ambulance	69 (63.3%)	42 (55.5%)
Helicopter	16 (14.7%)	9.3 (12.3%)
Other (private vehicle, fixed wing aircraft, unknown)	24 (22%)	24.3 (32.2%)

Description	Facility	Peer
Revised Trauma Score		
Mean overall	5.7	6
ISS <13	5.3	5.7
ISS 13-15	6.1	6.5
ISS 16-24	6.8	6.7
ISS 25-40	5	5.5
ISS 41-75	4.4	3.6
Hospital length of stay		
Total bed days	1281	843.3
Mean overall	11.8	11.1
ISS <13	7.4	6
ISS 13-15	5.5	7.8
ISS 16-24	11.4	8.2
ISS 25-40	14.4	14.1
ISS 41-75	21.6	37.7
ICU length of stay		
ICU total bed days (number of ICU admissions)	441 (79)	309.7 (49.7)
Mean overall	5.6	6.2
ISS <13	2.2	1.7
ISS 13-15	1.2	3.2
ISS 16-24	4	3.4
ISS 25-40	9	8.1
ISS 41-75	11.9	34.2
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	348 (67)	230.7 (37)
Mean overall	5.2	6.2
ISS <13	2.9	2.6
ISS 13-15	1.8	4.4
ISS 16-24	5.2	4
ISS 25-40	6.2	6
ISS 41-75	8.6	22.8

Appendix 4: Regional trauma service summaries

Table 39: Trauma data profile, Coffs Harbour Base Hospital

Description	Facility	Peer
Total admissions	94	82
Mean monthly admissions	7.8	6.8
Case fatality rate (ISS >12 excl. traumatic DOA)	9.9%	8.5%
Sex		
Male / Female	68 / 26	58 / 24
Age ranges		
Mean age	50.8	54.2
0-4	0 (0%)	1.1 (1.3%)
5-9	1 (1.1%)	0.6 (0.7%)
10-14	3 (3.2%)	1.8 (2.2%)
15-19	6 (6.4%)	5.3 (6.5%)
20-24	5 (5.3%)	3.4 (4.1%)
25-29	6 (6.4%)	3.8 (4.6%)
30-34	5 (5.3%)	4.8 (5.9%)
35-39	5 (5.3%)	3.6 (4.4%)
40-44	4 (4.3%)	4.1 (5%)
45-49	7 (7.4%)	4.5 (5.5%)
50-54	10 (10.6%)	5.5 (6.7%)
55-59	8 (8.5%)	5.7 (7%)
60-64	10 (10.6%)	6.7 (8.2%)
65-69	4 (4.3%)	4.8 (5.9%)
70-74	3 (3.2%)	6 (7.3%)
75-79	3 (3.2%)	5.2 (6.3%)
80-84	5 (5.3%)	6.3 (7.7%)
85+	9 (9.6%)	8.8 (10.7%)
Injury Severity Score		
Mean ISS	18.8	17.1
ISS <13	12 (12.9%)	14.3 (17.5%)
ISS 13-15	17 (18.3%)	22.9 (28%)
ISS 16-24	40 (43%)	27.5 (33.7%)
ISS 25-40	22 (23.7%)	16.2 (19.8%)
ISS 41-75	2 (2.2%)	0.8 (1%)
Mechanism of injury		
Assault	8 (8.5%)	4.7 (5.7%)
Falls	33 (35.1%)	36.5 (44.5%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	16 (66.7%)	23.7 (76.2%)
Road trauma	30 (31.9%)	17.3 (21.1%)
Other transport incident	18 (19.1%)	13.4 (16.3%)
All other injuries	5 (5.3%)	10.1 (12.3%)

Description	Facility	Peer
Injury type		
Blunt	87 (92.6%)	76.7 (93.5%)
Penetrating	4 (4.3%)	3.1 (3.8%)
Unknown	3 (3.2%)	2.2 (2.7%)
Admission type		
Direct admission	86 (91.5%)	66.7 (81.3%)
Transfer in	8 (8.5%)	14.8 (18%)
Unknown	0 (0%)	0.5 (0.6%)
Arrival modes		
Ambulance	84 (89.4%)	65.3 (79.6%)
Helicopter	3 (3.2%)	3.6 (4.4%)
Other (private vehicle, fixed wing aircraft, unknown)	7 (7.4%)	13.1 (16%)
Revised Trauma Score		
Mean overall	7.3	7.4
ISS <13	7.5	7.3
ISS 13-15	7.8	7.7
ISS 16-24	7.7	7.7
ISS 25-40	6.4	6.8
ISS 41-75	7.8	5.9
Hospital length of stay		
Total bed days	396	587.6
Mean overall	4.2	7.2
ISS <13	6.3	10.7
ISS 13-15	2.6	6.5
ISS 16-24	5.2	7.2
ISS 25-40	2.8	5.3
ISS 41-75	1	3.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	112 (40)	83.5 (27.6)
Mean overall	2.8	
ISS <13	2.2	2.5
ISS 13-15	1.2	3.9
ISS 16-24	3.5	3.3
ISS 25-40	3.4	3.2
ISS 41-75	0	13
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	28 (15)	25.5 (9.9)
Mean overall	1.9	2.6
ISS <13	2.2	2.3
ISS 13-15	2	2.6
ISS 16-24	1.2	3.2
ISS 25-40	2.2	2.2
ISS 41-75	0	7

