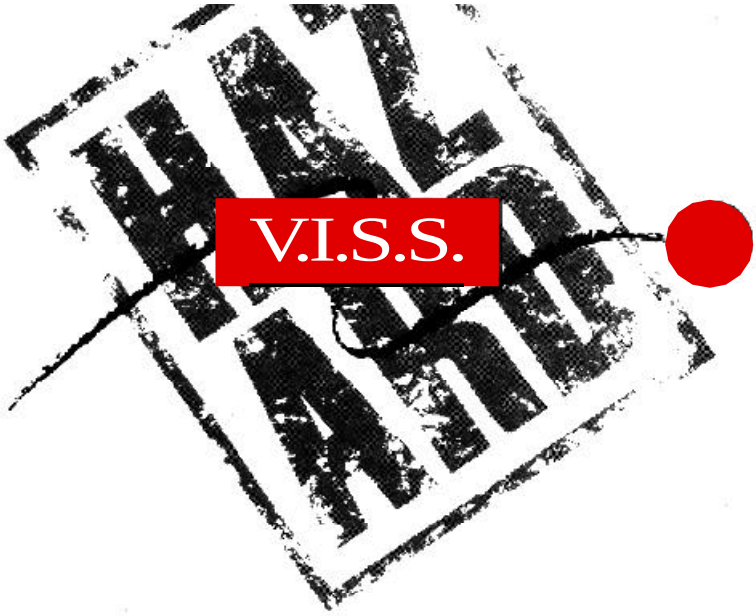
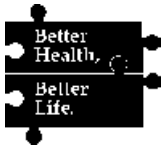


Hazard
(Special Edition)
March 1992

Victorian Injury
Surveillance System

Monash University
Accident Research Centre

Royal Children's Hospital
Parkville, Victoria
Australia 3052



Project Funded by
National Better
Health Program

Injury Surveillance in the Latrobe Valley

Latrobe Regional Hospital

This report provides an overview of injuries which presented to the Latrobe Regional Hospital In the period July to December 1991. A brief summary can be found on page 8. Additional detail about many specific injury problems can be obtained by further analyses of the data. The means of accessing VISS data for research or prevention are described on page 7.

Latrobe Valley
Better Health Project

Injury prevention will be a major component of this project which will commence in April 1992.

The Project will be funded by the National Better Health Program and the Victorian Health Promotion Foundation.

Marga Penny
Chris Hawkins
Joan Ozanne-Smith

Introduction

The Victorian injury Surveillance System (VISS) records details about injuries from patients and their doctors. When patients present with an injury, they are asked to fill out an 'injury and poisons form' and the information supplied is included in the VISS database. The aim of this data collection is to reduce the number and severity of injuries by gaining an awareness of the causes of injury. This will be achieved by close collaboration with the Latrobe Valley Better Health Project and the wider community.

Data collection began at the Latrobe Regional Hospital, Traralgon and Moe campuses, on July 1, 1991. This commencement date was timed to coincide with the amalgamation of these two hospitals. The Latrobe Valley unit of VISS is the first Victorian provincial town/rural surveillance unit, and collects data from injury victims of all ages.

This publication describes the catchment area and its population profile. It focuses on injuries to all ages, the surprisingly high proportion of eye injuries (12% of total Injuries), and the breakdown of occupational injuries. In addition three of the hazards that have been targeted by the local Better Health Program for injury control have been examined in detail. These are sport, playgrounds and safety in the home.

Background on the Valley

Demographics

As shown in Figure 1, the sub-region of the Latrobe Valley serviced by Traralgon and Moe Hospitals is made up of the cities of Traralgon, Morwell and Moe, and the shires of Mirboo, Traralgon and Moe. The population of this sub-region in 1991 was estimated to be 73,692 (ABS 1990). In addition, the majority of residents of Narracan Shire (est. population in 1991 11,546) requiring admission to hospital (67%) also present to either Moe or Traralgon hospitals.

