

Intensive Care profile

The *NSW Trauma Minimum Data Set* records whether patients were admitted to an intensive care unit at a Trauma Centre, and if so, for how long. Length of stay is measured as the number of whole days between the admission date to an Intensive Care Unit and separation date (inclusive). Lengths of stay of less than one day are counted as one day for the purposes of the *Trauma Minimum Data Set*.

There were **1,026 admissions** of patients with an **ISS >15** to an **Intensive Care Unit** in NSW in 2005 (44% of all admissions), similar to the 2004 figure of 1050 admissions (or 44% of all admissions).

The **average length of stay** in intensive care³⁵ increased from 7.47 days in 2004 to **7.56 days** in 2005. The average length of stay in an ICU for patients who survived also increased (from 7.71 days in 2004 to 7.99 days in 2005), however the average length of stay in an ICU for patients who died fell from 5.84 days to 5.05 days.

The **busiest months** for ICU admissions in the 2005 data set were **December** (101 admissions to ICU) and **March** (98 admissions to ICU). March has been a consistently busy month for ICU admissions since 2003.

The **greatest number** of ICU admissions occurred in the **15-24** years age group (222 ICU admissions, or 50% of the age group). ICU admissions were also more common for fixed wing, helicopter and NETS arrivals at Trauma Centres, with almost 62% of patients delivered by these modes of arrival admitted to an ICU.

The proportion of ICU admissions in 2005 increased with each ISS range. The **greatest** proportion of ICU admissions in 2005 was in the **ISS 41-75** range, or critical injuries range, where 65.1% of admissions in this ISS range were also admitted to an intensive care unit.

Table 31. ICU admissions by outcome and year

Year	Outcome – All	Outcome – Survived	Outcome – Died
2005	7.56 days	7.99 days	5.05 days
2004	7.47 days	7.71 days	5.84 days
2003	7.34 days	7.78 days	4.90 days

³⁵ Average length of stay in ICU = sum of all ICU lengths of stay divided by number of admissions to ICU. Please note ICU lengths of stay recorded in the *Trauma Minimum Data Set* are whole numbers only (integers).