Table 40: Trauma data profile, Gosford Hospital

Description	Facility	Peer
Total admissions	70	82
Mean monthly admissions	5.8	6.8
Case fatality rate (ISS >12 excl. traumatic DOA)	6.3%	8.5%
Sex		
Male / Female	48 / 20	58 / 24
Age ranges		
Mean age	54.6	54.2
0-4	1 (1.4%)	1.1 (1.3%)
5-9	0 (0%)	0.6 (0.7%)
10-14	2 (2.9%)	1.8 (2.2%)
15-19	8 (11.4%)	5.3 (6.5%)
20-24	5 (7.1%)	3.4 (4.1%)
25-29	3 (4.3%)	3.8 (4.6%)
30-34	3 (4.3%)	4.8 (5.9%)
35-39	0 (0%)	3.6 (4.4%)
40-44	3 (4.3%)	4.1 (5%)
45-49	2 (2.9%)	4.5 (5.5%)
50-54	2 (2.9%)	5.5 (6.7%)
55-59	3 (4.3%)	5.7 (7%)
60-64	7 (10%)	6.7 (8.2%)
65-69	6 (8.6%)	4.8 (5.9%)
70-74	4 (5.7%)	6 (7.3%)
75-79	6 (8.6%)	5.2 (6.3%)
80-84	7 (10%)	6.3 (7.7%)
85+	8 (11.4%)	8.8 (10.7%)
Injury Severity Score		
Mean ISS	16.2	17.1
ISS <13	7 (10%)	14.3 (17.5%)
ISS 13-15	30 (42.9%)	22.9 (28%)
ISS 16-24	21 (30%)	27.5 (33.7%)
ISS 25-40	11 (15.7%)	16.2 (19.8%)
ISS 41-75	1 (1.4%)	0.8 (1%)
Mechanism of injury		
Assault	4 (5.7%)	4.7 (5.7%)
Falls	33 (47.1%)	36.5 (44.5%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	22 (71%)	23.7 (76.2%)
Road trauma	18 (25.7%)	17.3 (21.1%)
Other transport incident	8 (11.4%)	13.4 (16.3%)
All other injuries	7 (10%)	10.1 (12.3%)

Description	Facility	Peer
Injury type		
Blunt	67 (95.7%)	76.7 (93.5%)
Penetrating	3 (4.3%)	3.1 (3.8%)
Unknown	0 (0%)	2.2 (2.7%)
Admission type		
Direct admission	70 (100%)	66.7 (81.3%)
Transfer in	0 (0%)	14.8 (18%)
Unknown	0 (0%)	0.5 (0.6%)
Arrival modes		
Ambulance	59 (84.3%)	65.3 (79.6%)
Helicopter	0 (0%)	3.6 (4.4%)
Other (private vehicle, fixed wing aircraft, unknown)	11 (15.7%)	13.1 (16%)
Revised Trauma Score		
Mean overall	7.3	7.4
ISS <13	6.9	7.3
ISS 13-15	7.5	7.7
ISS 16-24	7.6	7.7
ISS 25-40	6.5	6.8
ISS 41-75	4.1	5.9
Hospital length of stay		
Total bed days	477	587.6
Mean overall	6.8	7.2
ISS <13	11.7	10.7
ISS 13-15	6.7	6.5
ISS 16-24	6.7	7.2
ISS 25-40	4.7	5.3
ISS 41-75	1	3.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	14 (6)	83.5 (27.6)
Mean overall	2.3	
ISS <13	3	2.5
ISS 13-15	1	3.9
ISS 16-24	1	3.3
ISS 25-40	4	3.2
ISS 41-75	0	13
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	0 (0)	25.5 (9.9)
Mean overall	0	2.6
ISS <13	0	2.3
ISS 13-15	0	2.6
ISS 16-24	0	3.2
ISS 25-40	0	2.2
ISS 41-75	0	7

Table 41: Trauma data profile, Lismore Base Hospital

Description	Facility	Peer
Total admissions	55	82
Mean monthly admissions	4.6	6.8
Case fatality rate (ISS >12 excl. traumatic DOA)	10.2%	8.5%
Sex		
Male / Female	46 / 9	58 / 24
Age ranges		
Mean age	52.7	54.2
0-4	1 (1.8%)	1.1 (1.3%)
5-9	1 (1.8%)	0.6 (0.7%)
10-14	0 (0%)	1.8 (2.2%)
15-19	2 (3.6%)	5.3 (6.5%)
20-24	2 (3.6%)	3.4 (4.1%)
25-29	4 (7.3%)	3.8 (4.6%)
30-34	3 (5.5%)	4.8 (5.9%)
35-39	5 (9.1%)	3.6 (4.4%)
40-44	1 (1.8%)	4.1 (5%)
45-49	3 (5.5%)	4.5 (5.5%)
50-54	6 (10.9%)	5.5 (6.7%)
55-59	6 (10.9%)	5.7 (7%)
60-64	4 (7.3%)	6.7 (8.2%)
65-69	3 (5.5%)	4.8 (5.9%)
70-74	3 (5.5%)	6 (7.3%)
75-79	4 (7.3%)	5.2 (6.3%)
80-84	4 (7.3%)	6.3 (7.7%)
85+	3 (5.5%)	8.8 (10.7%)
Injury Severity Score		
Mean ISS	20.4	17.1
ISS <13	6 (10.9%)	14.3 (17.5%)
ISS 13-15	9 (16.4%)	22.9 (28%)
ISS 16-24	24 (43.6%)	27.5 (33.7%)
ISS 25-40	15 (27.3%)	16.2 (19.8%)
ISS 41-75	1 (1.8%)	0.8 (1%)
Mechanism of injury		
Assault	2 (3.6%)	4.7 (5.7%)
Falls	19 (34.5%)	36.5 (44.5%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	11 (64.7%)	23.7 (76.2%)
Road trauma	13 (23.6%)	17.3 (21.1%)
Other transport incident	3 (5.5%)	13.4 (16.3%)
All other injuries	18 (32.7%)	10.1 (12.3%)

