



Hazard
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Victorian Injury Surveillance
& Applied Research System (VISAR)
(Formerly VISS)

Monash University
Accident Research Centre



This edition of Hazard compares the injury profiles of Victorians by socio-economic status, indicating broad priority areas for prevention. In addition, VicHealth CEO Dr. Rob Moodie provides commentary on reducing health inequalities.

Socio-Economic Status and Injury

Summary

More young people (less than 45 years) die from injury than any other cause. The numbers of people who die from, or need hospital treatment for injuries are very high. In 1998, 1,665 Victorians died, while in 1999, 77,726 were admitted to hospital, and nearly 192,067 were treated by hospital emergency departments for injuries.

The likelihood of injury is not the same for all people. Available international evidence has demonstrated that among children, adolescents, and adults, lower socio-economic status is associated with increased risk of injury. VISAR recently upgraded its services by adding socio-economic status data to injury data held for deaths, hospitalisations, and emergency department (ED) presentations. This allowed VISAR to undertake population analyses of injury by socio-economic status.

Lower socio-economic status was associated with increased risk of injury

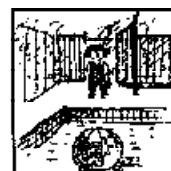
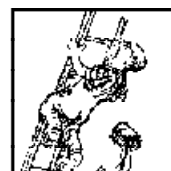
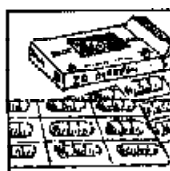
at all levels; deaths, hospital admissions, and ED presentations. However, regardless of socio-economic status, injury at all levels was most frequent between the ages of 15 and 29 years, with one exception – deaths and hospital admissions of high socio-economic status persons over 75 years of age. As socio-economic status increased, a person, when injured, was more likely to die or be hospitalised than were persons from lower socio-economic groups.

Examination of the causes of these injuries revealed that persons of low socio-economic status were more likely to suicide and self-harm, or suffer homicide and other assaults. Persons from high socio-economic status were more likely to sustain a severe fall, generally later in life, or sporting injuries. When admitted to hospital, high socio-economic status individuals had significantly longer stays. When presenting to an ED, high socio-economic status persons were more likely to be transferred to another hospital or to be admitted for further treatment. Persons from the mid-range socio-

economic groups were more likely to experience transport-related injury, other than pedestrian injury. However, pedestrian injuries and overdoses of heroin were more frequent among persons from both very high and very low socio-economic groups.

These results demonstrate that socio-economic status is a risk factor for injury, but that the causes of injury vary with socio-economic status. Interventions are identified for some high-risk groups. Further prospective research is required if additional interventions are to be elaborated.

Also in this edition, Dr Rob Moodie of VicHealth outlines some underlying factors to be addressed when developing programs to prevent injury. These include provision of equality of opportunity, using population wide and targeted approaches, considering the nature of the population and their geography, dealing with psychosocial factors and material disadvantage influences, and addressing critical ages and periods for injury prevention.



The effect of socio-economic status on injury among Victorians

Mark Stokes, Karen Ashby & Angela Clapperton

Introduction

If differences in socio-economic status (SES) indicate a variation in health outcomes, and in particular, injury risk, then measures of SES will indicate primary intervention targets, while at the same time, indicating approaches to prevention. For instance, if some classes of injury cause are more associated with certain SES, as smoking was associated with lower SES (Harper, 2001), appropriate interventions can be developed that consider both the cause and the injured group (Moodie, 2002).

SES has been related to health outcomes. A recent release from the Chief Health Officer for the Victorian Department of Human Services reports that SES differences were associated with marked differences in health status. Affluent, privileged people have better health and lower mortality compared to poor, disadvantaged people (Catford, 2001).

Comparisons of overall injury probability between nation-states reveals that increased probability of injury is associated with lower national SES indicators, such as gross national product. This trend was even more apparent when comparing adults from lower SES within those nation-states (Ahmed & Andersson, 2000). When considering populations within nation-states, injury mortality has been reported as being significantly higher among poorer groups (Cubbin, LeClerc & Smith, 2000).

Children & Adolescents

Much of the literature is focused upon children and adolescents. Several authors indicate increased injury risk among children and adolescents of lower SES (Avery, Vaudin, Fletcher & Watson, 1990; Dougherty, Pless & Wilkins, 1990; Roberts, Marshall, Norton & Borman, 1992; Carey, Vimpani & Taylor, 1993;

Jolly, Moller & Volkmer, 1993; Laing & Logan, 1999; Ahmed & Andersson, 2000). However, other authors report little or no increased injury risk associated with lower SES when examining injury in adolescents (Langley, Silva & Williams, 1987; Anderson, Dearwater, Olsen, Aaron, Kriska & LaPorte, 1994).

Williams, Currie, Wright, Elton and Beattie (1997) are critical of this literature. They suggest some studies were flawed by relying upon adolescents, a group where it is argued parental SES is of low importance because adolescents are more powerfully influenced by peer related psychosocial factors than by parental factors (cf. Anderson *et al.*, 1994). Other studies were considered flawed because the authors relied upon single, limited measures of SES, such as fathers' occupation (cf. Langley *et al.*, 1987) which does not robustly reflect SES.

Nonetheless, Williams *et al.* did not find a simple relationship between SES and injury among adolescents. They reported a more complex relationship where some injury causes were more frequent among lower SES, and others among higher SES. Among adolescents, low SES predicted high frequencies of assaults, pedestrian events, and road related injuries. On the other hand, high SES predicted injuries from sporting and leisure activities, as well as alcohol consumption.

Injury Beliefs

SES would appear to be involved in more than risk of injury. It appears that beliefs about how preventable injuries may be are also related to SES. Girasek (2001) reported SES significantly predicted whether or not respondents were likely to believe that injuries could be prevented. Low SES was associated with beliefs about the inevitability of injuries, whereas

higher SES was associated with beliefs about the preventability of injury. Consequently, public campaigns to reduce injuries may first need to consider the SES strata at which they are aimed, and thereafter seek to modify belief states about injury prevention, as well as the risk behaviours.

Surveillance & Research Tools

VISAR recently added SES to all data holdings. Other data enhancements include measures of years of life lost, probability of permanent and temporary disability, as well as aspects of treatment cost. Attachment of SES data to injury data allows VISAR to report on the effect of SES across the population, recent reports of which are lacking in the literature. This issue of *Hazard* reports upon the distribution of injury based upon SES and the implications for injury prevention research.

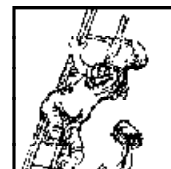
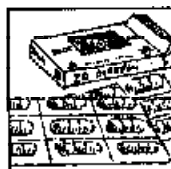
Method

Injury Data

Data for the present analyses were extracted from three injury databases:

- Victorian injury deaths (Australian Bureau of Statistics Death Unit Record File – ABS);
- Victorian public and private hospital admissions (Victorian Admitted Episodes Dataset – VAED); and
- Victorian public hospital emergency department (ED) presentations (Victorian Emergency Minimum Dataset – VEMD).

All data with non-Victorian postcodes of residence were excluded from the data extraction.



Data from all three sources were analysed, including ABS death data for 1998, and VAED and VEMD data for 1999. ABS death data were available for 1999 but were not used because a change in the coding system from International Classification of Diseases (ICD) version 9 to ICD version 10 in 1999 raised concerns about the integrity of the data. Various large discrepancies from known trends were apparent in the ICD10 coded data.

Death data were derived from the ABS death unit record file, which consists of information supplied by State Registrars of Births, Deaths and Marriages. Data included all registered deaths for Victorian residents in 1998 given an ICD9 'External Injury Cause' code by the ABS (n=1,665).

The VAED records hospital admissions for all Victorian hospitals, both public and private. VAED data, like ABS data, are coded using the ICD coding system. Transfers to another hospital and internal transfers were excluded to prevent double counting of injury cases. There were 77,726 hospital injury admissions reported on the VAED for 1999.

The VEMD records public hospital presentations to 28 EDs, representing

Box 1: Variables underlying the Index of Relative Socio-Economic Disadvantage

- Persons over 15 who did not attend school (%)
- Persons over 15 who left school at less than 15 years (%)
- Persons 15+ lacking qualifications (%)
- Lacking fluency in English (%)
- Aboriginal or Torres Strait Islander status (%)
- Single parent families (%)
- Separated or divorced (%)
- Occupation level (%)
- Unemployed (%)
- Family incomes less than \$15,600 (%)
- Dwellings without motor cars (%)
- Households renting (%)
- Dwellings with two or more families (%)

approximately 80% of statewide ED presentations. The VEMD reported 192,067 cases of injury to Victorian residents in 1999.

SES data

The Australian Bureau of Statistics collects and publishes considerable socio-economic information with each national census. The last of these, for which results are available, was conducted in 1996. Five statistics are compiled and published for various geographic areas, including statistical local areas, postcodes, and collection districts (McLennan, 1998) as the Socio-Economic Indices For Australia (SEIFA96). Of the five statistics compiled, the most applicable to assess the impact of disadvantage upon health

is the index of relative socio-economic disadvantage. This measure is applicable to both rural and urban areas, and reflects household income, household education, unemployment, and job skill levels. The higher the score, the fewer disadvantages are associated with the area.