Figure 110. ICU admissions by month for admissions to all Trauma Centres

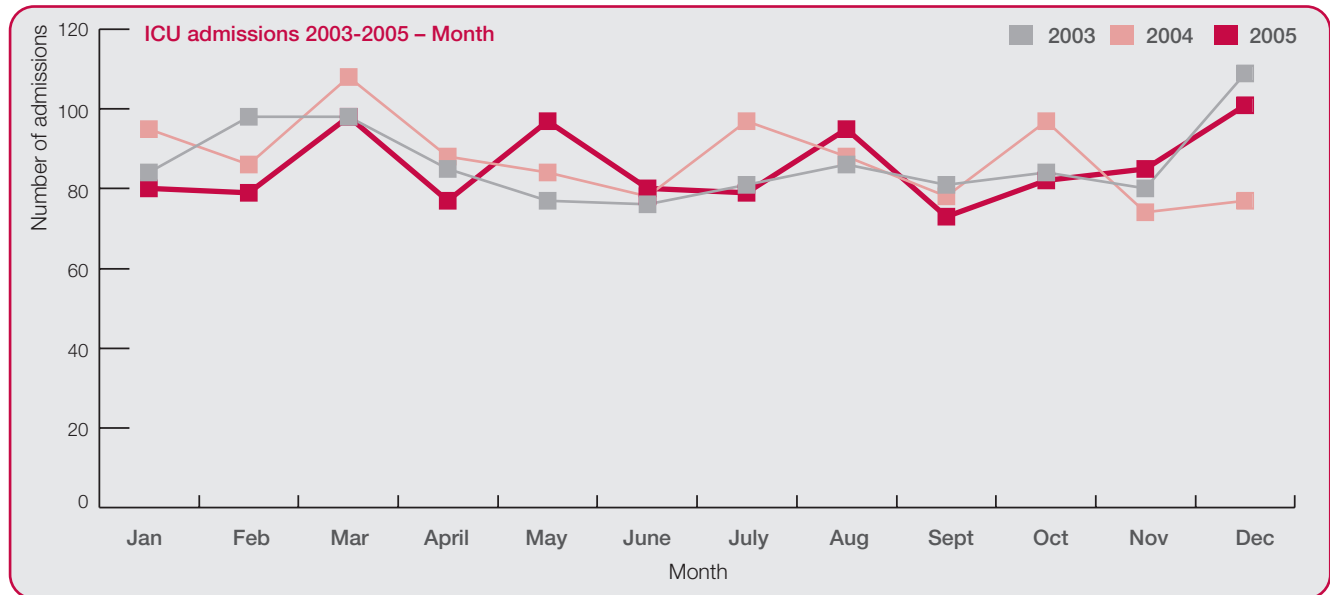


Figure 111. ICU admissions by month for trauma admissions to all Trauma Centres

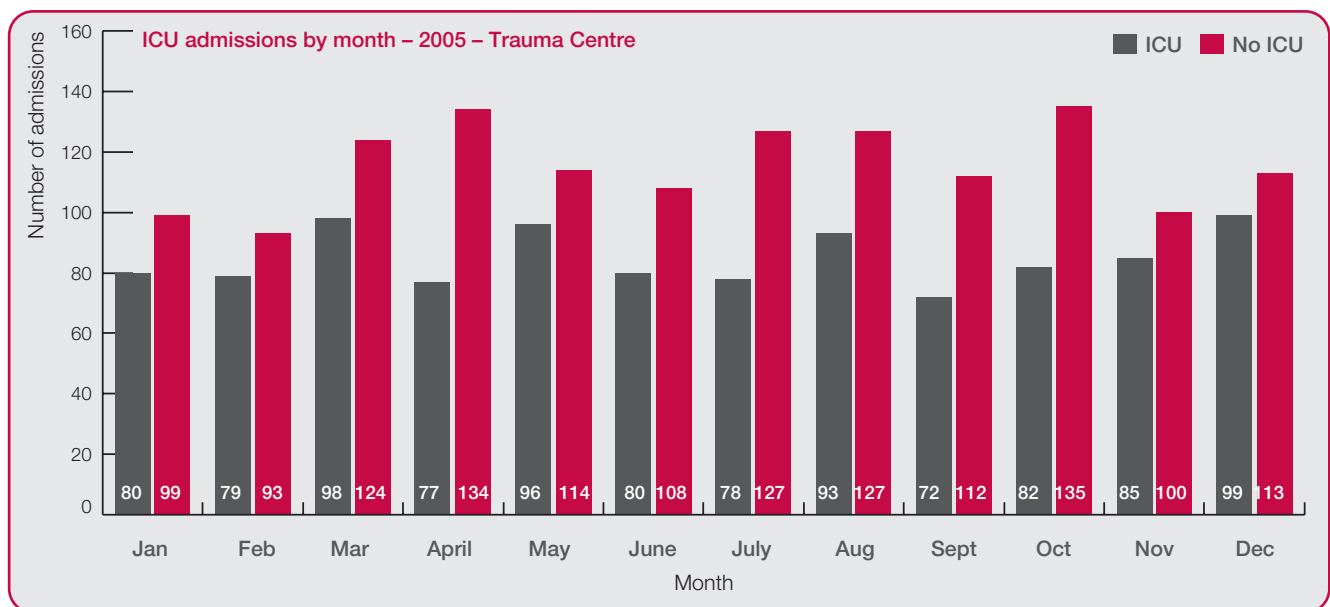


Figure 112. ICU admissions by age for trauma admissions to all Trauma Centres

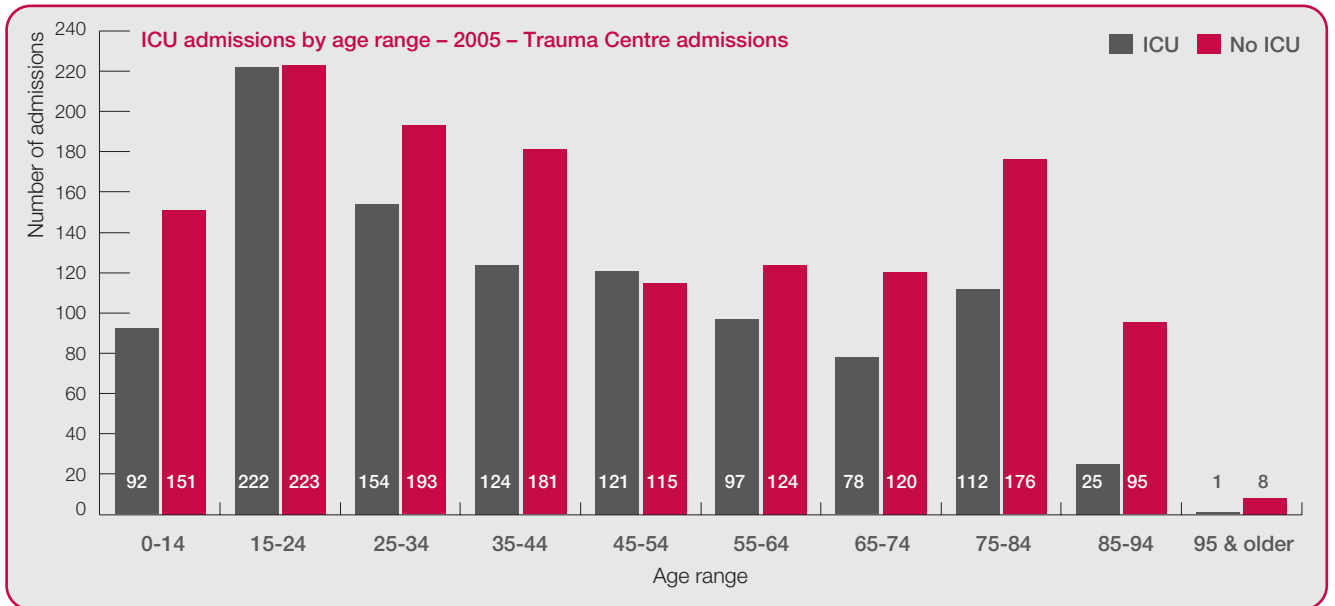


Figure 113. ICU admission percentages by arrival mode for admissions to all Trauma Centres

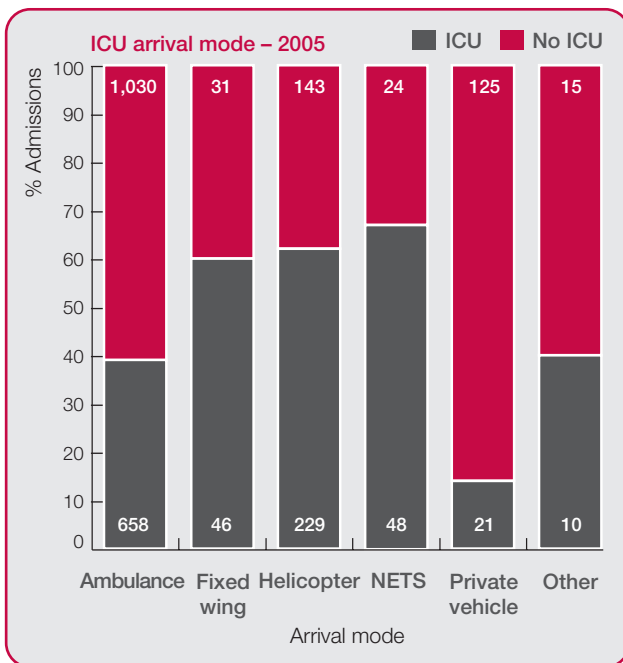
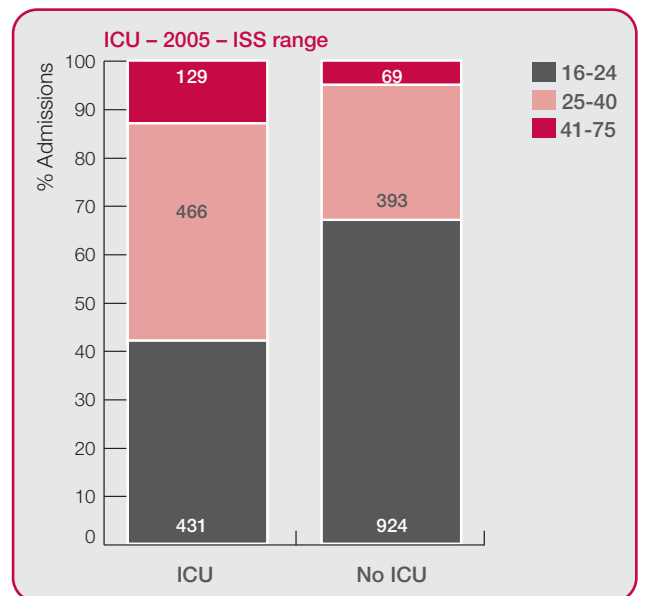


Figure 114. ICU admission percentages by injury severity score (ISS) range for trauma patient admissions to all Trauma Services



injury region profile

The Injury Severity Score (ISS) is the sum of the squares of the highest AIS code in each of the three most severely injured ISS body regions.