Description	Facility	Peer
Injury type		
Blunt	48 (87.3%)	76.7 (93.5%)
Penetrating	2 (3.6%)	3.1 (3.8%)
Unknown	5 (9.1%)	2.2 (2.7%)
Admission type		
Direct admission	52 (94.5%)	66.7 (81.3%)
Transfer in	3 (5.5%)	14.8 (18%)
Unknown	0 (0%)	0.5 (0.6%)
Arrival modes		
Ambulance	43 (78.2%)	65.3 (79.6%)
Helicopter	6 (10.9%)	3.6 (4.4%)
Other (private vehicle, fixed wing aircraft, unknown)	6 (10.9%)	13.1 (16%)
Revised Trauma Score		
Mean overall	7.1	7.4
ISS <13	7.8	7.3
ISS 13-15	7	7.7
ISS 16-24	7.7	7.7
ISS 25-40	6.2	6.8
ISS 41-75	2.6	5.9
Hospital length of stay		
Total bed days	398	587.6
Mean overall	7.2	7.2
ISS <13	5.5	10.7
ISS 13-15	15.6	6.5
ISS 16-24	7.2	7.2
ISS 25-40	3.3	5.3
ISS 41-75	1	3.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	100 (20)	83.5 (27.6)
Mean overall	5	
ISS <13	2	2.5
ISS 13-15	8.3	3.9
ISS 16-24	7.1	3.3
ISS 25-40	3.2	3.2
ISS 41-75	0	13
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	46 (12)	25.5 (9.9)
Mean overall	3.8	2.6
ISS <13	8	2.3
ISS 13-15	2	2.6
ISS 16-24	10	3.2
ISS 25-40	2.1	2.2
ISS 41-75	1	7

Table 42: Trauma data profile, Nepean Hospital

Description	Facility	Peer
Total admissions	146	82
Mean monthly admissions	12.2	6.8
Case fatality rate (ISS >12 excl. traumatic DOA)	3.9%	8.5%
Sex		
Male / Female	96 / 50	58 / 24
Age ranges		
Mean age	59.9	54.2
0-4	0 (0%)	1.1 (1.3%)
5-9	0 (0%)	0.6 (0.7%)
10-14	0 (0%)	1.8 (2.2%)
15-19	11 (7.5%)	5.3 (6.5%)
20-24	4 (2.7%)	3.4 (4.1%)
25-29	5 (3.4%)	3.8 (4.6%)
30-34	5 (3.4%)	4.8 (5.9%)
35-39	8 (5.5%)	3.6 (4.4%)
40-44	3 (2.1%)	4.1 (5%)
45-49	11 (7.5%)	4.5 (5.5%)
50-54	6 (4.1%)	5.5 (6.7%)
55-59	10 (6.8%)	5.7 (7%)
60-64	12 (8.2%)	6.7 (8.2%)
65-69	11 (7.5%)	4.8 (5.9%)
70-74	13 (8.9%)	6 (7.3%)
75-79	12 (8.2%)	5.2 (6.3%)
80-84	18 (12.3%)	6.3 (7.7%)
85+	17 (11.6%)	8.8 (10.7%)
Injury Severity Score		
Mean ISS	12.4	17.1
ISS <13	69 (47.3%)	14.3 (17.5%)
ISS 13-15	41 (28.1%)	22.9 (28%)
ISS 16-24	25 (17.1%)	27.5 (33.7%)
ISS 25-40	11 (7.5%)	16.2 (19.8%)
ISS 41-75	0 (0%)	0.8 (1%)
Mechanism of injury		
Assault	10 (6.8%)	4.7 (5.7%)
Falls	89 (61%)	36.5 (44.5%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	63 (88.7%)	23.7 (76.2%)
Road trauma	16 (11%)	17.3 (21.1%)
Other transport incident	18 (12.3%)	13.4 (16.3%)
All other injuries	13 (8.9%)	10.1 (12.3%)

Description	Facility	Peer
Injury type		
Blunt	138 (94.5%)	76.7 (93.5%)
Penetrating	8 (5.5%)	3.1 (3.8%)
Unknown	0 (0%)	2.2 (2.7%)
Admission type		
Direct admission	112 (76.7%)	66.7 (81.3%)
Transfer in	34 (23.3%)	14.8 (18%)
Unknown	0 (0%)	0.5 (0.6%)
Arrival modes		
Ambulance	120 (82.2%)	65.3 (79.6%)
Helicopter	0 (0%)	3.6 (4.4%)
Other (private vehicle, fixed wing aircraft, unknown)	26 (17.8%)	13.1 (16%)
Revised Trauma Score		
Mean overall	7.7	7.4
ISS <13	7.6	7.3
ISS 13-15	7.8	7.7
ISS 16-24	7.8	7.7
ISS 25-40	7.7	6.8
ISS 41-75	0	5.9
Hospital length of stay		
Total bed days	1887	587.6
Mean overall	12.9	7.2
ISS <13	14.5	10.7
ISS 13-15	7.2	6.5
ISS 16-24	11.4	7.2
ISS 25-40	27.6	5.3
ISS 41-75	0	3.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	277 (79)	83.5 (27.6)
Mean overall	3.5	
ISS <13	3	2.5
ISS 13-15	3.9	3.9
ISS 16-24	2.7	3.3
ISS 25-40	6.7	3.2
ISS 41-75	0	13
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	40 (12)	25.5 (9.9)
Mean overall	3.3	2.6
ISS <13	2	2.3
ISS 13-15	5.5	2.6
ISS 16-24	5	3.2
ISS 25-40	8	2.2
ISS 41-75	0	7

