

National Injury Mortality Surveillance System

**A PROFILE OF
FATAL INJURIES IN SOUTH AFRICA
1999**

**First Annual Report of the National Injury Mortality
Surveillance System**

Edited by A. Butchart
for

The Violence and Injury Surveillance Consortium, with Participating
Forensic Pathologists and the State Forensic Chemistry Laboratories

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EXECUTIVE SUMMARY

This is the first annual report of the National Injury Mortality Surveillance System (NIMSS). NIMSS is a mortuary-based system capturing 21 information items describing the “who, what, when, where and how” of fatal injuries. Despite its importance, such information has been missing from the national vital statistics on causes of death since 1991, and there are no indications that this situation will change in the near future.

This report covers 1 January to 31 December 1999, during which 14 829 fatal injuries were registered at 10 mortuaries in five provinces. This is approximately 25% of the estimated 60 000 fatal injuries occurring for the whole country each year, and the 1999 sample was biased to mainly urban areas. The NIMSS aims to progressively expand its geographical and case coverage until all injury deaths are included in what is intended to be an ongoing system for the epidemiological surveillance of fatal injuries.

Sex, age and population group. Of the 14 829 non-natural deaths, 21% were female and 79% male. Asians constituted 3% of all cases, Whites 11%, Coloureds 17% and Blacks 69%. The majority of victims were young adults, with 36% of all cases aged 15 to 29, and 37% aged 30-44. Seven percent of the victims were aged 0 to 4 years, 14% were aged 45 to 59 years and 6% were 60 years and over.

Manner of death. Homicide was the leading manner of death, accounting for 46% (N = 6 859) of all cases. Accidents accounted for 34% (N = 5 090), followed by suicide (8% or 1 157 cases). For 12% (N = 1 723) manner of death was undetermined. Males constituted 79% of all injury deaths, and there were 3.8 male deaths for every female death. The leading manner of death for males was homicide (51%) and for females, accidents (43%). The number of cases per month trended upward across the year for all manners of death except suicide.

External causes of death. Firearms overshadowed all other external causes, and accounted for 26% of all cases. The total of 3 906 firearm deaths was greater than the 3 684 deaths due to all motor vehicle accident (MVA) categories combined. In infants under one year, burns were the leading cause of death. From age 1 to 4 burns and pedestrian MVA deaths ranked first and second. From 5 to 14 years pedestrian injuries and drowning ranked first and second. From 15 to 64 firearms ranked first, and for those cases aged 65 years or more, firearms and MVA pedestrian deaths were approximately equal.

Homicide. Over half of the 6 859 homicides were inflicted by firearms, and a third by sharp instruments. The number of homicide victims rose abruptly in the 15 to 19 year age group and remained high until 39 years. There were 6.5 males per female homicide victim. Of the males, 51.7% were killed using firearms, while firearms accounted for 40.4% of female homicides. Strangulation homicides were over 6 times more frequent in females than in males. Strangulation and blunt instruments dominated up to 4 years of age, where after firearms and sharp instruments together accounted for around 80% of homicides per age group. Most homicides occurred in private homes, and nearly 80% of sharp instrument victims had positive blood alcohol concentrations (BACs) in contrast to the 40% of firearm victims with positive BACs.

Suicide. Firearms and hanging each accounted for one third of all 1 157 suicides. Most suicide victims were between 20 and 30 years of age. There were 3.5 males for every female suicide. The leading external causes of suicide in males were firearms (37.8%) and hanging (37.7%), and in females poisoning (29.9%) and firearms (26.0%). Most suicides occurred in private homes, and 27 suicides were recorded as having occurred at or in places of custody. Under half of all suicide victims had elevated BACs.

Fatal accidents. Accident deaths due to transport, burns, falls and drowning, and other external causes accounted for 5 090 or 34% of all fatal injuries. Of these 77% were transport-related, 9% were due to burns, 5% due to drowning, and 8% due to other external causes.

Transport-related deaths. Of the 3 880 transport-related deaths, 92% were MVAs, 5% were railway-related and 3% involved cyclists. Pedestrians accounted for 39% of the MVAs, followed by 27% where the user category was unknown. There were 2.9 males per female transport-related death. Pedestrian deaths ranked as the top external cause of death from age 1 to 14 years, among the top three from 15 years onwards, and as the third leading cause across all ages. Most MVA-related deaths occurred from early afternoon to mid-evening on Fridays and weekends. BAC was positive for 65% of pedestrians and 53% of drivers.