These body regions are:

- Head or neck
- Face
- Chest
- Abdominal or pelvic contents
- Extremities or pelvic girdle
- External

ISS body regions used to calculate each ISS are recorded in the *Trauma Minimum Data Set* for each patient record. Each ISS may have between one and three body regions recorded, depending on the location(s) of injuries.³⁶

While the ISS body region provides an indication of the location of injuries for each patient, it does not necessarily indicate the nature of the injury. The Head or Neck ISS Region for example may include cervical spine injuries³⁷ as well as traumatic brain injuries and skull fractures.

The **head or neck ISS body region was the most commonly injured** ISS body region in 2005, recorded for **75.2%** of injured people in the data set. The **death rate** for injured people with an ISS body region recorded in Head or Neck was **14.4%**, which was the highest death rate across the ISS body regions. This was higher than the 2004 death rate for the Head or Neck ISS body region, which was 12.1%.

The **head or neck ISS body region** was also recorded **more frequently for older injured people**, and grew in frequency from the age of 65 years and above.

The head body region was recorded in these age groups as follows:

- **Age 65-74 years** – 80.3% of admissions
- **Age 75-84 years** – 80.5% of admissions
- **Age 85-94 years** – 84.2% of admissions
- **Age 95 years and older** – 88.9% of admissions (group is small however)

³⁶ As a consequence the total number of ISS body regions recorded is greater than the total number of people injured.

³⁷ Spinal injuries are assigned to different ISS body regions according to the location of the injury, so that cervical spine injuries are assigned to the Head or Neck ISS body region, thoracic spine injuries are assigned to the Chest ISS Region and lumbar spine injuries are assigned to the Abdominal or Pelvic Contents ISS Region.

Figure 115. Outcomes by injury regions for trauma admissions to all Trauma Centres³⁸

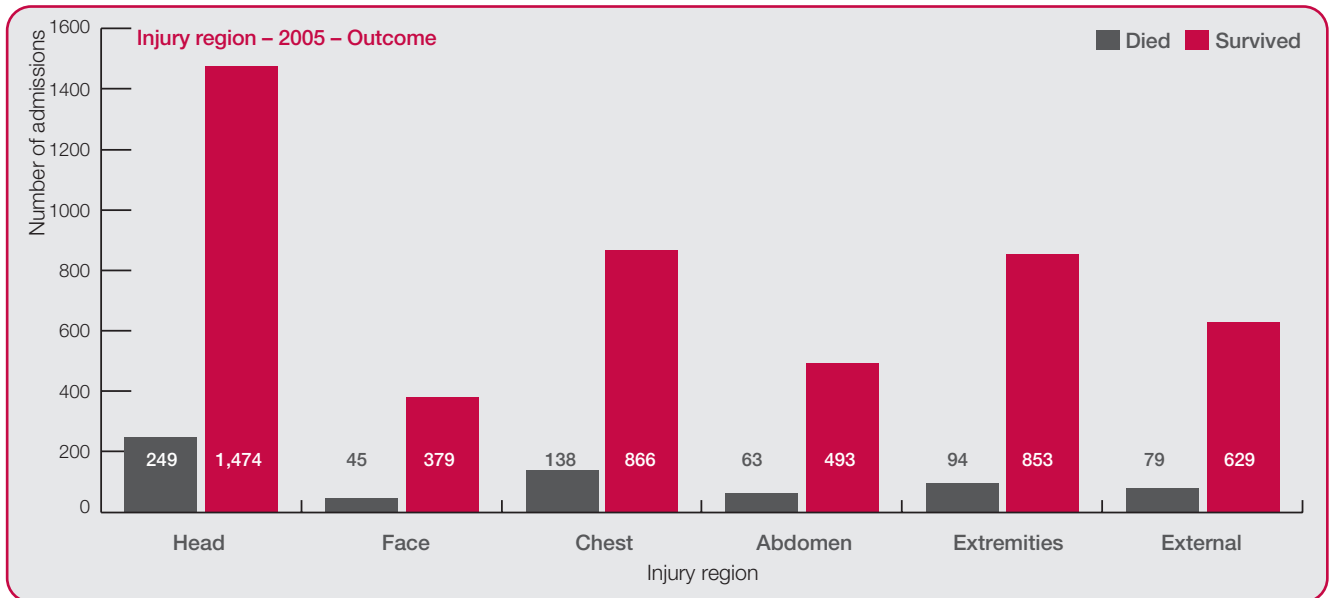
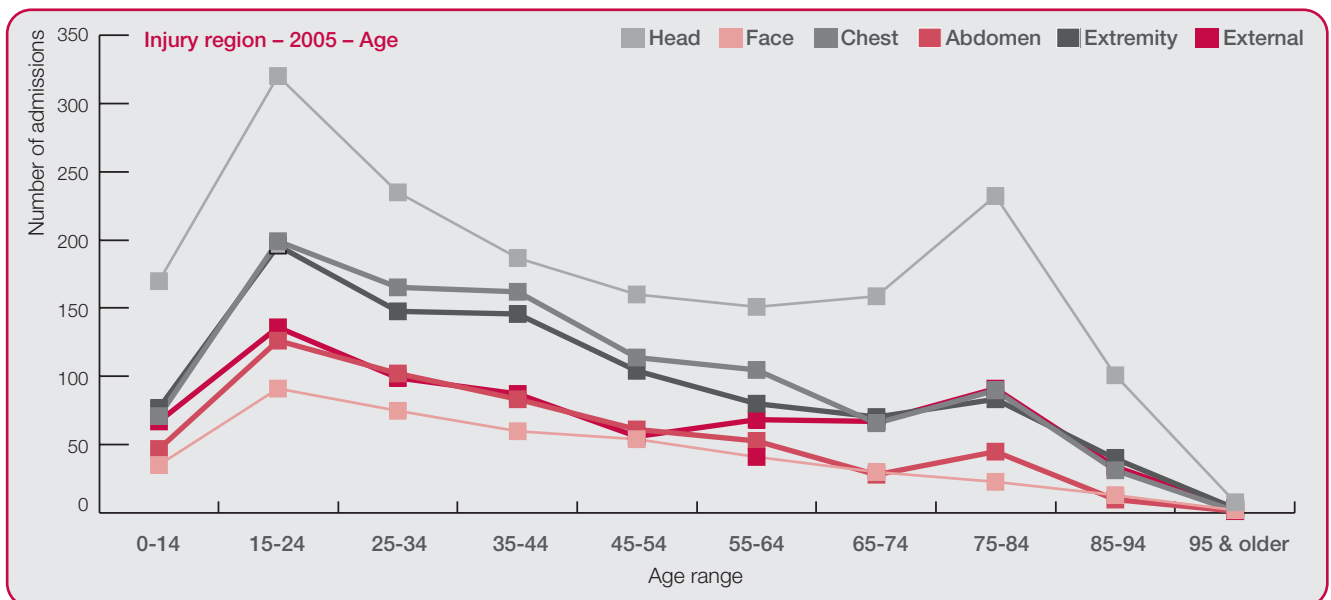