The age structure of the Latrobe Region differs from that of Victoria in two ways. It has a higher proportion in the 0 to 14 and 25 to 39 year age groups, indicating a population profile dominated by young families. There is also a higher proportion of males in the 25 to 44 year age group, reflecting the employment patterns found in the male dominated construction and energy industries (GRIB & LRC: p 2: 1991).

Types of industry & agriculture

Table 1 shows the industry grouping in the Latrobe Valley for employed persons. (ABS 1986).

The diversity of industries in the Latrobe Valley is reflected in the wide range of occupational Injuries (discussed below p. 4).

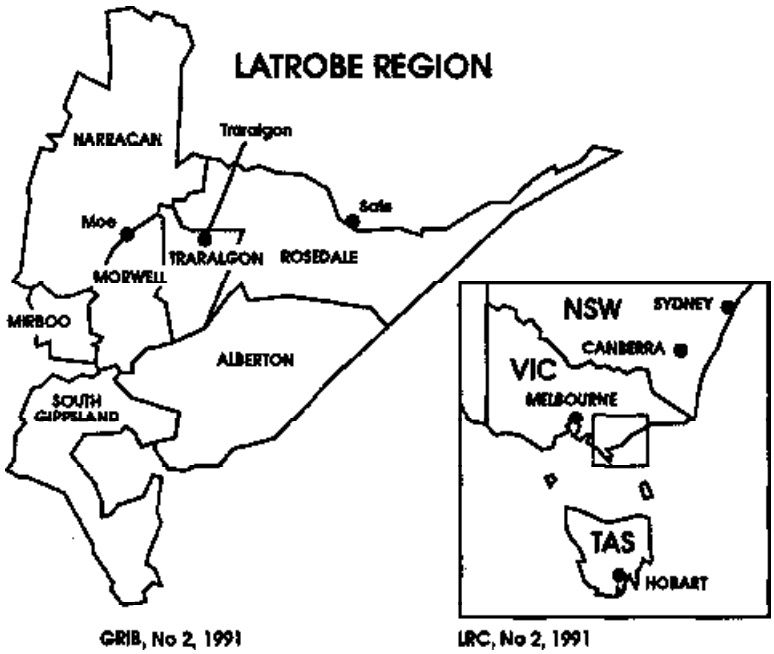
How representative is the data?

For the data collected to be of most use. It must be representative of the injury and poisoning Incidence of the region. The inclusion rate of all injuries and poisonings presenting to hospital in the Latrobe Valley is 90%, and according to the Health Department Victoria, the Latrobe Regional Hospital also services 88% of the residents who require hospital admission (GRIB & LRC p8, 1991). Injury data from the Latrobe Valley is therefore likely to be representative of the injury pattern in the area. As the hospital receives admissions of all ages, there should be no age bias in the data, making the Latrobe Regional Hospital unit the first comprehensive all-age injury data collection for Victorian emergency department presentations.

Some limitations may relate to a small minority of serious cases which will be retrieved by ambulance or helicopter and taken to major Melbourne referral hospitals therefore by-passing VISS. Also, some injuries to local residents occur when they are away from their local area.

This data only represents injury patterns over a six month period. Any seasonal variations need to be taken into account when drawing conclusions or making comparisons and this will be done when a full 12 months worth of data is available.

Map **Figure 1**



The Latrobe Region is situated in the southeast corner of Victoria and covers 9,318 km2

Industry groupings **Table 1**

	N	%
Electricity, gas	8776	26
Community services	4898	14
Trade (wholesale/retail)	4890	14
Manufacturing	3426	10
Construction	2887	8
Finance	1905	6
Agriculture, forestry	1852	5
Recreation, personal services	1307	4
Public administration	1120	3
Transport	743	2
Mining	576	2
Communication	417	1
Not elsewhere classified	342	1
Not specified	840	2
Total	**33979**	**100**

Source: Australian Bureau of Statistics. 1986 Census.
(Cities of Morwell, Traralgon and Moe, and Shires of Traralgon, Mirboo and Narracan.)