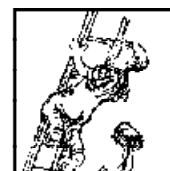
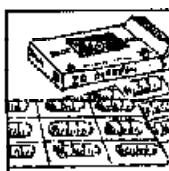
The present analyses applied the index of socio-economic disadvantage to all available Victorian postcodes. These were then grouped as described below. The chief disadvantage with this approach is that it treats each postcode as containing a homogenous population. A second problem is that where a postcode was not gazetted at the time of the census, it is not included in the data provided by the ABS. As some Victorian postcodes have come into existence since the 1996 census, through the splitting of postcodes, it was

Table 1: Overview of SES groups in the ABS, VAED & VEMD databases

		Relative index of socio-economic disadvantage		ABS (n)	VAED (n)	VEMD (n)	Age**	
		Lower	Upper				Mean	SD
SES 1	Most disadvantaged	-	935	247	10,913	32,296	30.57	22.14
SES 2	↓	936	976	267	10,706	27,705	30.65	22.13
SES 3	↓	977	1013	347	14,753	43,954	28.98*	21.23
SES 4	↓	1014	1052	341	14,963	35,343	30.08	21.63
SES 5	↓	1053	1094	221	12,015	32,326	30.29	21.93
SES 6	Least Disadvantaged	1095	+	183	8,963	15,282	33.53*	23.97
TOTAL				1,606	72,313	186,906	30.31	21.97

* Significantly different at p<0.05

** Mean age is based on VEMD records



necessary to exclude this data from the analyses. In total, 12 of 683 postcodes were excluded. This reduced the total deaths examined by these analyses to 1,606 (96.5%), hospitalisations to 72,313 (93.0%), and ED presentations to 186,906 (97.3%).

The data was separated into six groups (Table 1) based upon the 10th, 25th, 50th, 75th, and 90th quantiles of socio-economic disadvantage within Victoria as described by McLennan (1998).

Age

Age is a potentially confounding variable in assessments of the effects of SES. Consequently, it is important to understand the distribution of age by socio-economic group. As age data is not included in SEIFA96, we used age from the VEMD (being the largest of the three data sets) as a surrogate measure (Table 1). Age was similar in SES groups 1, 2, 4, and 5¹. However, SES 3 tended to be younger ($p<0.05$), and SES 6 tended to be older ($p<0.05$) than the other groups and the overall mean.

Geographic Region

Given that this report has similarities to that reported in Ashby, Stathakis, and Day, (2001) for geographic region, we include Figures and Tables presenting the breakdown of deaths and hospital admissions by broad geographical region against SES (see Appendix). The geographic regions considered were:

- Metropolitan centres (Melbourne & Geelong),
- Large and small rural centres (population over 10,000), or
- Other rural and remote centres (population less than 10,000).

These regional categories were distributed across postcodes as described in Ashby *et al.* (2001).

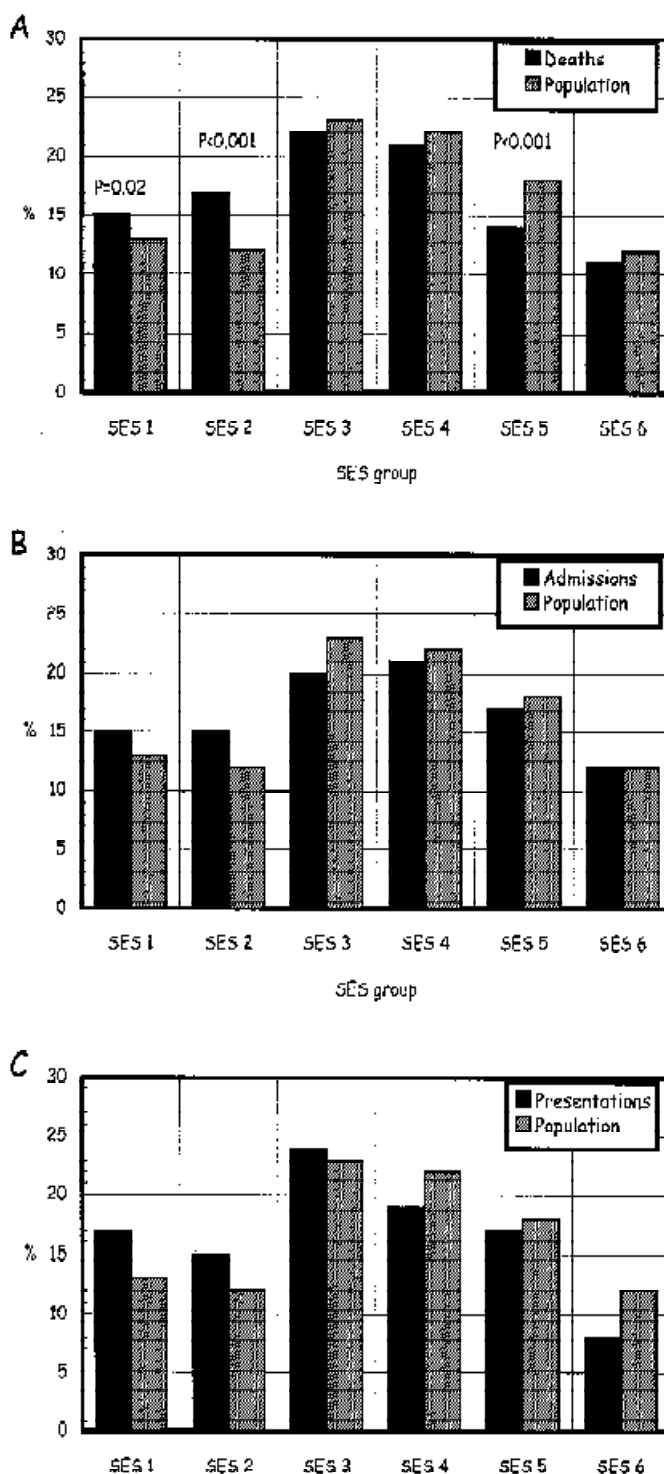


Figure 1: SES group representation compared to population representation

A: Injury Deaths, Victoria (Source: ABS 1998)

B: Injury Admissions, Victoria (VAED 1999)

C: Injury Presentations to EDs, Victoria (VEMD 1999)

¹ $F_{(5,186,685)}=101.2$, $P<0.001$. Student's Newman-Keuls post hoc analyses were used to assess differences between means. Degrees freedom reduced by excluding 215 cases lacking age information.

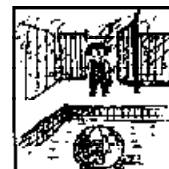
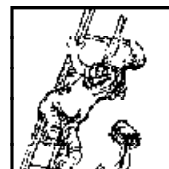
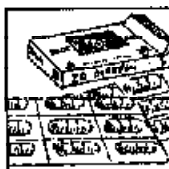


Table 2: Injury frequency and rate per 100,000 population for SES categories, for Victoria.
(Source: ABS 1998, VAED & VEMD 1999)

	Deaths - ABS				Hospital Admissions - VAED				Hospital Presentations - VEMD *				Victorian pop. June 1999	
	N	Rate per 100,000	% of Deaths	Deaths as % of injury within SES group	N	Rate per 100,000	% of Admissions	Admissions as % of injury within SES group	N	Rate per 100,000**	% of Presentations	Presentations as % of all injury within SES group	N	% of total
SES 1	247	37	15%	0.57%	10,913	1,655	15%	25.11%	32,296	6,123	17%	74.52%	659,278	13%
SES 2	267	43	17%	0.69%	10,706	1,731	15%	27.68%	27,705	5,600	15%	71.63%	618,448	12%
SES 3	347	31	22%	0.59%	14,753	1,308	20%	24.98%	43,954	4,873	24%	74.43%	1,127,513	23%
SES 4	341	31	21%	0.67%	14,963	1,362	21%	27.54%	35,343	4,021	19%	69.78%	1,098,600	22%
SES 5	221	25	14%	0.50%	12,015	1,341	17%	26.96%	32,326	4,510	17%	72.54%	895,979	18%
SES 6	183	31	11%	0.75%	8,963	1,536	12%	36.69%	15,282	3,273	8%	62.56%	583,600	12%
TOTAL	1,606	32	100%		72,313	1,451	100%		186,906	4,688	100%		4,983,418	100%

* VEMD comprises public hospital ED presentations only

**VEMD represents 80% of statewide ED presentations; hence the rate has been scaled up to represent a Victorian statewide rate

Results

Figure 1 and Table 2 present data for each level of severity: deaths, hospital admissions, and ED presentations. Within each level of severity, the total frequency, rate per 100,000, and proportion within severity level are presented by SES group. Additionally, we report the proportion of injuries (deaths, admissions, and ED presentations), indicating the injury burden within each SES group – % deaths, % admissions, % ED presentations – by SES group.