Figure 116. ISS body regions by age range for admissions to all Trauma Centres in 2005



³⁸ Figures here reflect numbers of injuries in each body region, not numbers of patients. Each patient can have injuries recorded in up to three body regions contributing to the Injury Severity Score.

injury severity profile

The ISS score is an internationally recognised anatomical scoring system which correlates linearly with mortality, morbidity and other measures of severity. ISS is best reported in ranges – for this report: 16-24 (serious injury), 25-40 (severe injury) and 41-75 (critical injury).

The **greatest proportion of critical injuries (ISS 41-75)** in the data set across age groups in 2005 occurred in the **15-24** years age group, where **12.6%** of admissions in this age range had an ISS in this range. This was similar to the 2004 figure for this ISS range and age group (12.5%).

The age range and outcome by ISS charts below demonstrate how ISS correlates generally with mortality. Death rates are higher in groups with a higher ISS, and highest in the critical injuries group (ISS 41-75). Death rates can also be seen to rise with age.

The frequency of helicopter arrivals at Trauma Centres increased with ISS range in the 2005 data set, as follows:

- **ISS 16-24** – 12.1% of arrival modes recorded as helicopter
- **ISS 25-40** – 19% of arrival modes recorded as helicopter
- **ISS 41-75** – 25.1% of arrival modes recorded as helicopter

A slightly greater proportion of people with critical injuries (ISS 41-75) were transported directly to a Trauma Centre from the scene of their injury in 2005 (76.8% of admissions) than people with less critical injuries (73.9% of admissions with an ISS of 16-24, and 73.6% of admissions with an ISS of 25-40).

This greater proportion of **direct from scene admissions** of people with critical injuries was more pronounced for people admitted from injuries occurring at **metropolitan locations** in 2005 (90.6% of admissions direct from scene for ISS 41-75).

The proportion of direct from scene admissions for people injured in rural locations however was lower in the ISS 41-75 range than in the other ISS ranges:

- **ISS 16-24** – 30% of admissions direct from scene
- **ISS 25-40** – 36.5% of admissions direct from scene
- **ISS 41-75** – 25.7% of admissions direct from scene

The average time to definitive care in 2005 decreased with injury severity, and people with an ISS of 41-75 arrived at their definitive trauma hospital in an average 4 hours and 25 minutes. In addition, the proportion of injured people arriving at their definitive trauma hospital directly from the scene of their injury within two hours increased with injury severity as follows:

- **ISS 16-24** – 83% (average 1 hour)
- **ISS 25-40** – 84% (average 1 hour)
- **ISS 41-75** – 92% (average 55 minutes)

Figure 117. Injury severity score (ISS) range percentages by age for trauma patient admissions to all Trauma Centres