Analysis of injury occurrence

Age and Sex Pattern

There were a total of 4,515 injury presentations in the first six months of VISS Latrobe Valley injury data collection, comprising 1,332 children

(aged 0 to 14 years) and 3,183 adults (15 years or older). Males are over-represented in each age group until the age of 60 years and older. The sex ratio for all injuries is 2.1 to 1.0 (male:female). In the 20 to 29 year age group the ratio is at its highest of 3.3 to 1.0. This distribution is shown in Figure 2. The age and sex distribution is similar to that found by the Queensland injury Surveillance and Prevention Project for their urban population.

Location

Over one third of the incidents (41%) occurred in the home of the injured person or in another home. In particular, they occurred in the yard or garage outside or in the indoor living or sleeping area. "Areas of production" include mine or quarry (1.6% of all injury cases), "factory/warehouse" (1.9%), "farm/ primary production" (3%), "construction site" (3%), and "other industrial" (8%). This latter coding category is used to describe workshops in both the private and public sector. Outdoor recreation includes both water-based and land-based recreation areas such as lakes or parks and public playgrounds. Areas of commerce includes shops, pubs and amusement areas. "School" includes school ovals and playgrounds.

Context

In reference to Figure 3, "maintenance" Includes many farm-related activities such as chopping wood, and tending animals and other livestock (e.g. feeding, milking, mustering and so on).

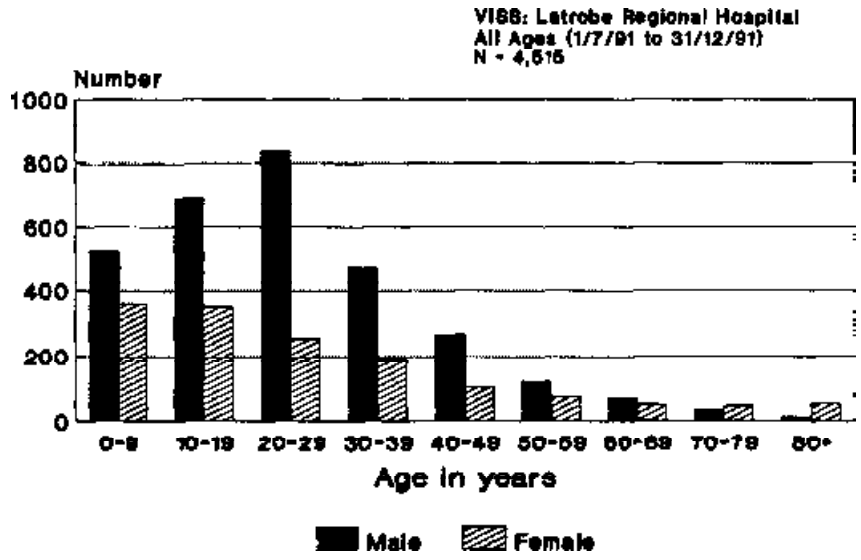
Intent

There were three hundred and seventeen injuries (8%) considered to have been caused intentionally. Assaults accounted for 201 presentations. 116 were possibly self-inflicted and the intent was unknown in 34 cases. Some of the people involved in fights were initially engaged in other activities (such as playing sport or dancing at a club) and were therefore coded accordingly in the "context" category. This explains the apparent discrepancy between the percentages for intentional injuries presented in the above two sections (context and intent).

Severity

A total of 394 persons (9% of injury presentations) were admitted to hospital, or were transferred to a hospital elsewhere. This is lower than the all-