Burns, falls, drowning and other accident deaths. Of the 1 169 deaths due to these causes, 41% were due to burns, 27% due to a cluster of 'other' accidents, 20% drowning, and 12% falls. Burns were the leading external cause of death under one year of age, and drowning ranked equal second with pedestrian deaths in this age group. Burns and drowning were the second and third leading external causes of death from 1 to 4 years of age, and drowning the second leading cause from 5 to 14 years. There were 4 males per female victim of drowning and falls, as against 1.5 males per female burn death. Most burn and fall deaths occurred in private homes, and drowning deaths in the sea, lakes and rivers, although a substantial proportion of drownings also happened in private homes. BACs were positive in 52% of the burn fatalities, 42% of the drowning deaths and 28% of the falls. There were 318 fatal accidents due to 'other' causes. In adults, contact with blunt objects (e.g. falling masonry) and crushing (mostly in mine accidents) were among the leading causes. In infants and children choking and poisoning by ingestion (e.g. of paraffin and other household chemicals) were prominent.

Manner of death undetermined. The age distribution of the 1 723 deaths where the manner was undetermined showed a concentration of cases among the very young (0 to 4) and the elderly (65 years and over). For deaths between these age groups the pattern by victim age and seasonal trend for deaths where the manner was undetermined was similar to that for suicides.

Violence and Injury Surveillance Consortium: Core Staff

Niresh Bhagwandin (MRC Cape Town)	Tel. (021) 938-0207
Joe Bopape (MRC Cape Town)	
Hilton Donson (MRC Cape Town)	
Richard Matzopoulos (MRC Cape Town)	
Mzimkhulu Maziko (MRC Cape Town)	
Margie Peden (MRC, until September 2000)	
Megan Prinsloo (MRC Cape Town)	
Nomhle Kawa (MRC Cape Town)	
Christine Harris (MRC Durban)	Tel. (031) 204-3675
Anesh Sukhai (MRC Durban)	
Alex Butchart (UNISA)	Tel. (011) 857-1142
Stephanie Burrows (UNISA)	
Melinda Potgieter (CSIR)	Tel. (012) 841-2889

CONTENTS

Executive Summary.....	ii
Violence and Injury Surveillance Consortium: Core Staff.....	iv
Table of Contents.....	v
Preface	vii
Acknowledgements.....	viii
1. The National Injury Mortality Surveillance System.....	1
1.1 Goals of the NIMSS.....	1
1.2 Aims of the NIMSS	1
1.3 NIMSS methodology	2
1.4 NIMSS Annual Report	2
2. Participating Facilities and Data Representivity.....	3
3 Manner of Non-natural Death.....	5
3.1 Manner of Non-natural Death by Victim Sex.....	5
3.2 Manner of Non-natural Death by Victim Population Group	6
3.3 Manner of Non-natural Death by Victim Age	6
3.4 Manner of Non-natural Death by Sex and Age of Victim	7
3.5 Manner of Non-natural Death by Victim Population Group and Age	9
3.6 Manner of Non-natural Death, Seasonal Trends	9
3.7 Manner of Non-natural Death, Provincial Variations	10
4 External Causes of Non-natural Death.....	11
4.1 External Causes of Non-natural Death by Victim Sex.....	11
4.1 External Causes of Non-natural Death by Victim Age	12
5 Homicide.....	14
5.1 Homicide, Seasonal Trends	14
5.2 Homicide, External Causes by Sex of Victim	15
5.3 Homicide, External Causes by Victim Population Group	15
5.4 Homicide, External Causes by Age of Victim.....	16
5.5 Homicide, Scene of Injury by Sex of Victim	16
5.6 Homicide, Day and Time of Death.....	17
5.7 Homicide and Victim Blood Alcohol Content	18
6 Suicide	19
6.1 Suicide, Seasonal Trends	19
6.2 Suicide, External Causes by Sex of Victim	20
6.3 Suicide, External Causes by Victim Population Group	20
6.4 Suicide, External Causes by Age of Victim	21
6.5 Suicide, Scene of Injury by Sex of Victim	21

6.6	Suicide, Day and Time of Death.....	22
6.7	Suicide and Victim Blood Alcohol Content	23
7	Fatal Accidents	24
7.1	Fatal Accidents by Victim Sex	24
7.2	Fatal Accidents by Victim Population Group.....	25
7.1	Transport-related Deaths	26
7.1.1	Transport-Related Deaths, Seasonal Trends.....	26
7.1.2	Transport-Related Deaths by User Category and Sex of Victim.....	27
7.1.3	Transport-Related Deaths by User Category and Victim Population Group	27
7.1.4	Transport-Related Deaths, User Categories by Age of Victim	28
7.1.5	Transport-Related Deaths, User Categories by Scene of Injury.....	28
7.1.6	Transport-Related Deaths, Day and Time of Death.....	29
7.1.7	Transport-Related Deaths by User Category and Blood Alcohol Content	30
7.2	Burns, Falls, Drowning and other Accident Deaths	32
7.2.1	External Causes of Other Accident Deaths	32
7.2.2	Burns, Falls, Drowning, and Other Accident Deaths, Seasonal Trends	33
7.2.3	Burns, Falls, Drowning, and Other Accident Deaths by Sex of Victim	33
7.2.4	Burns, Falls, Drowning, and Other Accident Deaths by Victim Population Group.....	34
7.2.5	Burns, Falls, Drowning, and Other Accident Deaths by Age of Victim ...	34
7.2.6	Burns, Falls, Drowning, and Other Accident Deaths by Scene of Injury..	35
7.2.7	Burns, Falls, Drowning, and Other Accident Deaths, Day and Time of Death.....	35
7.2.8	Burns, Falls, Drowning, and Other Accident Deaths by Victim Blood Alcohol Content	36
8	Manner of Death Undetermined	38
8.1	Undetermined Manner of Death by Sex of Victim.....	38
8.2	Undetermined Manner of Death by Victim Population Group	39
8.1	Undetermined Manner of Death by Victim Age	39