Death from injury was not proportionally representative; lower SES groups were significantly over-represented.² Socio-economic groups 1 and 2, at the lower end of the SES scale, were over-represented among the injured populations at all levels of severity (15%–17%), compared with their proportion in the overall Victorian population (12%–13%; Figure 1 & Table 2). Proportionally, injuries for other SES groups were representative. Slight under-representations were noted for the higher SES groups: SES 5 was under-represented for

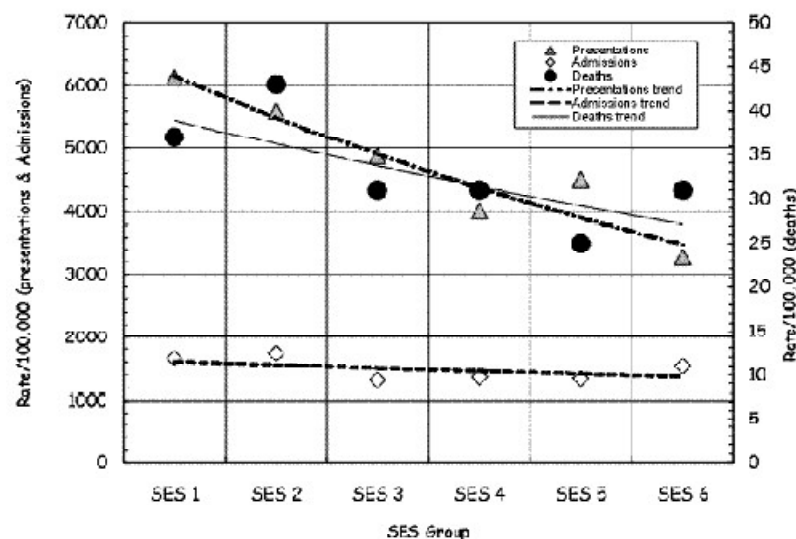


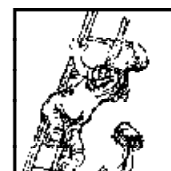
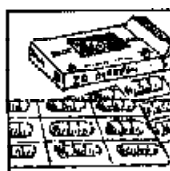
Figure 2: Rates of Death, Admissions, and ED presentation by SES group, for Victoria (Source: ABS 1998, VAED & VEMD 1999)

injury deaths and SES 6 for ED presentations (Figure 1 & Table 2).

Injury rates at all three levels of severity were consistently highest for persons in SES groups 1 and 2. The lowest hospital admission rates were shown to be in SES 3 (Table 2). Interesting patterns in the

rate data emerged when public and private hospitalisations were examined separately. The rate of admission for public hospitals decreased with increasing SES status from SES 2 (1,508 per 100,000) to SES 6 (846 per 100,000). In direct contrast the rate of hospitalisation

2 Overall, there was a significant bias for deaths by SES group ($\chi^2=45.84$, $df=5$, $p<0.001$), for hospitalisations by SES group ($\chi^2=8822.95$, $df=5$, $p<0.001$), and for ED presentations by SES group ($\chi^2=5908.89$, $df=5$, $p<0.001$). Significant differences within groups were noted, but are only presented for death data (Figure 3), as sample size overwhelmed the analyses for hospitalisations and presentations, rendering statistical significance uninformative.



for private hospitals increased with increasing SES status from SES 3 (182 per 100,000) to SES 6 (670 per 100,000).

The highest rate of ED presentation (6,123 per 100,000) was from SES 1, and was almost twice the ED presentation rate from SES 6 (3,273 per 100,000), which was the lowest. It is possible that these results do not fully reflect ED presentations. SES 6 may have disproportionately sought private medical treatment. Alternately, individuals from SES 6 may sustain fewer injuries of low severity than other SES groups. The data to resolve this question are not available.

It is apparent from Figure 2 that as SES increases, while the rates of injury decrease, injury death and severe injury assume relatively greater proportions of the total injury rate. This interesting result suggests that injury is less frequent with increasing SES, but that when an injury does occur, it is relatively more likely to be fatal, raising questions about high SES and injury opportunity or exposure. Possibly, higher SES is associated with increased extreme risk taking behaviour; possibly, higher SES is associated with increased age; or possibly, there is an interaction of both factors. Table 1 reveals that age within SES 6 is significantly greater than within other SES groups, however, age is not significantly greater for SES 4. The trend observed in Figure 2 reveals that for SES groups 4 and 6 injury death assumes a greater proportion of the total risk.

Age

To gain understanding of the factors giving rise to higher injury risk in the less disadvantaged SES groups we examined injury at all levels by SES across age. These data are presented in Figure 3, and reveal the age profile of injury within each SES group. Comparisons between SES groups can only be made to assess which SES age group is proportionately most injured³.

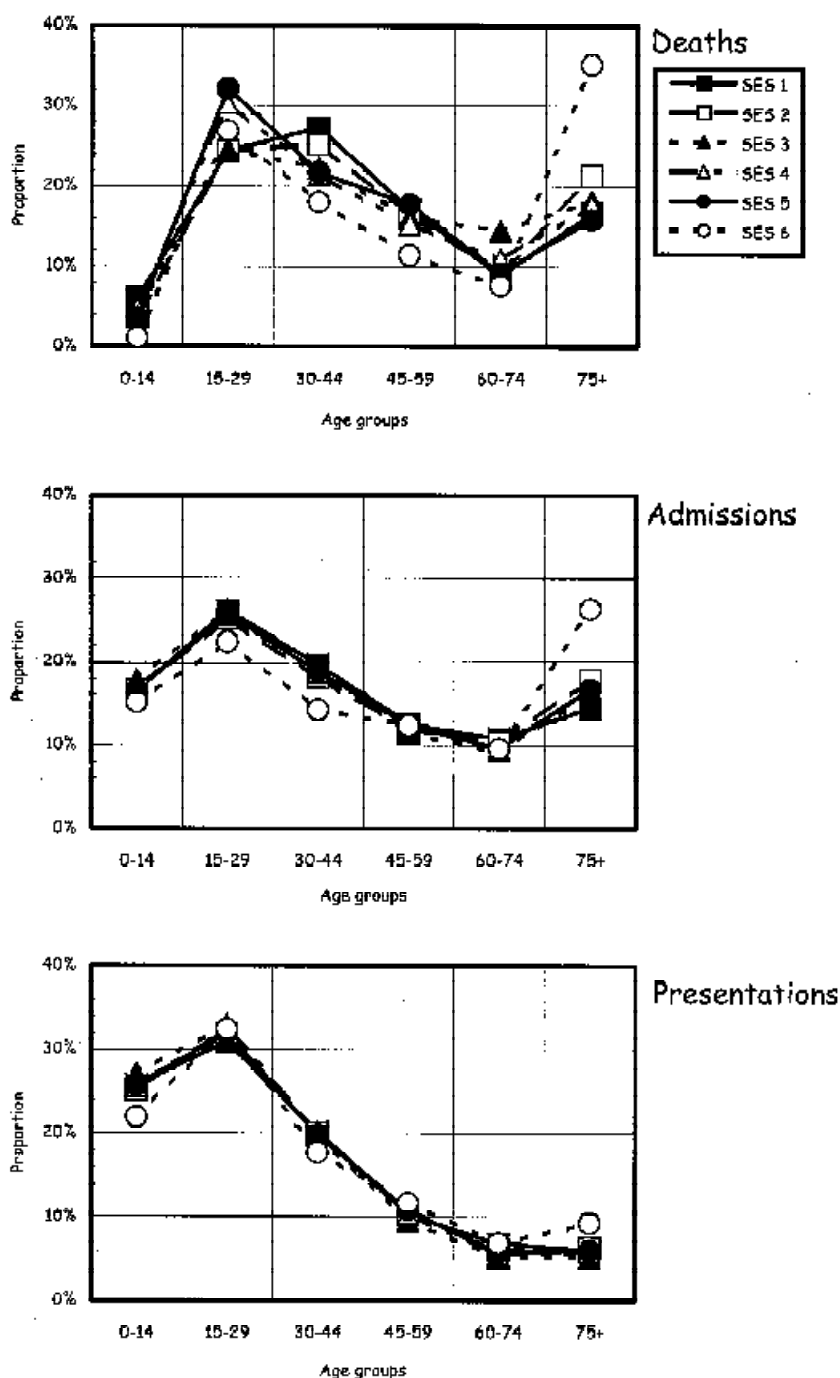
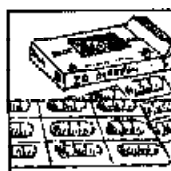


Figure 3: Injury proportion within each SES group by age
A: Injury Deaths, Victoria (Source: ABS 1998)
B: Injury Admissions, Victoria (VAED 1999)
C: Injury Presentations to EDs, Victoria (VEMD 1999)

For all levels of injury severity persons from SES groups 1 to 5 are most likely to be seriously injured or to die from injury

between 15 and 29 years of age. However, among SES 6, fatal or serious injury is most likely to occur at 75 or more years.

³ Care must be taken to avoid confounding population age biases within SES group with injury over- or under-representation of a particular age group within an SES group, which is unknown. Age data is not included in SEIFA96. Therefore, this analysis cannot reveal whether any SES group was more or less injured than another.