Age and Sex — Figure 2

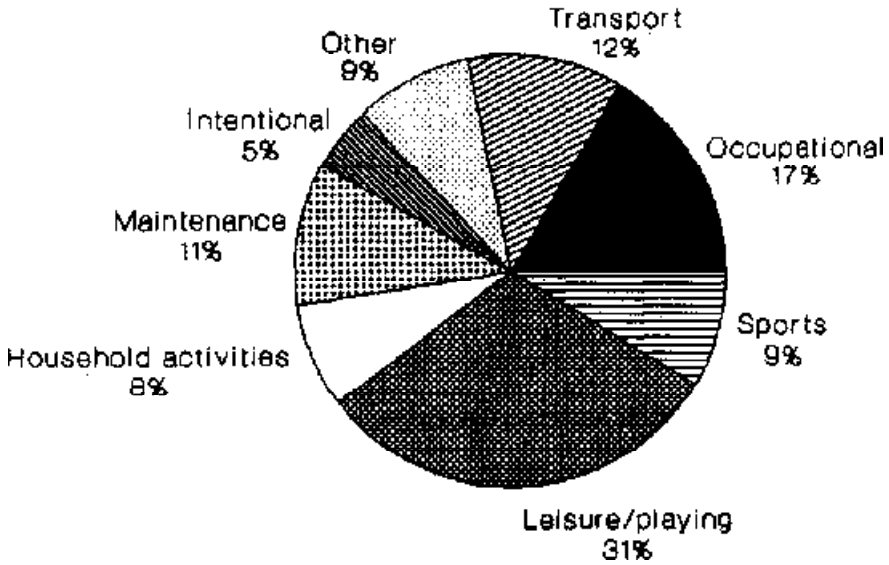


Location — Table 2

	N	%
Own home	1532	34
Areas used by transport	664	14
Areas of production	573	13
Sports areas	400	9
Outdoor recreation (including playground)	329	7
Other home	318	7
School	207	5
Areas of commerce	195	4
Other residential	115	3
Public institutions	37	1
Unknown /NEC	135	3
Total	**4505**	**100**

VISS: Latrobe Regional Hospital (Traralgon and Moe). All ages (1/7/91 to 31/12/91)

Context — Figure 3



VISS: Latrobe Regional Hospital. All ages (1/7/91 to 31/12/91). N = 4,515

ages admission rate in Queensland of 12% for the same 6 month period (QISPP data. 1991).

The admission rate within the Latrobe Valley is higher for infants (under 1 year old) and for the elderly, with the highest being 39% for persons over 80 years old.

Road trauma and intentional injuries were more severe (with relatively high admission rates of 17% and 21 % respectively), while occupational injuries were less severe (with a lower admission rate of 4%).

Breakdown factors:

These are the objects or activities associated with the person being injured. They are grouped in order of frequency in Table 3.

The most common sporting and recreation factors were football (67 cases) and basketball (47 cases). Power grinders (90) and electric welding equipment (51) were the most common workshop tools. Cars accounted for 205 of the 394 vehicles and motor bikes for 73. Stairs (76) and the floor (41) were the most common structures involved in precipitating an injury event.

Occupational injuries

Seventeen percent of injury incidents (n=761) occurred while the injured person was at work. Although the data are not adjusted for seasonal variations, two sectors appear to be overrepresented for injuries. The manufacturing sector makes up 10% of the workforce yet it has the highest proportion of injuries (29%) and construction workers. who comprise 8% of the workforce account for 15% of occupational injuries. (Tables 4 and 5).

Breakdown Factors — Table 3

	N	%
Sport & recreation (including bicycles)	604	21
Vehicles	394	13
Structures	346	12
Workshop tools	200	9
Environmental features	218	8
Kitchenware & appliances	173	6
Furniture	149	5
Garden equipment	132	5
Animals & Insects	116	4
Miscellaneous (Foreign bodies)	87	3
Industrial plant/equipment	80	3
Food & drink	55	2
Toys and nursery equipment	52	2
Packaging materials	42	1
Metal parts	37	1
Other	156	5
Total	**2901**	**100**

Note: Up to two factors can be recorded per case. Persons accounted for an additional 2145 factors. 'Other' includes general appliances, space heating and cooling apparatus, laundry, household appliances, entertainment equipment, personal use items, medical equipment.
VISS: Latrobe Regional Hospital. All ages. (1/7/91 to 31/12/91)

Industrial groupings — Table 4

	N	%
Manufacturing	218	29
Service utilities (gas & electricity)	164	22
Construction	115	15
Community services, health	102	13
Agriculture	44	6
Transport	50	7
Mining & minerals	19	2
Other	49	6
Total	**761**	**100**