Table 43: Trauma data profile, Orange Base Hospital

Description	Facility	Peer
Total admissions	114	82
Mean monthly admissions	9.5	6.8
Case fatality rate (ISS >12 excl. traumatic DOA)	1.9%	8.5%
Sex		
Male / Female	80 / 34	58 / 24
Age ranges		
Mean age	50.4	54.2
0-4	3 (2.6%)	1.1 (1.3%)
5-9	2 (1.8%)	0.6 (0.7%)
10-14	5 (4.4%)	1.8 (2.2%)
15-19	7 (6.1%)	5.3 (6.5%)
20-24	2 (1.8%)	3.4 (4.1%)
25-29	6 (5.3%)	3.8 (4.6%)
30-34	7 (6.1%)	4.8 (5.9%)
35-39	4 (3.5%)	3.6 (4.4%)
40-44	9 (7.9%)	4.1 (5%)
45-49	8 (7%)	4.5 (5.5%)
50-54	10 (8.8%)	5.5 (6.7%)
55-59	7 (6.1%)	5.7 (7%)
60-64	11 (9.6%)	6.7 (8.2%)
65-69	6 (5.3%)	4.8 (5.9%)
70-74	7 (6.1%)	6 (7.3%)
75-79	4 (3.5%)	5.2 (6.3%)
80-84	6 (5.3%)	6.3 (7.7%)
85+	10 (8.8%)	8.8 (10.7%)
Injury Severity Score		
Mean ISS	17.4	17.1
ISS <13	9 (7.9%)	14.3 (17.5%)
ISS 13-15	38 (33.3%)	22.9 (28%)
ISS 16-24	47 (41.2%)	27.5 (33.7%)
ISS 25-40	19 (16.7%)	16.2 (19.8%)
ISS 41-75	1 (0.9%)	0.8 (1%)
Mechanism of injury		
Assault	9 (7.9%)	4.7 (5.7%)
Falls	45 (39.5%)	36.5 (44.5%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	28 (84.8%)	23.7 (76.2%)
Road trauma	24 (21.1%)	17.3 (21.1%)
Other transport incident	26 (22.8%)	13.4 (16.3%)
All other injuries	10 (8.8%)	10.1 (12.3%)

Description	Facility	Peer
Injury type		
Blunt	110 (96.5%)	76.7 (93.5%)
Penetrating	4 (3.5%)	3.1 (3.8%)
Unknown	0 (0%)	2.2 (2.7%)
Admission type		
Direct admission	76 (66.7%)	66.7 (81.3%)
Transfer in	35 (30.7%)	14.8 (18%)
Unknown	3 (2.6%)	0.5 (0.6%)
Arrival modes		
Ambulance	74 (64.9%)	65.3 (79.6%)
Helicopter	12 (10.5%)	3.6 (4.4%)
Other (private vehicle, fixed wing aircraft, unknown)	28 (24.6%)	13.1 (16%)
Revised Trauma Score		
Mean overall	7.7	7.4
ISS <13	6.6	7.3
ISS 13-15	7.8	7.7
ISS 16-24	7.7	7.7
ISS 25-40	7.7	6.8
ISS 41-75	0	5.9
Hospital length of stay		
Total bed days	546	587.6
Mean overall	4.9	7.2
ISS <13	4.2	10.7
ISS 13-15	6.3	6.5
ISS 16-24	4.7	7.2
ISS 25-40	3	5.3
ISS 41-75	1	3.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	30 (14)	83.5 (27.6)
Mean overall		
ISS <13	3.3	2.5
ISS 13-15	0	3.9
ISS 16-24	1.4	3.3
ISS 25-40	0	3.2
ISS 41-75	0	13
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	15 (7)	25.5 (9.9)
Mean overall	2.1	2.6
ISS <13	2.7	2.3
ISS 13-15	1	2.6
ISS 16-24	2	3.2
ISS 25-40	0	2.2
ISS 41-75	0	7

Table 44: Trauma data profile, Port Macquarie Base Hospital

Description	Facility	Peer
Total admissions	58	82
Mean monthly admissions	4.8	6.8
Case fatality rate (ISS >12 excl. traumatic DOA)	5.9%	8.5%
Sex		
Male / Female	39 / 19	58 / 24
Age ranges		
Mean age	54.5	54.2
0-4	0 (0%)	1.1 (1.3%)
5-9	1 (1.7%)	0.6 (0.7%)
10-14	3 (5.2%)	1.8 (2.2%)
15-19	3 (5.2%)	5.3 (6.5%)
20-24	2 (3.4%)	3.4 (4.1%)
25-29	0 (0%)	3.8 (4.6%)
30-34	3 (5.2%)	4.8 (5.9%)
35-39	5 (8.6%)	3.6 (4.4%)
40-44	1 (1.7%)	4.1 (5%)
45-49	2 (3.4%)	4.5 (5.5%)
50-54	2 (3.4%)	5.5 (6.7%)
55-59	11 (19%)	5.7 (7%)
60-64	5 (8.6%)	6.7 (8.2%)
65-69	1 (1.7%)	4.8 (5.9%)
70-74	6 (10.3%)	6 (7.3%)
75-79	6 (10.3%)	5.2 (6.3%)
80-84	2 (3.4%)	6.3 (7.7%)
85+	5 (8.6%)	8.8 (10.7%)
Injury Severity Score		
Mean ISS	19	17.1
ISS <13	7 (12.1%)	14.3 (17.5%)
ISS 13-15	16 (27.6%)	22.9 (28%)
ISS 16-24	17 (29.3%)	27.5 (33.7%)
ISS 25-40	17 (29.3%)	16.2 (19.8%)
ISS 41-75	1 (1.7%)	0.8 (1%)
Mechanism of injury		
Assault	2 (3.4%)	4.7 (5.7%)
Falls	18 (31%)	36.5 (44.5%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	12 (60%)	23.7 (76.2%)
Road trauma	15 (25.9%)	17.3 (21.1%)
Other transport incident	17 (29.3%)	13.4 (16.3%)
All other injuries	6 (10.3%)	10.1 (12.3%)

