Analysing sporting injuries

The Victorian Injury Surveillance Unit (VISU) at Monash University, Melbourne, researches injuries that take place in the home, sport and leisure environments. In 2012 VISU published a report into adult injuries that occurred for 16 sports in Victoria. (VISU, 2012). The data analysed came from admissions to hospitals during the three-year period 1 July 2007 to 30 June 2010. Only serious injuries, that required hospital admission, for people over the age of 15 were included in this study.

Table 1 contains data from the study: numbers admitted to hospital for a sport-related injury over the three-year study period. Data are reported for 13 sports (some sports have been grouped).

SPORT	NUMBER OF HOSPITALISATIONS	
	MALE	FEMALE
AFL	6150	126
rugby (league/union)	399	21
soccer (indoor/outdoor)	1479	183
basketball	1001	316
netball	141	796
volleyball	62	22
baseball (+softball)	83	32
cricket (indoor/outdoor)	807	25
hockey	215	72
badminton	41	16
table tennis	26	14
squash (+racquetball)	80	18
tennis	185	151

Table 1. Number of hospitalisations over a three-year period in Victoria (2007–2010)

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.		
2.		
3.		
4.		

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 these data?

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The Australian Sports Commission Annual Report (2010) contains estimated numbers of Victorians who participate in sport, based on surveys. Table 3 summarises these estimates, again for people aged 15 and above. Figures in *grey italics* are considered less reliable due to low sample numbers.

	MALE	FEMALE		MALE	FEMALE
AFL	220 500	14 900	cricket	172 900	*16 900*
rugby	*12 100*	*1900*	hockey	21 000	*13 200*
soccer	210 000	60 400	badminton	36 900	24 700
basketball	143 400	67 000	table tennis	30 800	*2600*
netball	18 600	149 400	squash	31 800	*5100*
volleyball	27 500	23 500	tennis	160 200	137 600
baseball	*6700*	*10 400*			

Table 3. Sport participation in Victoria (2010)

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		
rugby (league/union)	399	21		
soccer (indoor/outdoor)	1479	183		
basketball	1001	316		
netball	141	796		
volleyball	62	22		
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.		
2.		
3.		
4.		

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).

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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?

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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?

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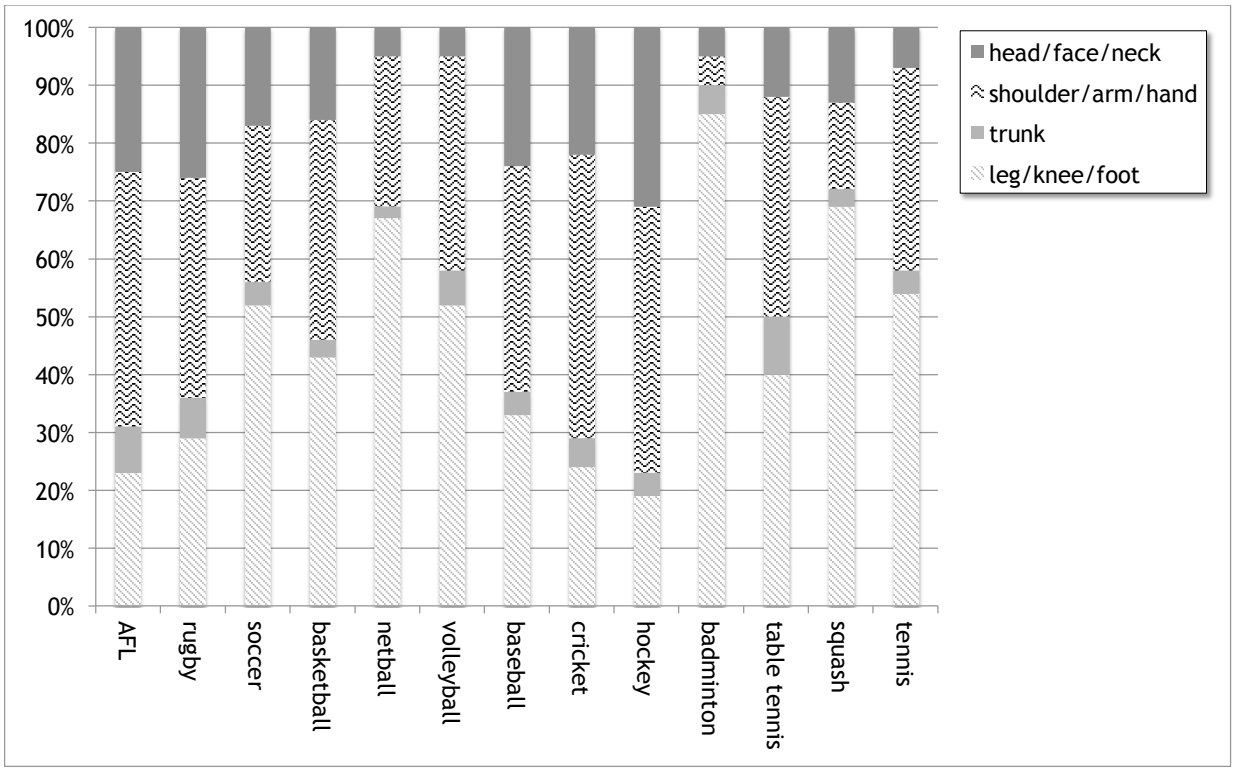

Figure 1. Analysis of injury site for 13 sports

8. The VISU study also analysed hospital data, about 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.

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