VISS: Latrobe Regional Hospital. All Ages (1/7/91 to 31/12/91)

Occupation — Table 5

	N	%
Tradespersons	306	40
Plant & machine (operators/drivers)	148	20
Labourers, related workers	122	16
Professional/service	85	11
Managers, admin.	71	10
Clerks	9	1
Other	20	2
Total	**761**	**100**

VISS: Latrobe Regional Hospital. All ages. (1/7/91 to 31/12/91)

Eye injuries

During the six month data collection period there were 551 people who sustained an eye injury, or 12% of all presentations. This seems quite high compared with the proportion in Queensland of 9%. Most of these (88%) were older teenagers and adults (aged 15 years or older). A relatively high proportion (19%) did not know when the injury occurred. This is not surprising as the onset of symptoms of many eye injuries caused by the presence of foreign bodies, irritants or corneal abrasions is often gradual. The nature of eye injuries is shown in Table 6.

Occupational

Over a third of the eye injury Incidents (38%) occurred on the job, mostly in the construction (62 cases), service utilities (56) and manufacturing (47) industries. The occupations most often affected were tradespersons (99), labourers (43) and the drivers or operators of plant or machinery (47). The most common types of equipment responsible for eye injuries on the job were grinders. buffers or polishers (21 cases) and hammers, sledges and mallets (10).

Safety glasses were reported to have been worn in only 129 cases (23%). This relatively low figure should not necessarily cause alarm as it may reflect the fact that eye protection prevents many eye injuries. Surveys of the rate of eye protection use would be needed to verify this. It does however raise the question of the adequacy of the eye protection used by those injured while wearing it.

Common foreign bodies were metal particles (either hot or cold), wood, sawdust, grit, dust and chemicals.

Non-occupational eye injuries

Those people who sustained eye injuries while not on the job were engaged in activities, as shown in Table 7.

Around half of the incidents resulting in eye injury in non-occupational settings occurred at home, and the majority of these (70%) happened in the garden, garage or yard. Thirty-five people were victims of assault (10% of all eye injuries). A much lower proportion of people in the non-work category reported the use of a safety device. Only 46 (13%) stated that they were wearing safety glasses.

Nature or eye injury — Table 6

	N	%
Foreign body	274	48
Abrasions	72	12
Inflammation/pain	69	12
Cuts & lacerations	53	9
Burn	33	6
Haematoma	33	6
Penetrating wound	11	2
Other	28	5
Total	**573**	**100**

Up to three injuries be recorded per injury case.
VISS: Latrobe Regional Hospital. All ages. (1/7/91 to 31/12/91).

Context (non-occupational eye injuries) — Table 7

	N	%
Maintenance	139	41
Leisure/playing	75	22
Transport	34	10
Sports	17	5
Household activities (sleeping. washing etc.)	16	5
School (excl. sport)	4	1
Fight	19	6
Other	37	11
Total	**341**	**100**

VISS: Latrobe Regional Hospital. All ages. (1/7/91 to 31/12/91)

Comment

There appears to be a strong need for an intervention program aimed at reducing the number and severity of eye injuries in the Latrobe Region. In particular, people engaged in high-risk activities such as grinding need to use appropriate eye protection. Glasses might not be adequate. The program should be aimed at employers, workers and home handy-persons. Such a program would be relatively inexpensive and any improvements could be monitored by VISS.

Although only six months of data have been analysed. It appears that some injuries are sustained by people who have no direct involvement in the activity which places them at risk. For this reason it is strongly suggested that bystanders need to protect themselves from eye injury. In particular supervisors need to set an example to colleagues, whilst at the same time protecting themselves. One possible intervention could be that in the work place, and even at home, a line could be painted on the ground to define a 'danger zone' beyond which eye protection should be worn.

Injuries to children

Children (under 15 years) accounted for just under 30% of presentations (1332 cases), and a similar proportion of cases admitted and transferred. This is similar to the pattern in Queensland (QISPP 1991).