Description	Facility	Peer
Injury type		
Blunt	52 (89.7%)	76.7 (93.5%)
Penetrating	3 (5.2%)	3.1 (3.8%)
Unknown	3 (5.2%)	2.2 (2.7%)
Admission type		
Direct admission	54 (93.1%)	66.7 (81.3%)
Transfer in	4 (6.9%)	14.8 (18%)
Unknown	0 (0%)	0.5 (0.6%)
Arrival modes		
Ambulance	52 (89.7%)	65.3 (79.6%)
Helicopter	0 (0%)	3.6 (4.4%)
Other (private vehicle, fixed wing aircraft, unknown)	6 (10.3%)	13.1 (16%)
Revised Trauma Score		
Mean overall	7.6	7.4
ISS <13	7.6	7.3
ISS 13-15	7.8	7.7
ISS 16-24	7.8	7.7
ISS 25-40	7.3	6.8
ISS 41-75	6.9	5.9
Hospital length of stay		
Total bed days	323	587.6
Mean overall	5.6	7.2
ISS <13	2.9	10.7
ISS 13-15	6.2	6.5
ISS 16-24	5.4	7.2
ISS 25-40	5.8	5.3
ISS 41-75	15	3.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	88 (27)	83.5 (27.6)
Mean overall	3.3	
ISS <13	1.6	2.5
ISS 13-15	1	3.9
ISS 16-24	4.7	3.3
ISS 25-40	2	3.2
ISS 41-75	13	13
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	29 (8)	25.5 (9.9)
Mean overall	3.6	2.6
ISS <13	2.3	2.3
ISS 13-15	0	2.6
ISS 16-24	2	3.2
ISS 25-40	2.5	2.2
ISS 41-75	13	7

Table 45: Trauma data profile, Tamworth Hospital

Description	Facility	Peer
Total admissions	76	82
Mean monthly admissions	6.3	6.8
Case fatality rate (ISS >12 excl. traumatic DOA)	11.3%	8.5%
Sex		
Male / Female	51 / 24	58 / 24
Age ranges		
Mean age	51.4	54.2
0-4	3 (3.9%)	1.1 (1.3%)
5-9	0 (0%)	0.6 (0.7%)
10-14	2 (2.6%)	1.8 (2.2%)
15-19	4 (5.3%)	5.3 (6.5%)
20-24	1 (1.3%)	3.4 (4.1%)
25-29	7 (9.2%)	3.8 (4.6%)
30-34	7 (9.2%)	4.8 (5.9%)
35-39	2 (2.6%)	3.6 (4.4%)
40-44	6 (7.9%)	4.1 (5%)
45-49	3 (3.9%)	4.5 (5.5%)
50-54	6 (7.9%)	5.5 (6.7%)
55-59	4 (5.3%)	5.7 (7%)
60-64	3 (3.9%)	6.7 (8.2%)
65-69	5 (6.6%)	4.8 (5.9%)
70-74	6 (7.9%)	6 (7.3%)
75-79	4 (5.3%)	5.2 (6.3%)
80-84	6 (7.9%)	6.3 (7.7%)
85+	7 (9.2%)	8.8 (10.7%)
Injury Severity Score		
Mean ISS	16.7	17.1
ISS <13	14 (18.4%)	14.3 (17.5%)
ISS 13-15	19 (25%)	22.9 (28%)
ISS 16-24	30 (39.5%)	27.5 (33.7%)
ISS 25-40	13 (17.1%)	16.2 (19.8%)
ISS 41-75	0 (0%)	0.8 (1%)
Mechanism of injury		
Assault	5 (6.6%)	4.7 (5.7%)
Falls	23 (30.3%)	36.5 (44.5%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	18 (64.3%)	23.7 (76.2%)
Road trauma	14 (18.4%)	17.3 (21.1%)
Other transport incident	21 (27.6%)	13.4 (16.3%)
All other injuries	13 (17.1%)	10.1 (12.3%)

Description	Facility	Peer
Injury type		
Blunt	68 (89.5%)	76.7 (93.5%)
Penetrating	2 (2.6%)	3.1 (3.8%)
Unknown	6 (7.9%)	2.2 (2.7%)
Admission type		
Direct admission	58 (76.3%)	66.7 (81.3%)
Transfer in	18 (23.7%)	14.8 (18%)
Unknown	0 (0%)	0.5 (0.6%)
Arrival modes		
Ambulance	49 (64.5%)	65.3 (79.6%)
Helicopter	12 (15.8%)	3.6 (4.4%)
Other (private vehicle, fixed wing aircraft, unknown)	15 (19.7%)	13.1 (16%)
Revised Trauma Score		
Mean overall	7.4	7.4
ISS <13	6.9	7.3
ISS 13-15	7.8	7.7
ISS 16-24	7.6	7.7
ISS 25-40	6.8	6.8
ISS 41-75	0	5.9
Hospital length of stay		
Total bed days	896	587.6
Mean overall	11.8	7.2
ISS <13	10.7	10.7
ISS 13-15	8.2	6.5
ISS 16-24	18.1	7.2
ISS 25-40	3.7	5.3
ISS 41-75	0	3.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	108 (33)	83.5 (27.6)
Mean overall	3.3	
ISS <13	2.1	2.5
ISS 13-15	12	3.9
ISS 16-24	2.9	3.3
ISS 25-40	2	3.2
ISS 41-75	0	13
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	23 (5)	25.5 (9.9)
Mean overall	4.6	2.6
ISS <13	0	2.3
ISS 13-15	6	2.6
ISS 16-24	5.5	3.2
ISS 25-40	3	2.2
ISS 41-75	0	7