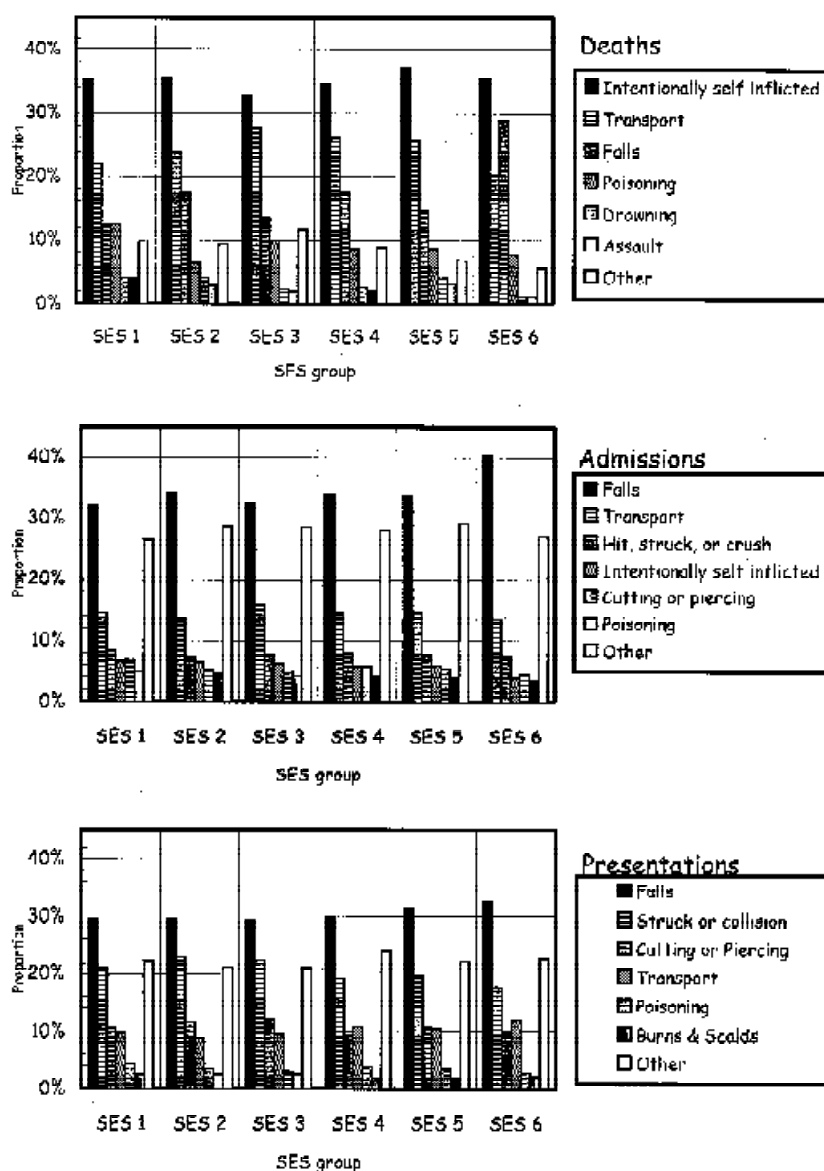


Figure 4: Proportionate injury cause within each SES group
A: Injury Deaths, Victoria (Source: ABS 1998)
B: Injury Admissions, Victoria (VAED 1999)
C: Injury Presentations to EDs, Victoria (VEMD 1999)

The risk of less serious injury is greatest between the ages of 15 and 29 for all SES groups. Either high SES individuals tend to survive without serious injury until late in life, or fewer individuals tend to obtain higher SES until later in life, as suggested by the age data in Table 1.

Given the similarity of injury profiles for presentations across SES groups (Figure 3), it is considered unlikely that a) younger high SES individuals remain uninjured,

and b) when injured that they avoid VEMD contributory EDs. Younger high SES individuals would appear to suffer similar rates of less serious injury to other groups, yet experience lower incidence of more serious or life threatening injuries. However, late in life, when injured, it would appear from the data in Figures 2 and 3, and Table 2, higher SES individuals experience a markedly increased incidence of serious or fatal injury.

A second point of interest from Figure 3 is that variation between SES groups decreased as the level of injury seriousness decreased: deaths, admissions, and presentations. Similar distributions for age of injury were seen among presentations, but not deaths. Within injury deaths, Figure 3 reveals considerable differences between SES groups, while among injury admissions there were moderate differences, and among injury presentations there were few differences.

Cause of Injury

Patterns of injury cause were examined across SES groups (Figure 4). Transport, falls, and poisoning were consistently among the most prominent causes of death, admission and ED presentation. Self-harm was prominent among admissions and deaths. Injuries from cutting and piercing were also prominent among both non-fatal injury categories. Other injury causes combined amounted to less than 12% of all causes of death, between 25% and 30% of causes of admission, and between 20% and 25% of causes of ED presentations. Falls were consistently a high cause of death, admission and ED presentation within SES 6. Poisoning was consistently prominent as a cause of injury at all levels of severity among SES 1.

Curiously, as a cause of injury, transport displayed an inverse "U" trend as SES increased, peaking at SES 3 for all levels of severity, with lower incidence at both high and low SES levels. The differences in incidences between these groups may possibly reflect a number of factors, which will be discussed below.

Deaths (*n*=1,606)

Suicide was the leading cause of injury death for all SES groupings representing between 33-37% of total injury deaths (Tables 3 & 4). The highest rates of suicide per 100,000 were among the lowest SES groups (SES 2: 15.4 and SES 1: 13.2) while the lowest rate of suicide per 100,000 was among SES 5 (9.2; Table 3). One group, SES 2, displayed the highest rates per 100,000 of the three most common means of suicide: hanging

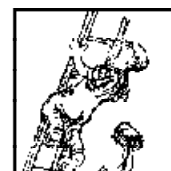
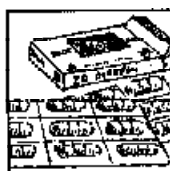


Table 3: Rate of injury death per 100,000 population by major external cause and SES groupings, Victoria (Source: ABS 1998).

E-code groups	SES 1 Rate	SES 2 Rate	SES 3 Rate	SES 4 Rate	SES 5 Rate	SES 6 Rate	Average Rate
Suicide (total)	13.2	15.4	10.1	10.7	9.2	11.1	11.6
• Hanging	5.8	5.8	3.6	4.8	4.1	3.8	4.7
• Motor vehicle exhaust gassing	2.4	2.8	2.0	2.6	1.7	2.4	2.3
• Firearms	0.8	2.4	1.4	1.0	0.8	0.3	1.1
Transport (total)	8.2	10.4	8.5	8.1	6.4	6.3	8.0
• Car driver/passenger	4.4	6.7	5.0	4.7	3.3	3.3	4.6
• Pedestrian	2.6	1.3	1.4	0.9	1.2	2.2	1.6
• Motorcyclist rider/passenger	0.9	1.0	1.2	1.1	1.0	0.7	1.0
Falls (total)	4.7	7.6	4.2	5.5	3.6	9.1	5.8
• Same level	4.3	6.8	4	4.7	3.5	8.2	5.3
Poisoning (total unintentional)	4.7	2.8	3.0	2.6	2.1	2.4	2.9
• Heroin	1.4	0.3	0.7	0.4	0.4	1.0	0.7
Drowning	1.5	1.8	0.7	0.6	1.0	0.3	1.0
Homicide	1.3	1.3	0.6	0.6	0.8	0.3	0.9
Choking/suffocation/FB	1.1	0.3	1.2	0.6	0.9	0.5	0.8
Other unintentional	0.3	0.7	1.3	0.6	0.1	0.9	0.7
Fire/burn/scalds	0.9	0.8	0.4	0.4	0.1	0.0	0.4
Hit/struck/crush	0.6	1.1	0.3	0.3	0.2	0.0	0.4
Undetermined intent	0.3	0.5	0.3	0.5	0.1	0.0	0.3
Machinery	0.2	0.2	0.2	0.3	0.0	0.2	0.2
Natural/environmental	0.2	0.3	0.0	0.1	0.2	0.2	0.2
Cutting/piercing	0.2	0.2	0.0	0.1	0.0	0.0	0.1
TOTAL	34.5	43.2	30.8	31	24.7	31.4	32.6

Table 4: Frequency of injury death by major external cause and SES groupings, Victoria (Source: ABS 1998).

E-code groups	SES 1 N	SES 2 N	SES 3 N	SES 4 N	SES 5 N	SES 6 N	Total N
Suicide (total)	87	93	114	117	82	63	560
• Hanging	38	36	41	53	37	22	227
• Motor vehicle exhaust gassing	16	17	22	23	15	14	107
• Firearms	5	13	16	11	7	2	56
Transport (total)	54	64	96	89	57	37	397
• Car driver/passenger	29	41	56	53	30	19	228
• Pedestrian	17	9	16	10	11	13	76
• Motorcyclist rider/passenger	6	6	13	12	9	4	50
Falls (total)	31	47	47	60	32	53	270
• Same level	28	42	45	52	31	48	246
Poisoning (total unintentional)	31	17	34	29	19	14	144
• Heroin	9	2	8	4	4	6	33
Drowning	10	11	8	9	9	2	49
Homicide	10	8	7	7	7	2	41
Choking/suffocation/FB	7	2	13	7	8	3	40
Other unintentional	2	4	15	6	1	3	33
Fire/burn/scalds	6	5	5	4	1	0	21
Hit/struck/crush	4	7	3	2	2	0	18
Undetermined intent	2	3	3	4	1	0	13
Machinery	1	1	2	2	0	1	7
Natural/environmental	1	2	0	1	2	1	7
Cutting/piercing	1	1	0	1	0	0	3
TOTAL	247	267	347	341	221	183	1,606

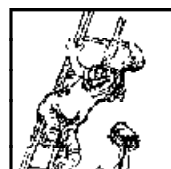


Table 5: Frequency and rate of unintentional poisoning deaths by SES groupings, Victoria (Source: ABS 1998)

	Heroin			Other drugs and medication			Total unintentional poisoning	
	N	Mean age	Rate per 100,000	N	Mean age	Rate per 100,000	N	Rate per 100,000
SES 1	9	31.1	1.4	16	34.8	2.4	31	4.7
SES 2	2	38.0	0.3	12	43.9	1.9	17	2.7
SES 3	8	26.0	0.7	21	39.1	1.9	34	3.0
SES 4	4	32.0	0.4	17	37.7	1.5	29	2.6
SES 5	4	24.5	0.4	13	40.0	1.5	19	2.1
SES 6	6	25.5	1.0	4	36.3	0.7	14	2.4
TOTAL	33		0.7	83		1.7	144	2.9