Injuries occurred in homes in almost half of the cases, and the remainder were mostly in areas of transportation (12%), education (11%) and sports (6%). The majority of injuries (67%) took place in the context of playing, with other common contexts being transportation and sports.

Cuts and lacerations were the most common type of injury sustained (30%). This is higher than found for children at other VISS hospitals (21%)*. Fractures were also common, accounting for 13% of injuries. Bruises comprised 10% of injuries, and sprains and strains (many to the wrist, ankle and elbow) also made up 10% of injury cases.

* VISS hospitals included in this comparison are: Royal Children's Hospital, Western Hospital (Footscray and Sunshine), Preston and Northcote Community Hospital.

The body pats most often injured were the head which accounted for 36% of all injuries including dental injuries and concussion) and the upper extremities (particularly the hands) which encompassed 32% of injuries. The lower extremities were injured in 19% of cases, with many injuries to ankles and feet. Adults had more injuries to the extremities and less to the head than children.

The most common factors associated with injuries are shown in Table 8.

Priority areas

There are clearly a number of areas to be addressed in terms of injury reduction in the Latrobe Valley. Sports, playgrounds and home safety are three of the four areas targeted by the Latrobe Valley Better Health Program. VISS data can be used to identify additional key areas for intervention and injury control.

Sports injuries

Sports injuries to children

Seven percent of children's injuries (97 cases) occurred during sport. One third of the sports related injuries sustained by children occurred on Saturdays, and the remainder were spread fairly evenly throughout the week. Sixty-five percent of the injuries took place on a sports arena, oval or court and 18% in a school playground. More than half the injured children received significant treatment (that is after emergency treatment. they required follow up care by a local doctor or an outpatient department) and 32% minor treatment.

Strains and sprains accounted for 33% of injuries (a large portion of these were to wrists, fingers and ankles), fractures for 17%, bruising for 16%, cuts and lacerations for 14%, and inflammation for 12%. The upper extremities were the body part most often injured (47%), the head (in particular the face) contributed to 21% of injuries, and the lower extremities 24%, with ankles being injured in over half of these.

Football and basketball were contributing factors in 15 and 16 injuries respectively, and cricket accounted for a further six sports injuries and soccer another five. Without data as to the proportion of children playing these games. It is not possible to make comparisons of rates of injuries associated with them.

Sports injuries in Adults

Ten percent of the adult injuries (324 cases) presented to the hospital were sport-related. Most occurred on weekends.

Strains and sprains accounted for 29% of injuries, with the ankle being the body part most often strained or sprained. The incidence of such injuries may be reduced if careful attention is paid to adequate warming up. Seventeen percent of injuries were fractures, and 7% were dislocations or subluxations, mostly of fingers. The fractures tended to be admitted more often than other types of injuries (admission rate for fractures was 15%). Lower extremities were the body part most often injured (43%), with ankle injuries being prominent in this category. Injuries were to the upper extremities in 31% of injuries (often fingers were injured), and the head accounted for 26% of injuries.

The main sports were football and basketball (65 and 46 cases respectively). Other sports during which injuries were sustained were cricket (21 cases), netball (19 cases) and volleyball (9 cases). Impact between the injured person and another player caused almost a quarter of the adult sports injuries.

Playground and Parks

Eight percent (370) of the injury incidents occurred in playgrounds or parks. Of these two thirds of the injury victims were male and 58% were sustained by children (under 15 years). The injuries to adults in this category were predominantly in "private or commercial amusement areas" or "National or other public parks". Saturday had the most injuries (78 of the total 370), and Sunday and Friday had 58 and 57 injuries respectively. Forty-three percent of the injury Incidents occurred in public playgrounds and amusement areas and 41% in school and kindergarten playgrounds. Sixteen percent of injury cases happened in National Parks and other public parks.

In 53% of cases the victim was moving and hit an immovable object (such as the ground or a post), and in 16% of cases he or she was hit by another moving object or person. Strain or over exertion contributed 13%. Twenty-two cases were classed as assaultive, and one as possibly self-inflicted.