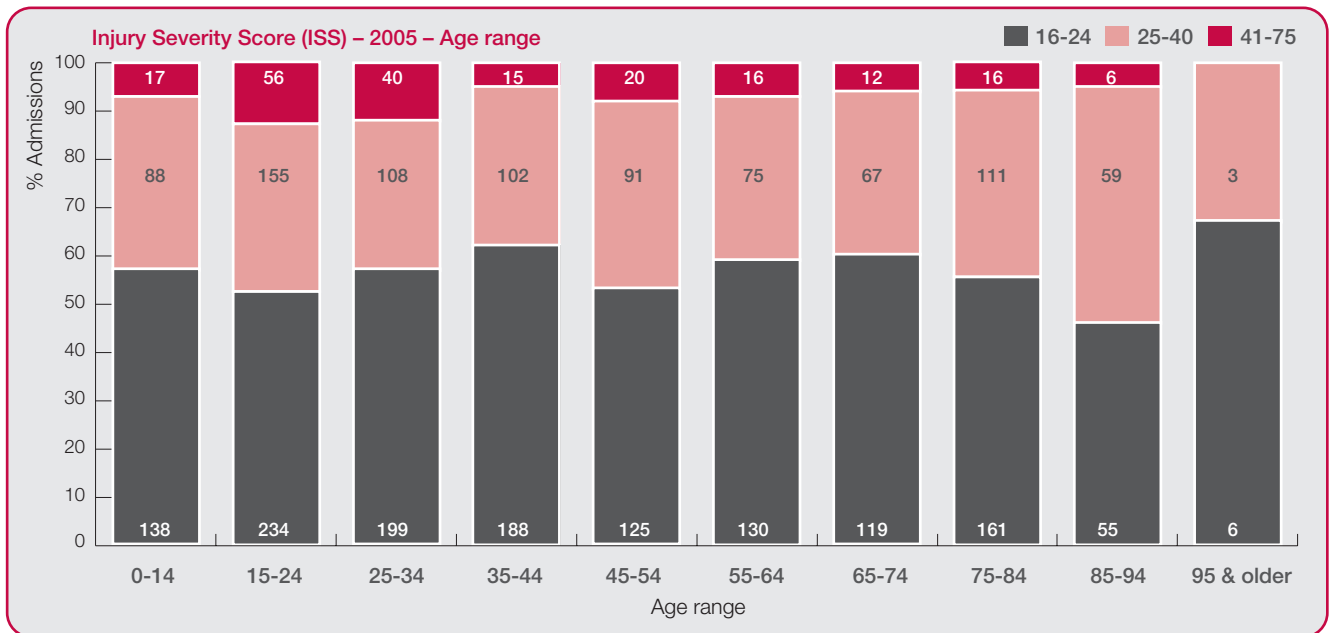
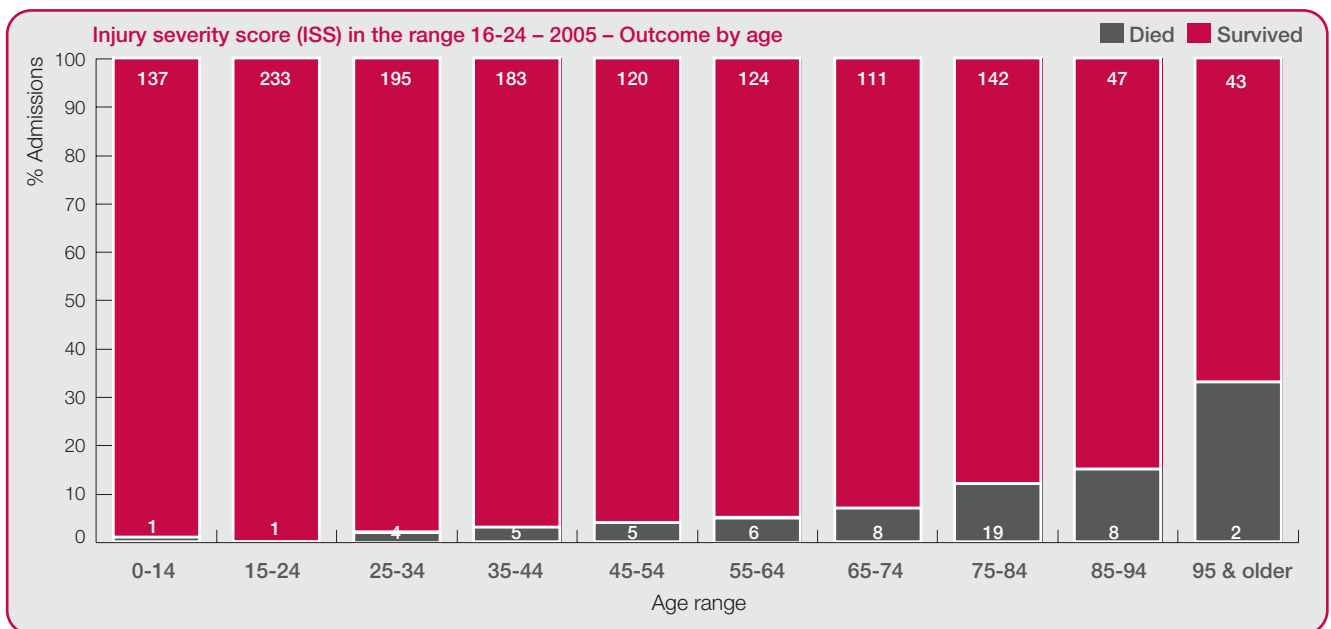


Figure 118. Outcome percentages by age for trauma patient admissions to all Trauma Centres with an injury severity score (ISS) in the range 16-24



injury severity profile

Figure 119. Outcome percentages by age for trauma patient admissions to all Trauma Centres with an injury severity score (ISS) in the range 25-40

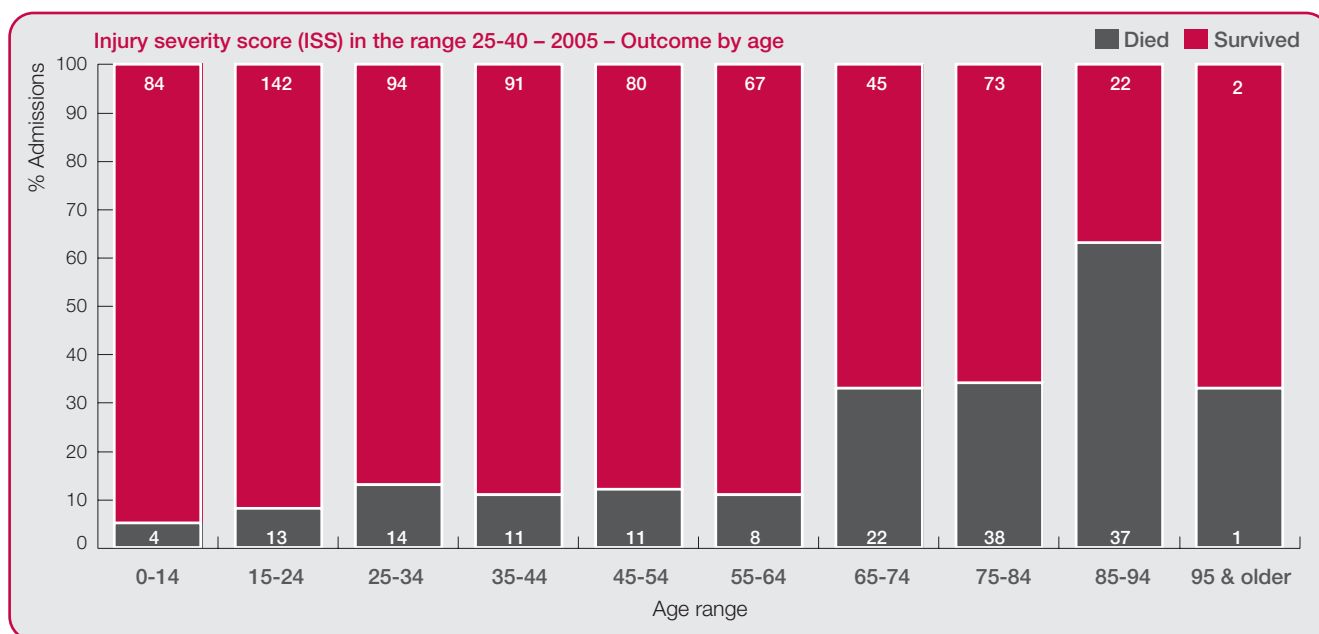


Figure 120. Outcome percentages by age for trauma patient admissions to all Trauma centres with an injury severity score (ISS) in the range 41-75