Table 6: Injury hospital admission rates per 100,000 of population by injury cause and SES groupings, Victoria (Source: VAED 1999)

Injury cause	SES 1 Rate	SES 2 Rate	SES 3 Rate	SES 4 Rate	SES 5 Rate	SES 6 Rate	Average Rate
Falls	529.8	592.8	421.6	461.3	453.6	618.9	513.0
Transport	240.3	234.1	206.9	199.8	194.4	206.0	213.6
Hit/struck/crush	139.4	125.8	102.3	109.1	100.3	113.3	115.0
Self inflicted	108.1	110.4	81.4	76.6	79.9	59.8	86.0
Cutting/piercing	113.8	90.7	67.1	77.3	71.1	69.7	81.6
Poisoning	83.1	79.7	55.8	56.3	51.9	51.9	63.1
Assault	96.5	88.4	55.7	47.8	47.5	35.5	61.9
Natural	30.6	53.0	40.0	35.1	30.0	24.3	35.5
/environmental							
Choking/suffocation/	39.7	37.7	29.5	26.9	28.9	23.8	31.1
FB							
Machinery	35.0	26.0	23.0	25.5	22.3	12.3	24.0
Intent undetermined	30.9	26.0	18.5	22.1	24.4	20.9	23.8
Fire/burn/scalds	29.1	33.1	18.7	14.7	18.0	17.6	21.9
Near drowning	2.4	1.9	1.1	0.8	1.5	1.5	1.5
Other	176.4	231.2	186.6	208.6	217.0	280.0	216.6
Total	1655.3	1731.1	1308.5	1362.0	1341.0	1535.8	1488.9

(5.8 per 100,000); motor vehicle exhaust gassing (2.7 per 100,000); and firearms (2.4 per 100,000). The rate of firearm suicide for SES 2 was more than twice the average rate (1.1 per 100,000).

Transport was the second most common cause of injury death for all SES groups, except SES 6. Rates of injury death for both drivers and passengers were again highest for SES 2 (3.7 and 2.9 per 100,000 respectively), considerably exceeding the overall rates for both (2.9 and 1.7 per 100,000 respectively). Death rates for motorcyclists were consistent across SES groups and were between 0.7 (SES 6) and 1.2 (SES 3) per 100,000 persons.

Death rates for on-road pedal cyclists were also similar across SES groups. However, death rates for pedestrians from SES 1 (2.6 per 100,000) were almost three times those for SES 4 (0.9 per 100,000) and twice that for SES 5 (1.2 per 100,000).

The second most common cause of death for SES 6 was falls, which concords with the results discussed above from Figure 2 and 3. Most fall related deaths were among persons aged 75+ (77%-88%). The highest rate of fall deaths was within SES 6 (9.1 per 100,000), and the majority of these were among persons aged 85 years and over (66%). The rate of fall deaths in

SES 6 reflects the larger representation of the 75+ age group in deaths for this SES group (Figure 3), and suggests that higher SES groups, while at lower risk of injury death while younger, face a considerable risk from falls as they age.

Unlike the rates for the leading causes of death such as suicide and transport, the rate of unintentional poisoning death were highest among SES 1 (4.7 per 100,000) and were almost twice the average for the other five SES groups (2.5 per 100,000; range 2.1-3.0 per 100,000). The rates of unintentional poisoning for drugs other than heroin were highest among SES 1 (Table 5). However, the highest rates for death from heroin overdose were among SES groups 1 and 6. The mean ages of those dying from a heroin overdose indicate that as SES increases, age tends to decrease. The oldest individual among SES 1 that suffered heroin overdose was 54 years, and for SES 6 was 34 years. These results suggest heroin overdose in higher SES groups is focused among the young, while lower SES groups experience overdose in a wider age range. Age for death from poisoning from other medications ranged between 14 and 88 consistently across SES groups, and reflects that children only rarely die from poisoning. This contrasts with the over-representation of young children among hospital admissions for poisoning (Ashby *et al.*, 2001; Routley *et al.*, 2001; Stathakis & Scott, 1999).

Hospital Admissions (n=72,313)

Falls were the leading cause of hospital admissions for all SES groups, representing one-third of admitted injuries for SES 1 to 5 and 40% of SES 6 (Table 6). Approximately one half of all falls were among persons aged 65 or older for all groups (minimum: SES 5=47.3%; maximum: SES 6=59.5%). The highest proportion of older falls in the home were among SES 2 (45.6%), while SES 6 had the lowest (41%). The highest proportion of falls in residential institutions was among SES 3 (17.8%) while SES 4 had the lowest (14.7%). Child falls were highest among SES 5 (20.2%) and lowest among SES 6 (13.8%), however falls from

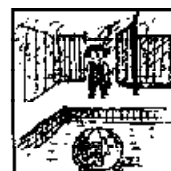
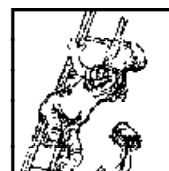
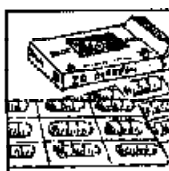


Table 7: Injury hospital admission rates per 100,000 of population by nature of main injury and SES groupings, Victoria (Source: VAED 1999)

Nature of Main Injury	SES 1 Rate	SES 2 Rate	SES 3 Rate	SES 4 Rate	SES 5 Rate	SES 6 Rate
Fracture	548.5	604.3	468.7	502.5	515.2	648.7
Open wound	312.2	266.8	206.6	230.7	217.2	239.4
Poisoning	191.3	200.8	136.0	134.0	126.6	110.2
Sprain/strain	81.5	92.2	73.3	79.8	77.8	92.4
Intracranial injury	87.8	110.0	80.9	67.3	60.3	76.1
Dislocations	44.9	53.5	46.7	44.3	50.2	62.9
Bruises/haematoma	58.7	63.9	44.5	45.9	38.1	50.4
Superficial injury	45.8	56.6	39.6	36.2	35.9	42.7
Burns	34.1	36.7	22.4	16.9	19.4	19.9
Nerves/spinal cord injury	29.1	23.1	18.4	19.5	24.2	24.2
Foreign body	23.8	25.5	20.5	19.3	18.8	19.0
Internal injury	22.0	19.7	13.9	16.4	14.7	14.7
Injury to blood vessels	10.0	4.9	4.8	5.4	5.6	3.9
Crushing injury	6.4	5.8	4.2	4.2	3.9	4.5

playground equipment, the most common fall related product, were least common in SES 2 (27.1%) and most common in SES 4 (32.7%).

Figure 4 indicates that the pattern for many of the major causes of hospital admission were similar across SES groups. Falls and transport injury were the most frequent causes of hospital admission, closely followed by 'hit, struck, or crush' injuries. Notably, other than falls, the highest rates for all discrete injury categories were among SES 1 and 2 (Table 6).

While the rates of transport injury, as a broad category, were similar across SES groups, examination of transport injury sub-categories revealed some variation. Between SES groups 2 to 6, the rates of hospital admission to drivers and passengers decreased with increasing SES group status. The hospital admission rate for SES 1 drivers (69.9 per 100,000) and passengers (32.6 per 100,000) was lower than all but SES groups 5 and 6, possibly reflecting lower car access among this SES group. Interestingly, rates of admitted

pedestrian injury were highest among both SES 1 and SES 6.

It is notable that the rate of assault decreased with increasing SES status. The rate of assault for SES 1 (96.5 per 100,000 population) was approximately twice that for SES 4 (47.8 per 100,000) and SES 5 (47.5 per 100,000), and almost three times that of SES 6 (35.5 per 100,000; Table 6).

SES 1 recorded the highest rates of open wounds, nerve or spinal cord injury, internal injury, injury to blood vessels and crushing injury. The rate of intracranial injury was highest among SES 2 (110.0 per 100,000), substantially higher than all other SES groups. SES 6 reported the highest rates of admission for fracture (648.7 per 100,000 population); sprains/strains (92.4 per 100,000) and dislocation (62.9 per 100,000; Table 7).

An analysis of variance was undertaken to assess whether there were differences between the SES groups over the length of stay in hospital.⁴ Once admitted to hospital, compared to persons from all

other SES groups, people from SES 6 had significantly longer hospital stays. None of the other SES groups differ significantly from each other.

Emergency Department

Presentations (n=186,906)⁵

There were 186,906 presentations that could be related to SES data from the VEMD for 1999. These cases represent approximately 80% of statewide public hospital ED presentations.

Across all SES groups injuries most frequently occurred in the home, though notably, as SES increased, home injury decreased in proportion, varying between 42% for SES 1 to 34.2% for SES 6. Similarly, injuries occurring in industrial or construction areas were observed to decrease with increasing SES status. Injuries in residential institutions (other than home) displayed the opposite trend and increased with increasing SES.

Work related injury was most apparent among SES 3 and 4 (11.2 and 10.3% respectively) compared to SES 6 which had the lowest work related injury figures (8.1%). The higher SES groups, 5 and 6, reported the highest proportions of sports related injury (8% each), compared to 6% each in SES 1 and 2.

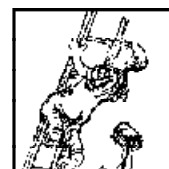
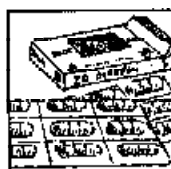
The highest proportion of assaults were among SES 1 (4.5%) compared to an average 3.2% for SES 2-6, with the lowest among SES 5 (2.9%). Levels of self-harm were also highest among SES 1 (3.0%) and lowest among SES 6 (1.9%).