The most common injury type was strains and sprains (21% of injuries), with the ankle often injured in this way. Fractures accounted for 19% of injuries, and the radius/ulna and wrist were the body parts most often fractured. Fractures were severe enough to warrant admission to hospital in 24% of cases. The upper extremities were often the site of injury (41%). then the lower extremities (28%). with ankles and knees often injured. Head injuries represented 20% of injuries.

Sport and recreation (activities or equipment) led to the injury event in over half (56%) of the incidents in parks and playgrounds. The most common were playground equipment (N=50) and skiing (N=23). There is likely to be a seasonal bias in favour of winter sports such as skiing. The most common cause of injury was Impact with the ground (36%) or concrete (14%).

Breakdown Factors **Table 8**

	N	%
Sports and Recreation	281	37
Structures (stairs, doors, floor)	89	12
Vehicles	58	8
Environmental Factors (ground, trees)	48	6
Toys and Nursery Equipment	48	6
Animals	39	5
Beds	30	4
Yard and Garden Equipment	27	4
Kitchenware and appliances	27	4
Other	104	14
Total	**751**	**100**

Of the sports and recreation categories, bikes and monkey bars were the most common factors, being involved in 67 and 23 injuries respectively.
VISS: Latrobe Regional Hospital. Under 15 years. (1/7/91 t031/12/91)

Playground Equipment

There were 55 cases of injury directly involving play equipment. Ninety-one percent of the people were under 15 years old. Just under half the cases occurred on weekends. Of playground injury incidents 55% of injuries happened in public playgrounds, and 33% in schools. More than 62% of the incidents involved a fall. For injury incidents involving play equipment, monkey bars and other climbing apparatus were associated with 400k of incidents, and slides and sliding boards were factors for 20%. The actual cause of the injury was landing on the ground in 58% of these cases, and hitting against monkey bars and other climbing equipment 11%.

Since a large proportion of these injury cases involved a fall. The use of impact absorbing material (for example tan bark), which is known to reduce the number and severity of injuries, is strongly recommended. A Draft Australian Standard referring to play equipment specifies an undersurfacing on 200mm of pine bark or mulch for junior play areas, and 250mm for senior areas. (SAA Dr 91167.)

Decreasing the fall height from playground equipment is another important design consideration.

Safety in the home

1900 cases of injury occurred in the home (42%). Sixty-two percent of the victims were male. Children accounted for 39% of injury cases. The age group most often injured in the home was 2029 year olds (347 injuries). The location of injuries was:

Yard and garage	44%
Living or sleeping area	37%
Kitchen	13%
Bathroom	3%
Driveway	3%

The most common injury type was cuts and lacerations (34%), with foreign bodies and fractures each accounting for 9%, bruising and inflammation for 8% each and strains and sprains for 7%. Upper extremities were injured in 36% of cases, the head in 30% and lower extremities in 19%.

The commonest items which led to injury events in and around the home were: Structures (17% - especially stairs or steps); furniture (11% - mostly beds or chairs); workshop tools (10%) and sport and recreation (9% - particularly bicycles). Factors which injured people included impact with various landing surfaces (19% - floor, ground or concrete); foreign bodies (7%); furniture (7%) and knives (6%). Most (90%) of the knife-related injuries were to adults who were Involved with food preparation or maintenance at work or at home.

Injury Prevention

The aim of the Victorian Injury Surveillance System is to reduce injuries. The detailed local injury data which VISS collects and analyses together with data from other sources, such as hospital admissions, deaths and road crash reports provides an excellent foundation for injury prevention. Injury data can be used to describe the size and nature of specific injury problems and to link them with injury countermeasures and Implementation strategies. VISS will support the Latrobe Valley Better Health Program by providing injury data and advice and by monitoring changes in injury rates.