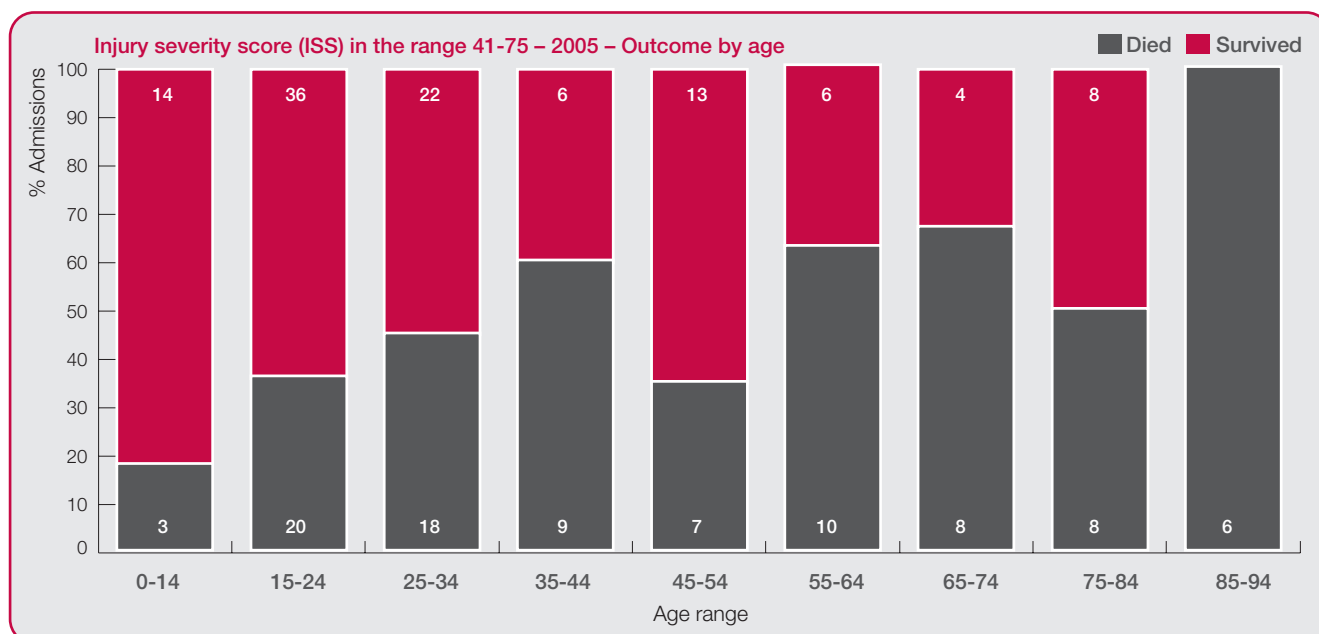


Figure 121. Injury severity score (ISS) range by arrival mode for trauma patient admissions to all Trauma Centres

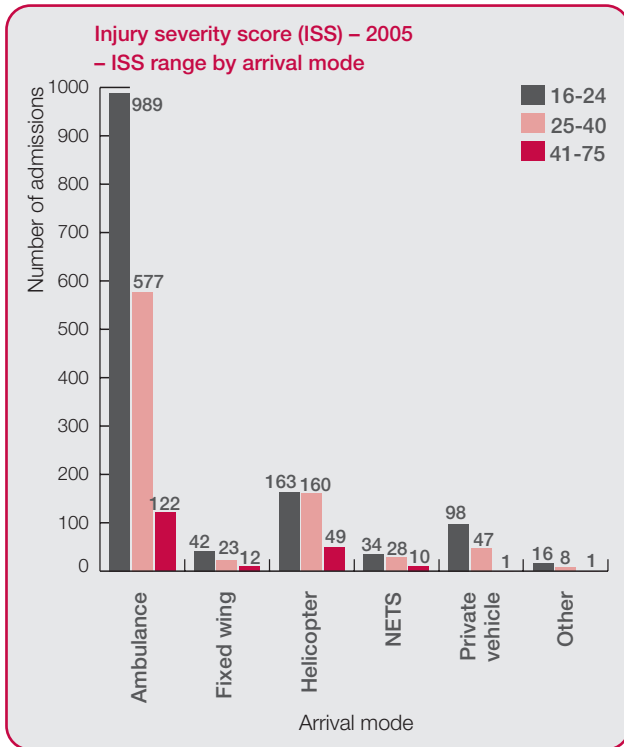


Figure 122. Admission type percentages by injury severity score (ISS) range for trauma patient admissions to all Trauma Centres

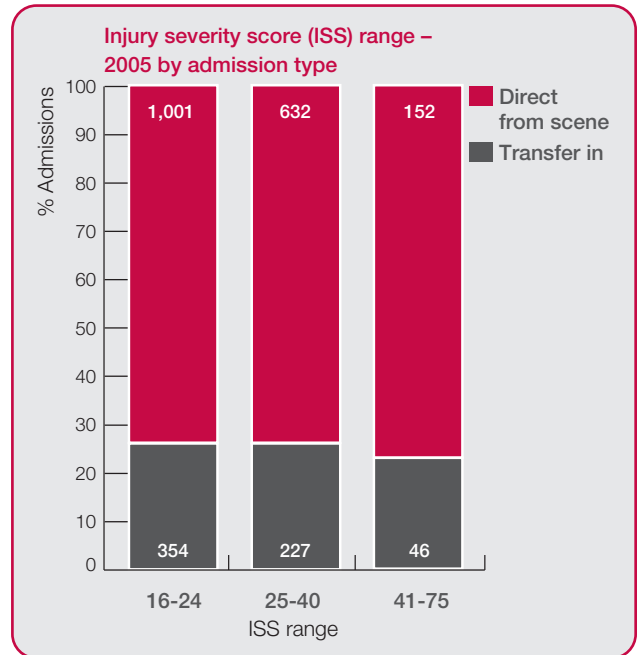


Figure 123. Admission type percentages by injury severity score (ISS) range for trauma patient admissions to all Trauma Centres of patients injured at metropolitan locations