Following presentation to an ED, 13.7% of injured persons were admitted to hospital as an inpatient for further treatment. The highest rate of admission was among SES 6 (15.4% admitted), with the lowest among SES 3 and 5 with 12.6% of each group subsequently admitted. A further 2.6% of both SES 5 and 6 were transferred from the hospital ED at which

4 There was a statistically significant difference for length of stay between the six groups

($F_{(5, 72207)}=14.93$, $p<0.001$). Subsequent post hoc analyses indicated that the mean score for SES 6 ($M=5.4$, $SD=12.39$) was significantly different ($p<0.05$) from all other SES groups.

5 While rates per 100,000 for injury cause by SES group were reported for deaths and hospitalisations, this is not available for ED presentation data. The VEMD, from which presentations are drawn, constitutes approximately 80% of all estimated presentations. However, consistency of representation is absent when examining subsets of injury by any variable. Consequently, estimating rates would introduce substantial bias into the analyses.



they attended to another hospital for admission, compared to 1.1% of SES 2 who were transferred for admission.

Discussion

These results demonstrate that injury decreases with rising SES. Lower SES is a clear risk factor for injury, and death from injury. SES 1 and 2 suffer proportionately more deaths, and SES 5 experiences proportionately fewer injury deaths than would be expected based on population proportion. Additionally, it is clear that SES 1 and 2 are over-represented among hospital admissions and ED presentations, while SES 4 and 6 are under-represented for ED presentations to public hospitals. Injury over-representation among lower SES groups is present at all severity levels, and continues until 75 years of age, where the trend reverses and people from SES 6 become over-represented.

Interestingly, and in line with Williams *et al.*'s suggestion (1997), variation between SES groups at ages 15 to 29 years is overwhelmed by the size of the injury problem. Adolescents and young adults in all SES categories were the cohorts most frequently affected by injury at all levels of severity. The present results are also similar to those reported by Williams *et al.* in that assaults were more common among low SES groups than high SES groups, while sporting injuries were more common among high SES groups than low SES groups. However, contrary to Williams *et al.* pedestrian injuries were common among the highest and the lowest SES groups. Research assessing the specific antecedent factors for both high and low SES groups would provide interesting and valuable information, likely to lead to novel injury prevention interventions, and is necessary in light of these findings.

Among lower SES individuals self-harm injuries (including suicide), assault injuries (including homicide), and poisoning (other than heroin), drowning,

and injuries from fires burns or scalds were prominent. Countermeasures are available for poisoning (Routley *et al.*, 2001; Stathakis & Scott, 1999), drowning (Stathakis & Scott, 1999), and burns and scalds (Stathakis & Scott, 1999; Routley & Ashby, 1997). However, more can yet be done. Work is required to prevent access by children to medications, as current child-resistant closures are both insufficiently widely used (Routley *et al.*, 2001) and often defeated by children (Stathakis & Scott, 1999). The antecedents of drowning are yet poorly understood – children still drown in pools where fencing regulations apply, and sometimes with functioning pool fences, in baths, farm dams, and at beaches. Anecdotal information suggests this may occur even when adults supervise children. Research into the antecedents of drowning is urgently required.

While risk of death, serious, and moderately serious injury is greater among lower SES groups, one of the most interesting results was the interaction between deaths, admissions and ED presentations across SES (Figure 2 & Table 2). Relative to presentations, injury deaths and hospital admissions were proportionally fewer in lower SES groups than in high SES groups. When injured, persons from high SES are more likely to be injured severely, or to die. When examined more closely, the discrepancy in injury among SES 6 occurs later in life, among those 75 or more years of age (Figure 3). Many of these injuries to older, higher SES individuals appear to be falls (Figure 4 & Tables 3, 4 & 6), underlining the fatal and serious nature of falls when suffered by older persons. In fact, fall related deaths were most prominent within SES 6, and the rate was nearly double that of SES 1. These results are further underscored by the finding that when admitted to hospital, persons from SES 6 remained significantly longer than persons from all other SES groups. Moreover, considerably more persons from SES 6

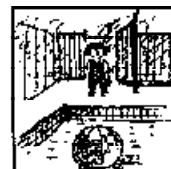
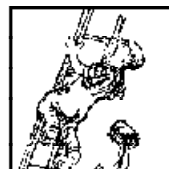
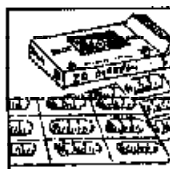
were admitted following presentation to hospital (15.4% of ED presentations) than from other SES groups.

This interpretation suggests that while minor injuries occur with similar frequency in all SES groups, individuals from the highest SES group (SES 6) tend to avoid more serious and fatal injuries until later in life, at which time they are vulnerable to falls. These falls are sufficiently serious that they are either fatal or require prolonged hospital admissions. Additional research is necessary to confirm these exploratory findings. However, these results underscore the urgency with which falls prevention among the elderly is required. Possible prevention strategies, suggested by Cassell (2001) and Cassell and Lee (2000), include the use of hip protectors, balance and strength training, and follow-up medical and occupational therapy. Given the treatment cost of falls, \$12.4 million dollars and 50,000 bed days for hip fractures alone (Stokes & Ozanne-Smith, 2001), it would seem reasonable that further research and evaluation of intervention programs be undertaken.

Transport injury, other than pedestrian, was most evident in middle ranked SES groups, with lower incidence in both high and low SES groups. Possible explanations include lower motor vehicle access among SES 1, and among higher SES groups age-related driving reduction, greater vehicle safety, improved education with enhanced awareness of safer driving behaviour, lower exposure to poorer road infrastructure, and increased public transport options. However, each of these needs to be evaluated, and research specifically addressing transport safety and SES needs to be undertaken.

While SES 1 and 6 experience low rates of transport injury, they experience high rates of heroin overdose, and serious pedestrian injury, resulting in admission. Increased rates of pedestrian injury may be a function of age and reduced driving in higher SES, and of reduced vehicle access in lower SES. This question also requires additional specific research to elucidate.

6 Though higher SES, or less disadvantage in the present context, does not translate to higher wealth, increased wealth is one function that forms the basis for assessment of SES.



The ages of SES 6 individuals experiencing heroin overdose compared to the higher mean age and greater range displayed in SES 1 suggest the motivation for consuming this drug differs across these two SES groups. Specific research is required to elucidate these, but may include greater wealth⁶ and casual use among higher SES individuals, and greater exposure and prolonged use among lower SES individuals. Again, these are interesting questions requiring specific research.

The SES results suggest that selected injury prevention activities need to be focused toward lower SES groups. However, it has been reported that lower SES individuals are less likely to accept that injuries may be prevented (Girasek, 2001). This is not surprising, given the increased exposure to assault and homicide, and high rates of self-harm and suicide among lower SES groups. While, Girasek's results indicate that strategies directed to reduce injury need to convey the message that it is possible to prevent injury, greater focus needs to be given toward environmental, design, and organisational changes. These passive interventions may be the most immediate and effective measures to prevent injuries among these groups.

Passive measures to be directed at high-risk SES groups might include:

- Enhanced design for safety in public housing and work places
- Free or subsidized distribution of hip protectors for the frail elderly
- Safer packaging of poisons with attention to a wider use of child resistant packaging, and reduced availability of commonly accessed poisons.

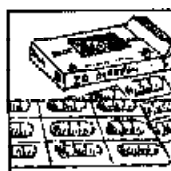
Injury prevention activities would be improved by inclusion of public information campaigns to broaden their impact. These should highlight the key messages of the injury prevention

strategies, along with implementation of countermeasures that are then evaluated. Examples include:

- Victorian Government: "Play it Safe by Water"
<http://www.watersafety.vic.gov.au>
- Country Fire Authority "Get down low and go, go, go"
<http://www.cfa.vic.gov.au>

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Reducing Health Inequalities: Challenges to promoting health and preventing injury

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There is a systematic pattern of social inequalities in all countries, with a heavier burden of illness and exposure to health hazards in the more socially disadvantaged groups in society (Feachem, 2000; Hupalo & Herden, 1999). Australia is no exception.

Social inequalities exist in the health of Australians across a range of health status indicators including mortality (all cause and specific), morbidity, life and health expectancy and self perceived health. Inequalities also exist in immediate determinants of health including health risk factors; health knowledge, attitudes and behaviours; and access to health and preventative services. These inequalities exist across a range of social and cultural measures including education level, occupation, income, employment status, rurality, ethnicity, Aboriginality, gender and area based measures of socio-economic disadvantage (Australian Institute of Health and Welfare, 2000; Glover, Harris, & Tennant, 1999; Mathers, 1994; Public Health and Development Division, 1999; Turrell, Oldenburg, McGufford, & Dent, 1999).

The association between health and socioeconomic status, whilst complex, is strong and enduring. Reducing health inequalities presents a range of old and new debates to those involved in promoting the health of individuals and populations. As this edition of *Hazard* demonstrates lower socioeconomic status in Victoria is a clear risk factor for injury and greater likelihood of death from injury. Other groups that have emerged as having higher injury related morbidity and mortality in analyses of injury data

are rural people and indigenous Australians (Ashby, Stathakis, & Day, 2001; Australian Institute of Health and Welfare, 2000; Public Health and Development Division, 1999).

In preventing the widening of disparities in the burden of injury related ill-health, injury prevention initiatives face similar challenges to other health promotion initiatives, including programs aiming to prevent smoking, increase physical activity and improve mental health. These challenges relate not only to the methods of our work such as the measures used to define socioeconomic status, but also to our fundamental understandings of the purpose of public health/health promotion, including issues of human rights and social justice.

