Worksheet answers

1. Use the data in Table 1 to determine the four sports, for males and females separately, that resulted in most hospitalisations over the three-year study period. Enter into Table 2.

	SPORTS WITH MOST HOSPITALISATIONS (MALES)	SPORTS WITH MOST HOSPITALISATIONS (FEMALE)
1.	*AFL*	*netball*
2.	*soccer*	*basketball*
3.	*basketball*	*soccer*
4.	*cricket*	*tennis*

Table 2. Sports resulting in the most hospitalisations over three years (2007–2010)

2. Of course, the sport that has the highest number of hospitalisations is not necessarily the most dangerous. We need to allow for the popularity of different sports. A lot more people play soccer, for example, than hockey, so we would expect more soccer injuries than hockey.

   What additional data would you need to make a fair comparison between hospitalisation rates for different sports? How would you use this data?

   We need to know the number of males and females that play each of these sports in order to calculate the hospitalisation rate = number hospitalised / number of participants.
   This rate can be expressed as a fraction, percentage or per 1000 participants.

3. Use data in Table 3 to calculate the number of hospitalisations over three years, per thousand participants, for each sport. Calculate rates for male and female separately and enter into Table 4 (calculations have already been done for some sports).

$$\text{hospitalisation rate (per thousand participants)} = 1000 \times \frac{\text{number of hospitalisations}}{\text{number of participants}}$$

SPORT	NUMBER OF HOSPITALISATIONS		HOSPITALISATIONS PER 1000 PARTICIPANTS	
	MALE	FEMALE	MALE	FEMALE
AFL	6150	126	27.9	8.4
rugby (league/union)	399	21	(33.0)	(11.1)
soccer (indoor/outdoor)	1479	183	7.0	3.0
basketball	1001	316	7.0	4.7
netball	141	796	7.6	5.3
volleyball	62	22	2.3	0.9
baseball (+softball)	83	32	(12.4)	(3.1)
cricket (indoor/outdoor)	807	25	4.7	(1.5)
hockey	215	72	10.2	(5.5)
badminton	41	16	1.1	0.6
table tennis	26	14	0.8	(5.4)
squash (+racquetball)	80	18	2.5	(3.5)
tennis	185	151	1.2	1.1

Table 4. Hospitalisation rate per thousand participants in Victoria (2007–2010)

4. What sports resulted in the most hospitalisations per thousand participants over three years? Enter into Table 5.

	SPORTS WITH MOST HOSPITALISATIONS PER THOUSAND PARTICIPANTS (MALE)	SPORTS WITH MOST HOSPITALISATIONS PER THOUSAND PARTICIPANTS (FEMALE)
1.	*rugby*	*(rugby)*
2.	*AFL*	*AFL*
3.	*(baseball)*	*(hockey)*
4.	*hockey*	*(table tennis)*

Table 5. Sports resulting in the most hospitalisations per thousand participants over three years

5. Discuss the results in Table 5, given what you know about these sports (eg contact versus non-contact sports).

   For males, the contact sports (rugby and AFL) have the highest hospitalisation rate. Of the football codes, soccer has a much lower rate than rugby or AFL.

   AFL and rugby also appear in the list of female sports with high hospitalisation rates. However three of the sports have unreliable data due to low participation rates.

6. Data for hospital admissions are exact, as all hospitals are required to keep accurate records of admissions. On the other hand, data in Table 3 are obtained from a survey. How does this affect the accuracy of your findings?

   Sports with unreliable data can't be used in the analysis. For females, three of the sports with the highest hospitalisation rate have unreliable data. Leaving these sports aside, netball, basketball and table tennis have the next highest hospitalisation rates. These sports involve quick stopping and turning that may cause injuries.

7. Data from the VISU study are for injuries that resulted in hospitalisation only. How might you investigate the injury rate in different sports, for all injuries, including those not requiring hospitalisation?

   The VSU study could be extrapolated to all injuries if we knew the proportion of injuries that resulted in hospitalisation for each sport. A survey could be designed to find out these proportions. It might find, for example, that injuries in some sports tend to be more severe and are more likely to need hospitalisation.

8. The VISU study also analysed hospital data, about the sites of injury, which is summarised in Figure 1. Use what you know about forces in the human body and potential causes of injury to suggest explanations for differences between sports.

   Injuries to lower limbs are highest for badminton, squash, netball and tennis. These are all sports that require rapid twists and turns that place high stresses on lower limbs.

   Shoulder, hand and arm injuries are most common in cricket, hockey and AFL. These may be impact injuries.

   Baseball and hockey have highest injuries to the head. These are also likely to be impact injuries from bat or ball.

   Injuries to the trunk are fairly low for all sports.