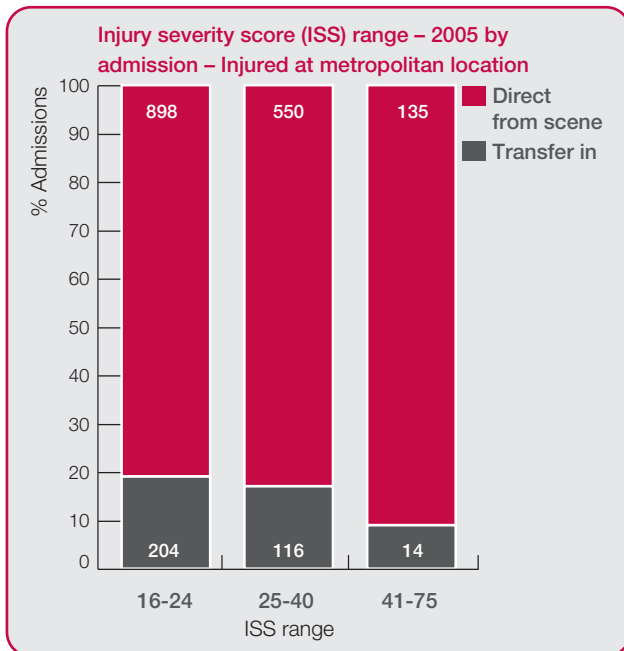
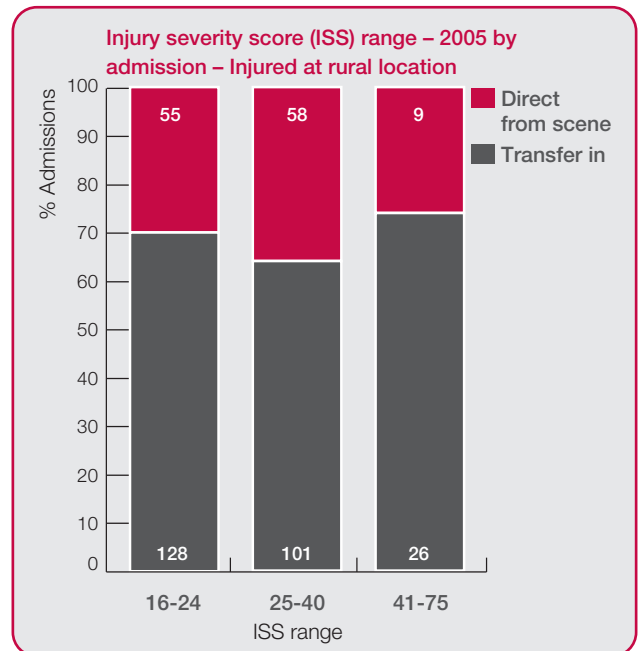


Figure 124. Admission type percentages by injury severity score (ISS) range for rural trauma patient admissions to all Trauma Centres of patients injured at rural locations



injury severity profile

Table 32. Times to definitive trauma hospitals for trauma patients with an Injury Severity Score in the range 16-24 by admission type³⁹

Time period	Direct from scene	Transfer in
0-2 hours	691 patients (83%) Average 1 hour	–
2-6 hours	63 patients (8%) Average 3 hours 11 minutes	53 patients (19%) Average 4 hours 22 minutes
6-12 hours	15 patients (2%) Average 8 hours 40 minutes	107 patients (38%) Average 8 hours 17 minutes
12-24 hours	19 patients (2%) Average 17 hours 21 minutes	57 patients (20%) Average 16 hours 51 minutes
Greater than 24 hours	40 patients (5%) Average 88 hours 25 minutes	62 patients (22%) Average 84 hours 25 minutes

Table 33. Times to definitive trauma hospitals for trauma patients with an Injury Severity Score in the range 25-40 by admission type

Time period	Direct from scene	Transfer in
0-2 hours	427 patients (84%) Average 1 hour	–
2-6 hours	47 patients (9%) Average 2 hours 54 minutes	38 patients (21%) Average 4 hours 29 minutes
6-12 hours	3 patients (<1%) Average 7 hours	67 patients (37%) Average 8 hours 27 minutes
12-24 hours	13 patients (3%) Average 18 hours 10 minutes	37 patients (20%) Average 17 hours 50 minutes
Greater than 24 hours	20 patients (4%) Average 70 hours 15 minutes	40 patients (22%) Average 93 hours 10 minutes

Table 34. Times to definitive trauma hospitals for trauma patients with an Injury Severity Score in the range 41-75 by admission type

Time period	Direct from scene	Transfer in
0-2 hours	123 patients (92%) Average 55 minutes	–
2-6 hours	7 patients (5%) Average 3 hours	10 patients (26%) Average 3 hours 53 minutes
6-12 hours	2 patients (1%) Average 8 hours 38 minutes	16 patients (42%) Average 8 hours 50 minutes
12-24 hours	–	10 patients (26%) Average 15 hours 2 minutes
Greater than 24 hours	1 patient (1%) 121 hours 24 minutes	2 patients (5%) Average 74 hours 32 minutes

³⁹ Times to definitive trauma hospitals are calculated only where times of injury are known.

length of stay

The hospital length of stay recorded in the *NSW Trauma Minimum Data Set* is the length of stay in a Trauma Centre while classified as an acute care patient. Additional days in hospital, for example while attending rehabilitation, are not included in these figures. For patients admitted to more than one Trauma Centre, lengths of stay in each centre are counted separately.