The following five points explore some of these generic challenges in reducing health inequalities through health promotion and, in particular, injury prevention.

1. Promoting the health of populations requires fair equality of opportunity

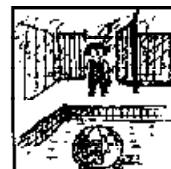
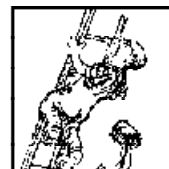
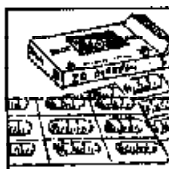
While some differences in health are unavoidable (they have genetic and biological underpinnings), many are not, and may also be unjust. Equity in health is concerned with the fairness of the distribution of resources for health, which may or may not result in equal shares depending on the resources people already have. Hence, a core issue for those concerned with promoting health is progress toward achieving the ideal of providing a fair opportunity for all people to enjoy health (and avoid injury) to their fullest potential (Whitehead, 1990).

While the causal pathways that influence health inequalities are only partially understood there is enough evidence for health planners to act in some areas. Creating equal opportunity for health necessitates consideration of not only individual qualities and access to preventive and curative services but also attention to the distribution of the broader social and environmental factors (such as safe workplaces, neighbourhoods, etc) that influence health outcomes. The challenge for health promotion/injury prevention is ensuring that interventions are effective for all and do not exacerbate health inequalities.

2. Using population wide and targeted approaches

Public health approaches to disease prevention and injury prevention have often been premised upon a utilitarianism, namely, 'greatest good for the greatest number' which can often obscure or worsen differentials in health between groups. Rose postulated that a 'population strategy is necessary whenever risk is widely diffused through the whole population' (Rose, 1992). While such an approach aims to lessen risk across the population it does not necessarily reduce health inequalities and may even increase health differentials if higher social groups obtain greater benefit from any intervention (Whitehead, 1995).

Targeting interventions can be defensible, both ethically and empirically, where definable groups are clearly at increased risk. This is important for health inequalities that are not distributed along a continuum. It is also important to acknowledge that the effectiveness of



promotion and preventive strategies are likely to improve when the problems of the most at risk (disadvantaged) are taken into account. The two approaches are not necessarily mutually exclusive; improvements in population health may also occur through improvements in the health of the most disadvantaged groups, and vice versa.

3. Working with people and with places

Health inequalities exist across geographical areas with different socioeconomic status, as is evident in the differences in injury related deaths, emergency presentations and hospital admissions in the article by Stokes, Ashby and Clapperton (2002). State level burden of disease studies also demonstrate significant differences in years of life lost from injury across areas with different socioeconomic status, as well as between metropolitan, regional centres and rural areas (Public Health and Development Division, 1999).

These spatial inequalities are important because they support the existence of area level influences on health. While there is evidence that spatial inequalities in health are largely *compositional* (i.e. the result of similar types of people with similar types of health behaviours, health risks and health status living in the one place), there is new research that suggests it may also be *contextual* (i.e. due to the effect of the areas in which people live on their health). Contextual or area level influences may include the physical environment, economic factors and characteristics of the social fabric and may exist from the neighbourhood up to the societal level.

The role of area level or contextual influences is significant for health promotion and injury prevention for two main reasons. Firstly because they suggest that social inequality may effect everyone's health, not only those who are disadvantaged. This provides a crucial lever to advocate for policy or systems change to address social and

health inequalities, especially in contentious decisions around redistribution of resources. Secondly because they support the potential significance of environmental interventions to reduce injury. Health promotion and injury prevention initiatives need to address the challenge of changing both people and places if they are to reduce health inequalities.

4. Addressing psychosocial factors and material disadvantage influences on injury rates

Health inequalities result from cumulative differential exposure to adverse material conditions and psychosocial risks across the life span. There is much interest and debate on the relative importance of the association between the health of an individual and their psychosocial environment and material conditions. Individual behaviours clearly contribute to health as the data in this *Hazard* shows around high SES and some high risk taking behaviours (see Stokes *et al.*, Figure 2) but the contribution of material circumstances is significant. Interventions that aim to improve psychosocial environments (reduce psychological stresses) are most likely to lead to better health or injury reduction when accompanied with improvements in the material environment.

5. Life course issues: critical periods for injury prevention

There are critical transition periods in life when people may be very vulnerable to being pushed onto (or selecting) a more or less advantaged path that health promotion and injury prevention must account for even though health inequalities result from cumulative differential exposure across the life span. These periods include early childhood, the move from primary to secondary education, the transition to the workplace, leaving home, starting a family and retirement (Wilkinson & Marmot, 1998).

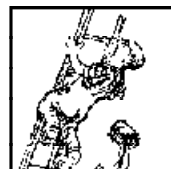
Childhood is a particularly crucial time because of the influence of early life on subsequent mental and physical health

and development. Interventions arguably have the best chance of reducing future inequalities in health when they relate to present and future parents, especially mothers and children (Acheson, 1998).

A challenge for those interested in health inequalities and injury prevention is to identify critical periods of increased risk for low socioeconomic groups and design interventions that increase the likelihood these groups will negotiate these transitions injury free. Longitudinal research on the relationship between injury, social mobility, socioeconomic status and health may increase understandings of how social disadvantage is related to injury exposures at different points of the life course and how these exposures can be prevented or mitigated.

As suggested by Stokes *et al.* researching and designing interventions to address upstream determinants of injuries with these groups, such as clusters of common risk and protective factors, may be an important challenge in reducing inequalities in the burden of injury. For example early intervention programs such as parent education and home visitation for mothers at risk have demonstrated short term outcomes such as 40% decreased infant admission to physician for injuries and ingestion, and long term outcomes such as reduced rates of detention and arrest (Hosman, 2001). Designing early intervention programs to reduce high risk and violent behaviour in low socioeconomic adolescents may be an important challenge in reducing the burden of injury in this group relating to transport related injuries, falls, drownings, poisonings and intentional injuries.

Stokes *et al.* provide an important picture of the gradient of injury across socioeconomic status in Victoria. The challenge ahead is developing evidence-based assessment of interventions that impact on these effects. A challenge that they and their colleagues are well placed to take on.



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VISAR on the Web


 New on the VISAR web page:

 Short report:

Update on dog bite in Victoria

 Message from the Director

 Hazard 49

 Addition of SES data

<http://www.general.monash.edu.au/muarc/visar/index.htm>

Appendix

When the geographical breakdown of injury deaths were examined it was apparent that residents of rural Victoria were strongly represented in SES 2 and 3, representing more than half of the injured persons in each of these SES groups (Tables A1 & A2). In contrast, SES groups at each extreme have very low rural representation SES 1 (4.9%) and SES 6 (0%). A similar pattern is observed when examining hospital admissions data. Rural Victoria were most strongly represented among SES 2 with 56.6 %, and SES 3 with 48.1% compared to 8.5% of SES 5 and 2.5% of SES 6 (Figures A1 & A2). VEMD data is not represented in geographic tables, there are few hospitals servicing remote and rural centres that contribute to the VEMD.

Errata

Hazard, No. 48, September 2001, p12 References:

Sherker, S. & Cassell, E. (2001) Personal protective equipment use by in-line skaters in Victoria. *ANJPH*; 25: 179-184.
(also available at <http://www.general.monash.edu.au/muarc/inline/inline.htm>)

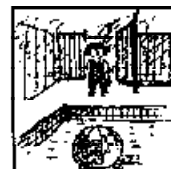
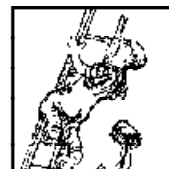
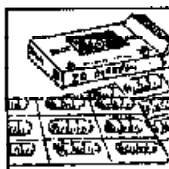
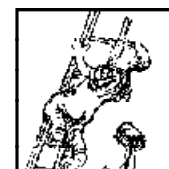
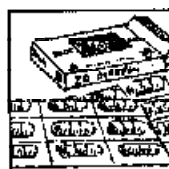
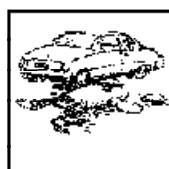


Table A1: SES by broad geographic grouping for injury deaths, Victoria (Source: ABS 1998)

		Metropolitan	Rural Centres	Rural & remote	Total
SES 1	Count	221	12	14	247
	% of SES	89.5%	4.9%	5.7%	100.0%
	% of Region	19.6%	5.8%	5.1%	15.4%
SES 2	Count	129	70	68	267
	% of SES	48.3%	26.2%	25.9%	100.0%
	% of Region	11.4%	34.0%	24.9%	16.6%
SES 3	Count	165	98	84	347
	% of SES	47.6%	28.2%	24.2%	100.0%
	% of Region	14.6%	47.6%	30.8%	21.6%
SES 4	Count	239	18	84	341
	% of SES	70.1%	5.3%	24.6%	100.0%
	% of Region	21.2%	8.7%	30.8%	21.2%
SES 5	Count	194	8	19	221
	% of SES	87.8%	3.6%	8.6%	100.0%
	% of Region	17.2%	3.9%	7.0%	13.8%
SES 6	Count	179	0	4	183
	% of SES	97.8%	0.0%	2.2%	100.0%
	% of Region	15.9%	0.0%	1.3%	11.4%
TOTAL	Count	1,127	206	273	1,606
	% of SES	70.2%	12.8%	17.0%	100.0%
	% of Region	100.0%	100.0%	100.0%	100.0%

Table A2: SES by broad geographic grouping for admissions, Victoria (Source: VAED 1999)