Table 46: Trauma data profile, The Tweed Hospital

Description	Facility	Peer
Total admissions	28	82
Mean monthly admissions	2.3	6.8
Case fatality rate (ISS >12 excl. traumatic DOA)	12%	8.5%
Sex		
Male / Female	22 / 6	58 / 24
Age ranges		
Mean age	52.9	54.2
0-4	1 (3.6%)	1.1 (1.3%)
5-9	0 (0%)	0.6 (0.7%)
10-14	0 (0%)	1.8 (2.2%)
15-19	0 (0%)	5.3 (6.5%)
20-24	4 (14.3%)	3.4 (4.1%)
25-29	0 (0%)	3.8 (4.6%)
30-34	3 (10.7%)	4.8 (5.9%)
35-39	3 (10.7%)	3.6 (4.4%)
40-44	1 (3.6%)	4.1 (5%)
45-49	1 (3.6%)	4.5 (5.5%)
50-54	0 (0%)	5.5 (6.7%)
55-59	3 (10.7%)	5.7 (7%)
60-64	1 (3.6%)	6.7 (8.2%)
65-69	3 (10.7%)	4.8 (5.9%)
70-74	1 (3.6%)	6 (7.3%)
75-79	1 (3.6%)	5.2 (6.3%)
80-84	3 (10.7%)	6.3 (7.7%)
85+	3 (10.7%)	8.8 (10.7%)
Injury Severity Score		
Mean ISS	18.9	17.1
ISS <13	3 (10.7%)	14.3 (17.5%)
ISS 13-15	5 (17.9%)	22.9 (28%)
	12 (42.9%)	27.5 (33.7%)
ISS 25-40	8 (28.6%)	16.2 (19.8%)
ISS 41-75	0 (0%)	0.8 (1%)
Mechanism of injury		
Assault	2 (7.1%)	4.7 (5.7%)
Falls	10 (35.7%)	36.5 (44.5%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	8 (72.7%)	23.7 (76.2%)
Road trauma	7 (25%)	17.3 (21.1%)
Other transport incident	2 (7.1%)	13.4 (16.3%)
All other injuries	7 (25%)	10.1 (12.3%)

Description	Facility	Peer
Injury type		
Blunt	26 (92.9%)	76.7 (93.5%)
Penetrating	1 (3.6%)	3.1 (3.8%)
Unknown	1 (3.6%)	2.2 (2.7%)
Admission type		
Direct admission	23 (82.1%)	66.7 (81.3%)
Transfer in	5 (17.9%)	14.8 (18%)
Unknown	0 (0%)	0.5 (0.6%)
Arrival modes		
Ambulance	20 (71.4%)	65.3 (79.6%)
Helicopter	1 (3.6%)	3.6 (4.4%)
Other (private vehicle, fixed wing aircraft, unknown)	7 (25%)	13.1 (16%)
Revised Trauma Score		
Mean overall	7.4	7.4
ISS <13	6	7.3
ISS 13-15	7.8	7.7
ISS 16-24	7.7	7.7
ISS 25-40	7	6.8
ISS 41-75	0	5.9
Hospital length of stay		
Total bed days	124	587.6
Mean overall	4.4	7.2
ISS <13	11	10.7
ISS 13-15	3.2	6.5
ISS 16-24	3.8	7.2
ISS 25-40	3.6	5.3
ISS 41-75	0	3.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	19 (10)	83.5 (27.6)
Mean overall	1.9	
ISS <13	2.7	2.5
ISS 13-15	1	3.9
ISS 16-24	1.7	3.3
ISS 25-40	2	3.2
ISS 41-75	0	13
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	14 (5)	25.5 (9.9)
Mean overall	2.8	2.6
ISS <13	3	2.3
ISS 13-15	0	2.6
ISS 16-24	0	3.2
ISS 25-40	2.5	2.2
ISS 41-75	0	7

Table 47: Trauma data profile, Wagga Wagga Base Hospital

Description	Facility	Peer
Total admissions	92	82
Mean monthly admissions	7.7	6.8
Case fatality rate (ISS >12 excl. traumatic DOA)	9.9%	8.5%
Sex		
Male / Female	69 / 23	58 / 24
Age ranges		
Mean age	51.9	54.2
0-4	1 (1.1%)	1.1 (1.3%)
5-9	1 (1.1%)	0.6 (0.7%)
10-14	3 (3.3%)	1.8 (2.2%)
15-19	8 (8.7%)	5.3 (6.5%)
20-24	4 (4.3%)	3.4 (4.1%)
25-29	5 (5.4%)	3.8 (4.6%)
30-34	7 (7.6%)	4.8 (5.9%)
35-39	1 (1.1%)	3.6 (4.4%)
40-44	5 (5.4%)	4.1 (5%)
45-49	5 (5.4%)	4.5 (5.5%)
50-54	6 (6.5%)	5.5 (6.7%)
55-59	3 (3.3%)	5.7 (7%)
60-64	11 (12%)	6.7 (8.2%)
65-69	5 (5.4%)	4.8 (5.9%)
70-74	7 (7.6%)	6 (7.3%)
75-79	6 (6.5%)	5.2 (6.3%)
80-84	4 (4.3%)	6.3 (7.7%)
85+	10 (10.9%)	8.8 (10.7%)
Injury Severity Score		
Mean ISS	17.8	17.1
ISS <13	11 (12%)	14.3 (17.5%)
ISS 13-15	28 (30.4%)	22.9 (28%)
ISS 16-24	30 (32.6%)	27.5 (33.7%)
ISS 25-40	23 (25%)	16.2 (19.8%)
ISS 41-75	0 (0%)	0.8 (1%)
Mechanism of injury		
Assault	4 (4.3%)	4.7 (5.7%)
Falls	41 (44.6%)	36.5 (44.5%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	23 (71.9%)	23.7 (76.2%)
Road trauma	20 (21.7%)	17.3 (21.1%)
Other transport incident	13 (14.1%)	13.4 (16.3%)
All other injuries	14 (15.2%)	10.1 (12.3%)