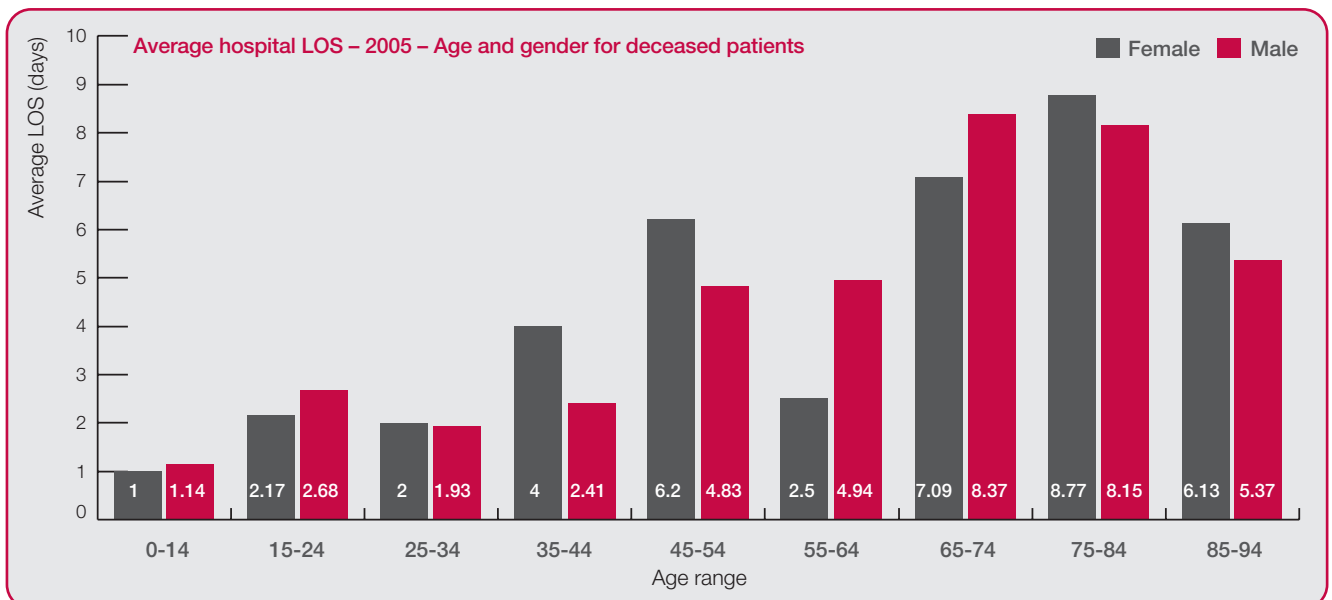
The **average overall hospital length of stay** for all admissions to Trauma Centres of patients with an **ISS >15** for 2005 was **15.86 days**. For patients who died following admission to a Trauma Centre the average length of stay was much lower at 5.36 days.

Lengths of stay for patients who died in a trauma hospital increased until the 75-84 years age range, then fell to be nearer the average for all age ranges. The **highest average length of stay** in the **deceased patients** group was **8.77 days** for **females** in the age range **75-84** years.

Average lengths of stay in 2005 were generally longer for patients with a higher ISS, however this was not the case for patients between the ages of 45 and 74 years with critical injuries (ISS 41-75). For this group of patients the average length of stay in the ISS 41-75 range was less than the ISS 25-40 range. The average length of stay for the ISS 41-75 group in ages **85-94** years was also very low at **1.33 days**.

For patients who sustained injuries as a result of a **low / medium (<5m) fall**, lengths of stay ranged **from 5.44 days** for children aged **0-14 years**, to **19.85 days** for people aged between **55 and 64 years**. Most other age groups had an average length of stay between 11 and 18 days.

Figure 125. Hospital average length of stay (LOS) by age and gender for deceased trauma patient admissions to all Trauma Centres



length of stay

Figure 126. Hospital average length of stay (LOS) by age and injury severity score (ISS) range for trauma patient admissions to all Trauma Centres

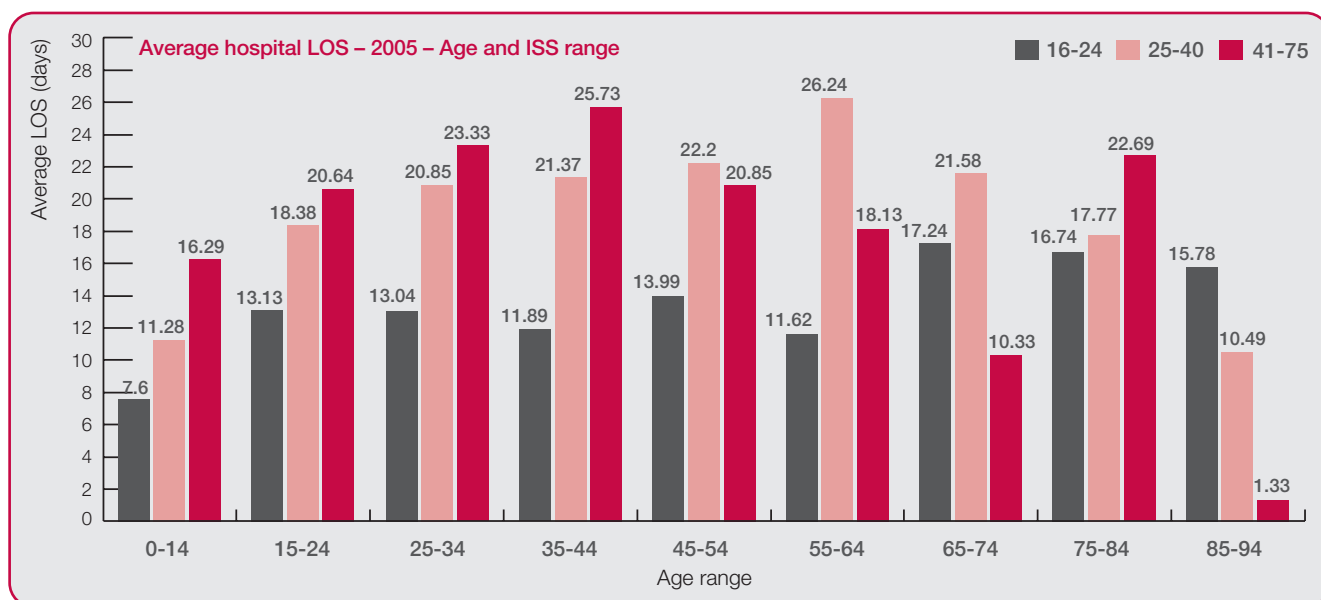


Figure 127. Hospital average length of stay (LOS) by age for low to medium fall (<5m) related trauma patient admissions to all Trauma Services