		Metropolitan	Rural Centres	Rural & remote	Total
SES 1	Count	2,381	979	735	10,913
	% of SES	86.0%	7.3%	6.7%	100.0%
	% of Region	17.9%	9.5%	6.5%	15.1%
SES 2	Count	4,642	3,267	2,797	10,706
	% of SES	43.4%	30.5%	26.1%	100.0%
	% of Region	8.8%	38.9%	24.6%	14.8%
SES 3	Count	7,662	3,488	3,603	14,753
	% of SES	51.9%	23.6%	24.4%	100.0%
	% of Region	14.6%	41.5%	31.6%	30.4%
SES 4	Count	11,107	583	3,273	14,963
	% of SES	74.2%	3.9%	21.9%	100.0%
	% of Region	21.1%	6.9%	28.7%	30.7%
SES 5	Count	10,995	268	752	12,015
	% of SES	91.5%	2.2%	6.3%	100.0%
	% of Region	20.9%	3.2%	6.6%	16.6%
SES 6	Count	8,736	0	227	8,963
	% of SES	97.5%	0.0%	2.5%	100.0%
	% of Region	16.6%	0.0%	2.0%	12.4%
TOTAL	Count	52,523	8,403	11,387	72,313
	% of SES	72.6%	11.6%	15.7%	100.0%
	% of Region	100.0%	100.0%	100.0%	100.0%



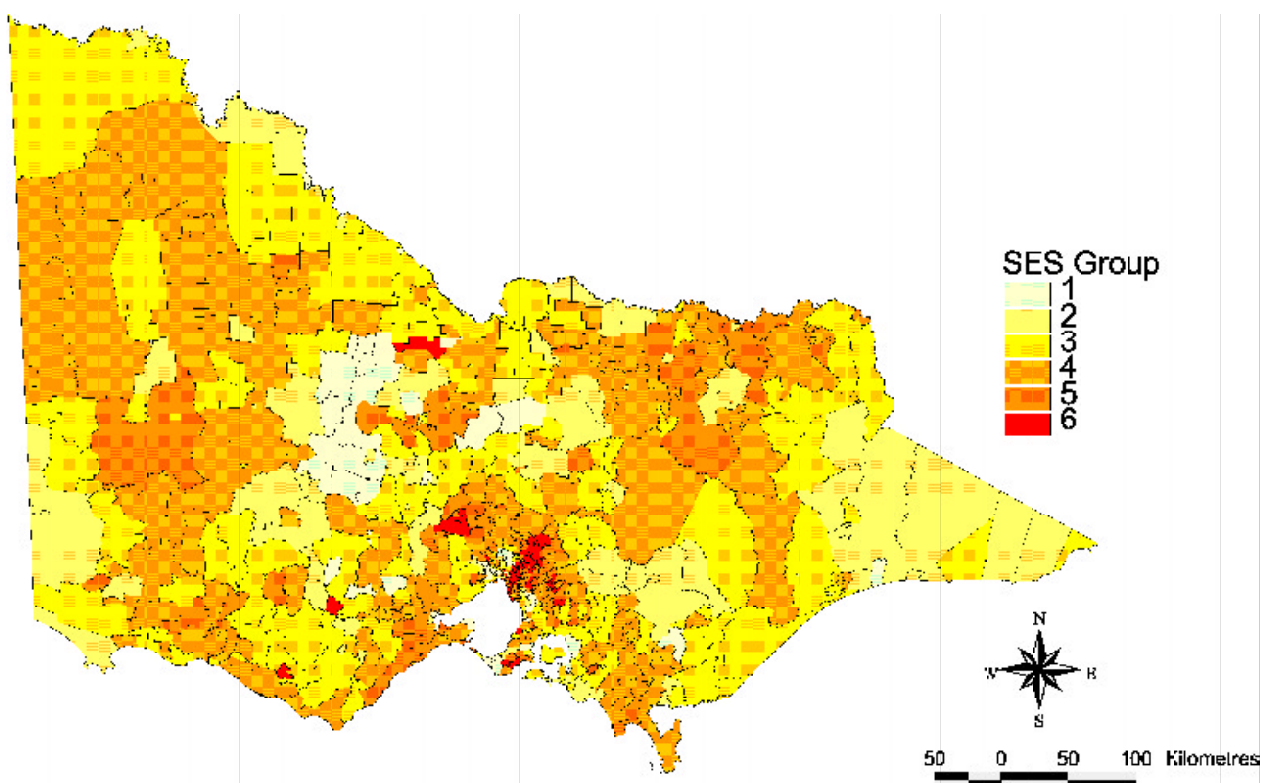


Figure A1: Victoria by postcode showing SES classifications

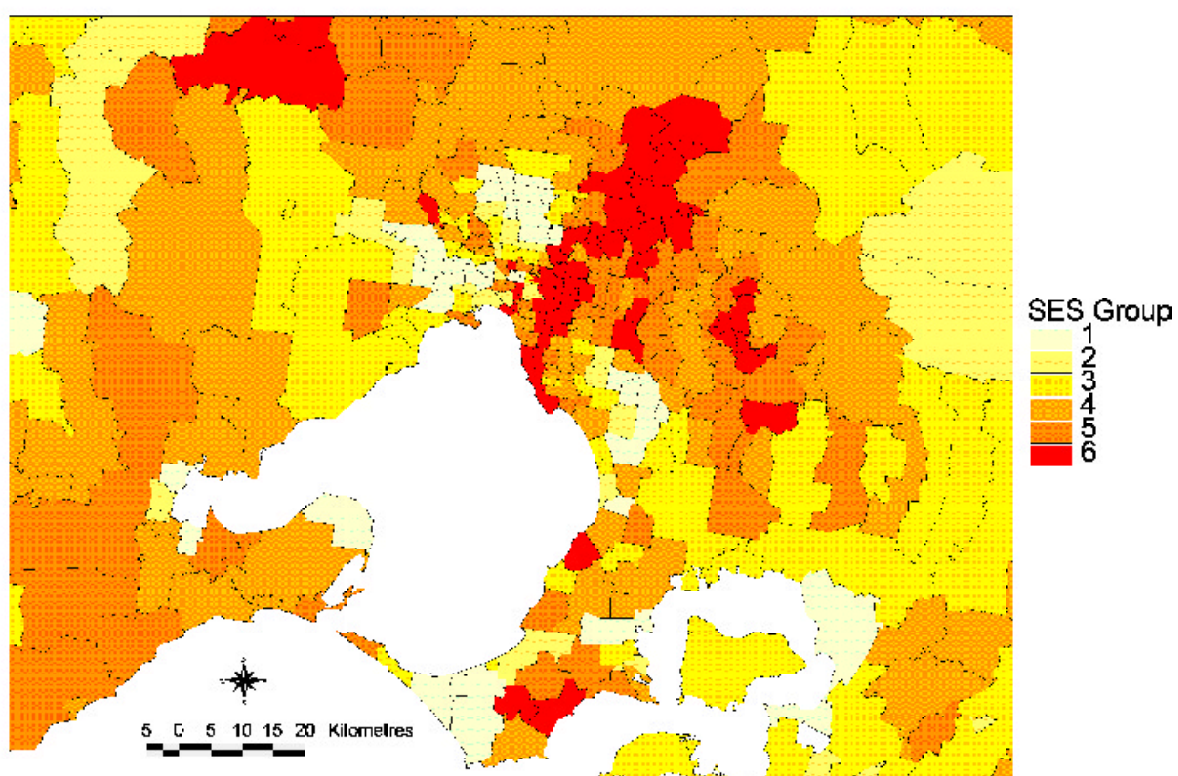
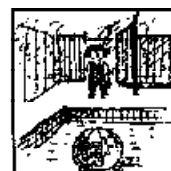
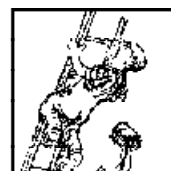
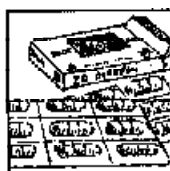
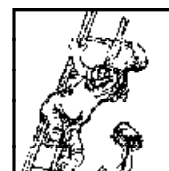
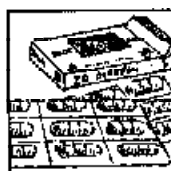


Figure A2: Area surrounding Melbourne Metropolitan area by postcode showing SES classifications



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General Acknowledgements

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<i>From October 1995</i>	<i>From November 1995</i>
Austin & Repatriation Medical Centre	Dandenong Hospital
Ballarat Base Hospital	
The Bendigo Hospital Campus	<i>From December 1995</i>
Box Hill Hospital	Royal Victorian Eye & Ear Hospital
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Access to coronial data and links with the development of the Coronial's Services statistical database are valued by VISAR.

National Injury Surveillance Unit

The advice & technical back-up provided by NISU is of fundamental importance to VISAR.

How to Access

VISAR Data:

VISAR collects and tabulates information on injury problems in order to lead to the development of prevention strategies and their implementation. VISAR analyses are publicly available for teaching, research and prevention purposes. Requests for information should be directed to the VISAR Co-ordinator or the Director by contacting them at the VISAR office.

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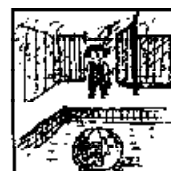
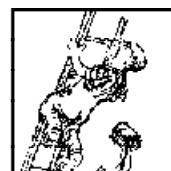
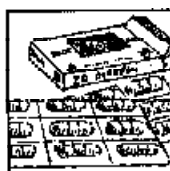
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