Description	Facility	Peer
Injury type		
Blunt	86 (93.5%)	76.7 (93.5%)
Penetrating	2 (2.2%)	3.1 (3.8%)
Unknown	4 (4.3%)	2.2 (2.7%)
Admission type		
Direct admission	67 (72.8%)	66.7 (81.3%)
Transfer in	25 (27.2%)	14.8 (18%)
Unknown	0 (0%)	0.5 (0.6%)
Arrival modes		
Ambulance	73 (79.3%)	65.3 (79.6%)
Helicopter	1 (1.1%)	3.6 (4.4%)
Other (private vehicle, fixed wing aircraft, unknown)	18 (19.6%)	13.1 (16%)
Revised Trauma Score		
Mean overall	7.4	7.4
ISS <13	7	7.3
ISS 13-15	7.8	7.7
ISS 16-24	7.7	7.7
ISS 25-40	6.7	6.8
ISS 41-75	0	5.9
Hospital length of stay		
Total bed days	308	587.6
Mean overall	3.3	7.2
ISS <13	3.3	10.7
ISS 13-15	3.6	6.5
ISS 16-24	3.5	7.2
ISS 25-40	2.8	5.3
ISS 41-75	0	3.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	45 (27)	83.5 (27.6)
Mean overall	1.7	
ISS <13	1.2	2.5
ISS 13-15	2.4	3.9
ISS 16-24	1.8	3.3
ISS 25-40	1.6	3.2
ISS 41-75	0	13
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	21 (16)	25.5 (9.9)
Mean overall	1.3	2.6
ISS <13	1.2	2.3
ISS 13-15	1	2.6
ISS 16-24	1	3.2
ISS 25-40	1.4	2.2
ISS 41-75	0	7

Table 48: Trauma data profile, Wollongong Hospital

Description	Facility	Peer
Total Admissions	87	82
Mean monthly admissions	7.2	6.8
Case fatality rate (ISS >12 excl. traumatic DOA)	17.9%	8.5%
Sex		
Male / Female	62 / 25	58 / 24
Age ranges		
Mean age	59.4	54.2
0-4	1 (1.1%)	1.1 (1.3%)
5-9	0 (0%)	0.6 (0.7%)
10-14	0 (0%)	1.8 (2.2%)
15-19	4 (4.6%)	5.3 (6.5%)
20-24	5 (5.7%)	3.4 (4.1%)
25-29	2 (2.3%)	3.8 (4.6%)
30-34	5 (5.7%)	4.8 (5.9%)
35-39	3 (3.4%)	3.6 (4.4%)
40-44	8 (9.2%)	4.1 (5%)
45-49	3 (3.4%)	4.5 (5.5%)
50-54	7 (8%)	5.5 (6.7%)
55-59	2 (2.3%)	5.7 (7%)
60-64	3 (3.4%)	6.7 (8.2%)
65-69	4 (4.6%)	4.8 (5.9%)
70-74	10 (11.5%)	6 (7.3%)
75-79	6 (6.9%)	5.2 (6.3%)
80-84	8 (9.2%)	6.3 (7.7%)
85+	16 (18.4%)	8.8 (10.7%)
Injury Severity Score		
Mean ISS	19.3	17.1
ISS <13	5 (5.9%)	14.3 (17.5%)
ISS 13-15	26 (30.6%)	22.9 (28%)
ISS 16-24	29 (34.1%)	27.5 (33.7%)
ISS 25-40	23 (27.1%)	16.2 (19.8%)
ISS 41-75	2 (2.4%)	0.8 (1%)
Mechanism of injury		
Assault	1 (1.1%)	4.7 (5.7%)
Falls	54 (62.1%)	36.5 (44.5%)
Falls ≥65 years (% of all mechanisms of injury for ≥65 years)	36 (81.8%)	23.7 (76.2%)
Road trauma	16 (18.4%)	17.3 (21.1%)
Other transport incident	8 (9.2%)	13.4 (16.3%)
All other injuries	8 (9.2%)	10.1 (12.3%)

Description	Facility	Peer
Injury type		
Blunt	85 (97.7%)	76.7 (93.5%)
Penetrating	2 (2.3%)	3.1 (3.8%)
Unknown	0 (0%)	2.2 (2.7%)
Admission type		
Direct admission	69 (79.3%)	66.7 (81.3%)
Transfer in	16 (18.4%)	14.8 (18%)
Unknown	2 (2.3%)	0.5 (0.6%)
Arrival modes		
Ambulance	79 (90.8%)	65.3 (79.6%)
Helicopter	1 (1.1%)	3.6 (4.4%)
Other (private vehicle, fixed wing aircraft, unknown)	7 (8%)	13.1 (16%)
Revised Trauma Score		
Mean overall	7	7.4
ISS <13	5.7	7.3
ISS 13-15	7.5	7.7
ISS 16-24	7.2	7.7
ISS 25-40	6.4	6.8
ISS 41-75	6	5.9
Hospital length of stay		
Total bed days	521	587.6
Mean overall	6	7.2
ISS <13	9.8	10.7
ISS 13-15	7.5	6.5
ISS 16-24	5.3	7.2
ISS 25-40	4.4	5.3
ISS 41-75	2.5	3.1
ICU length of stay		
ICU total bed days (number of ICU admissions)	42 (20)	83.5 (27.6)
Mean overall	2.1	
ISS <13	1.6	2.5
ISS 13-15	2.5	3.9
ISS 16-24	2.6	3.3
ISS 25-40	1.8	3.2
ISS 41-75	0	13
Hospital ventilation days		
Total ventilation bed days (number of ventilated cases)	39 (19)	25.5 (9.9)
Mean overall	2.1	2.6
ISS <13	1.8	2.3
ISS 13-15	1	2.6
ISS 16-24	3	3.2
ISS 25-40	1.9	2.2
ISS 41-75	0	7

Appendix 5: Calculation of the Injury Severity Score

An ISS is calculated for each patient based on the AIS injury severity classification of their specific injuries. The ISS value ranges from 1-75 and is calculated as:

$$ISS = A^2 + B^2 + C^2$$

Where A, B, and C are the highest AIS severity codes in each of the (up to) three most severely injured ISS body regions.