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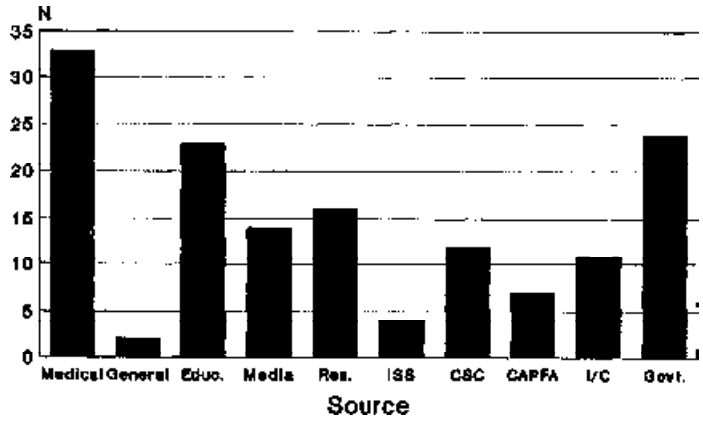
3. Unemployment in the Latrobe Valley: a sub-regional analysis - Executive Summary; November 1991, Gippsland Region Information Bank (GRIB) and the Latrobe Regional Commission (LRC), Churchill, VIC.

How to access VISS data

VISS collects, tabulates and interprets information on injury problems in order to lead to the development of prevention strategies and their Implementation. VISS analyses are publicly available for teaching, research and prevention purposes. Requests for information should be directed to the VISS Co-ordinators or the Director by phoning (03) 3455087. The new VISS fax number is (03) 346 4736.

Users of VISS information represent a wide range of fields including the government, medicine and education, as shown in Figure 4.

VISS Data Information Requests **Figure 4**



(1.7.90 - 30.6.91)

Note: CAPFA - Child Accident Prevention Foundation of Australia
I/C = Industry and commerce
Res = Research
ISS = Injury Surveillance System
CSC = Child Safety Centre

General Acknowledgements

Participating Hospitals

Royal Children's Hospital

Western Hospital (Footscray and Sunshine)

Preston and Northcote Community Hospital

Royal Victorian Eye and Ear Hospital

Latrobe Regional Hospital (Traralgon and Moe)

Royal Melbourne Hospital (from February 1992)

The contributions to the collection of VISS data by the directors and staff of the Emergency Departments of these hospitals, other participating clinicians, Medical Records Departments, and ward staff are all gratefully acknowledged. The Surveillance System could not exist without their help and co-operation.

In the Latrobe Regional Hospital thanks are specifically directed to Dr. Glynn Derwent-Smith (Director of Emergency Services, LRH) and Ms. Julia Palmer (VISS data processor).

Coronial Services

Access to Coronial data and links with the department of the Coronial Services statistical database are valued by VISS.

Melbourne University Department of Paediatrics & Royal Children's Hospital

Office facilities, computers, secretarial and infrastructure support.

National injury Surveillance Unit

The advice and technical back-up provided by NISU is of fundamental Importance to VISS.

QISPP

The Queensland injury Surveillance and Prevention Project provided valuable data to enable comparative analyses with Latrobe data.

Latrobe Regional Commission

For provision of data, information and background on the Latrobe Valley.

Health Department Victoria, Gippsland Regional Office

For provision of data on utilization of health services and a demographic profile of the Latrobe Valley.

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How and where are people injured in the Latrobe Valley?

Where	%	How - major factors
Home	44	Slips, trips and falls; maintenance and gardening (indoor and outdoor)
Work	17	Using workshop tools, knives;
Road, footpath	15	Two thirds are motor vehicle occupants
Sport	9	Mostly football, basketball or netball
Other	15	Includes schools, parks and playground

VISS: Latrobe Regional Hospital, all-age. (1/7/91 to 31/12/91) N = 4515

The above table is designed to provide a quick overview of injury patterns in the Latrobe Valley for a 6 month period. Minor overlap occurs in the above categories. However more detailed and specific information is provided throughout this report. Additional information is available from VISS on request.

This report was produced by the Victorian injury Surveillance System with the artistic and graphics assistance of the Educational Resource Centre, Royal Children's Hospital. This .pdf version recreated by Glenda Cairns.