The six ISS body regions are:

- head or neck
- face
- chest
- abdominal or pelvic contents
- extremities or pelvic girdle
- external.

The following example shows how an ISS is calculated from a set of injuries.

Table 49: ISS calculation example

ISS body region	Injury	AIS severity code	Include in ISS calculation?
Head or neck	Small subdural haematoma	AIS-4	Yes
Chest	Bilateral lung contusion	AIS-4	No
Chest	Bilateral flail chest	AIS-5	Yes
Abdominal or pelvic contents	Superficial spleen laceration	AIS-2	Yes
Extremities or pelvic girdle	Left phalange (little toe) fracture	AIS-1	No

Based on the above injuries, the ISS is calculated as:

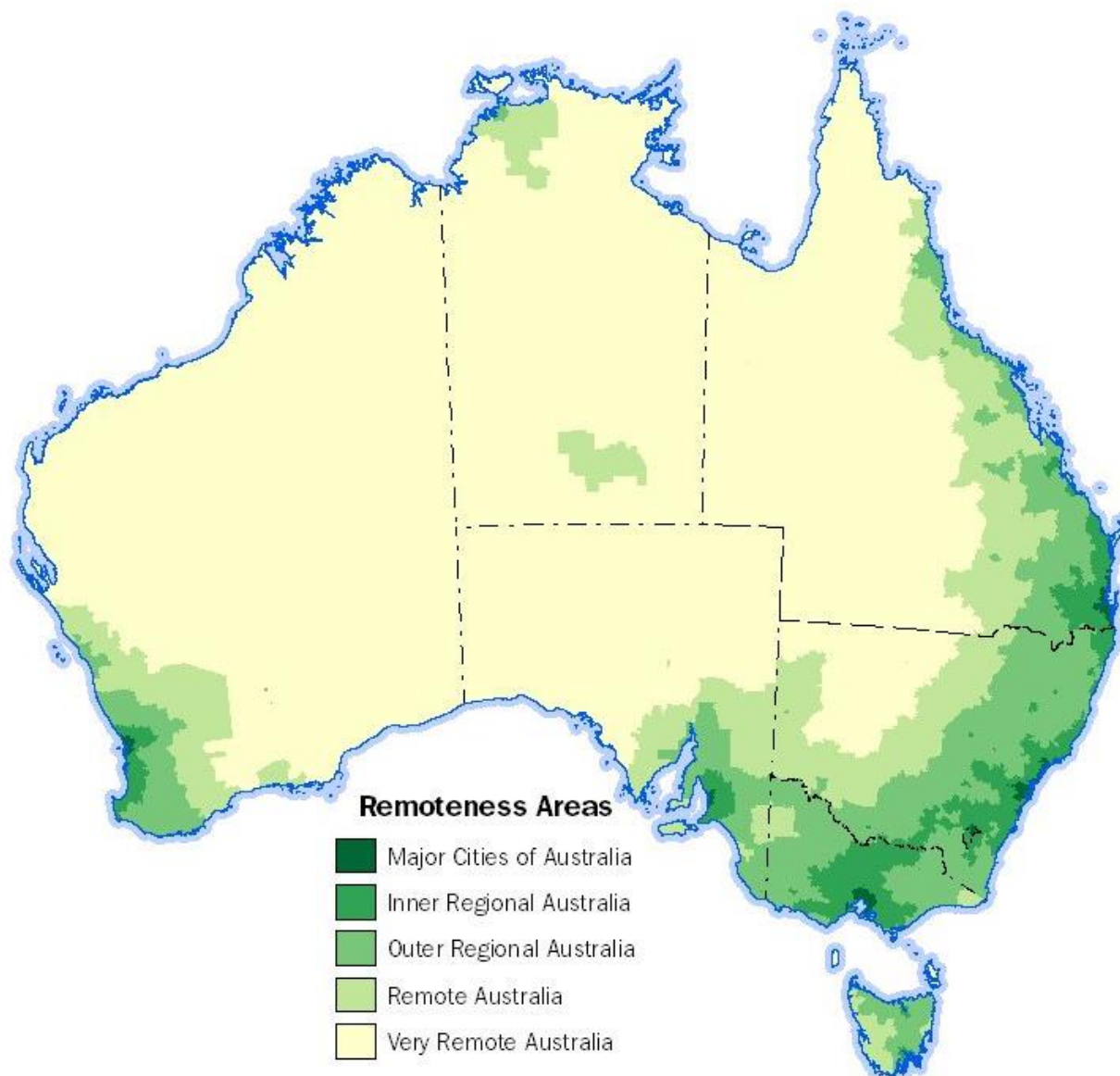
$$ISS = 4^2 + 5^2 + 2^2$$

$$ISS = 45 \text{ (critical injury)}$$

Appendix 6: Australian Statistical Geography Standard Remoteness Areas

The Australian Statistical Geography Standard (ASGS) Remoteness Areas (RA) is based on the Accessibility and Remoteness Index of Australia which defines locations in terms of remoteness, i.e. the physical distance of a location from the nearest urban centre (access to goods and services) based on population size (Figure 36).

Figure 36: Map of 2016 Remoteness areas for Australia



Source: ABS, <http://www.abs.gov.au/websitedbs/d3310114.nsf/home/remoteness+structure>

For further information on ASGS-RA please see [The Australian Statistical Geography Standard \(ASGS\) Remoteness Structure](#) on the Australian Bureau of Statistics website.