PREFACE

Information about deaths due to external causes is of critical importance for monitoring demographic, seasonal and socio-economically related trends in major causes of death and disability such as homicide, motor vehicle accidents, burns, falls, and drowning. Despite its importance, such information has been missing from the national vital statistics on causes of death since 1991, and there are no indications that this situation will change in the near future.

The National Injury Mortality Surveillance System (NIMSS) was established to fill this gap by providing information about deaths due to external causes. The information is collated from existing investigative procedures at mortuaries, state forensic chemistry laboratories and the courts. All deaths due to external causes are included, allowing an overview of how the different categories of external cause (e.g. gunshots, burns) contribute to the profile of non-natural mortality in men, women, and children.

As of November 2000 there were no alternative sources for the information about fatal injuries that the NIMSS collects, analyses and disseminates. It is therefore essential that the system establish links with vital statistics so that the information vacuum around non-natural deaths in the vital statistics is filled. It is also important to link the system with the police data base, so that levels of under-reporting deaths due to interpersonal violence and motor vehicle accidents can be established. Similar reasoning underlies the need to link the NIMSS with the national database on road accidents and injuries.

The utility of the information collected by the NIMSS lies in the pointers it provides for improving the prevention and control of injuries in South Africa, and in evaluating the impact of direct (e.g. gun law enforcement) and indirect (e.g. socio-economic development) interventions that should reduce some of the major causes of fatal injury. This first report, although limited in coverage to only 25% of all non-natural deaths, provides a baseline profile for future monitoring and an information platform to reinforce the ongoing extension and improvement of the system.

The NIMSS data reported here are limited to the numerator data, and a major challenge is to establish useful denominators. This is most likely to be successful if done at the level of each participating mortuary's catchment area, until all mortuaries serving a particular geographical area are included and rates can be calculated for entire cities, provinces and the country as a whole.

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We also thank the many other forensic pathologists who assisted with case registration.

South African Police Services

Deputy National Commissioner L.J. Eloff, and Mr. J.J. Botma facilitated establishment of the NIMSS among the various South African Police Services personnel at provincial and mortuary level.

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1. THE NATIONAL INJURY MORTALITY SURVEILLANCE SYSTEM

The National Injury Mortality Surveillance System (NIMSS) produces and disseminates descriptive epidemiological information for deaths due to non-natural causes that in terms of the Inquests Act of 1959 are subject to medico-legal investigation. The ultimate goal is to establish a permanent system that will register all such deaths that occur annually in South Africa.

1.1 Goals of the NIMSS

The goals of the NIMSS are:

- ?? to provide ongoing and systematic information about the incidence, causes and consequences of all non-natural deaths at local, regional and national levels
- ?? to enable the early identification of new injury trends and emerging problem areas so that adequate interventions can be timeously established
- ?? to determine priorities for injury and violence prevention action, both for high-risk groups and socio-environmental risk factors
- ?? to help evaluate direct and indirect violence and injury prevention and control measures
- ?? to monitor seasonal and longitudinal changes in the non-natural fatality profile.

In achieving these goals the NIMSS is intended to meet the information requirements of three main stakeholder groups, namely the forensic medico-legal services; the national crime prevention strategy; and violence and injury prevention agencies at local, provincial and national level.

For **Forensic medico-legal services** the NIMSS will provide vital information for the allocation of resources, auditing of costs and rationalisation of services. The current absence of information and the fragmented nature of these services prevents proper assessment of their costs, inhibits their evaluation and impedes proper planning.

For the **National Crime Prevention Strategy** the NIMSS will provide crucial baseline data for all deaths due to violence and other injuries, including information on particularly sensitive indicators such as gunshots, alcohol and other substance involvement, the covariance between violence and unintentional injury deaths, and demographic and geographic variations in the magnitude and patterning of violent deaths.

Injury prevention agencies include national and local government, the South African Police Services, non-governmental organisations, business and para-statal. The NIMSS will provide descriptive information needed for the design and implementation of preventive interventions at municipal, metropolitan, provincial and national levels.

1.2 Aims of the NIMSS

The NIMSS uses existing medico-forensic investigative procedures. It collates onto a single data form and into a single computer database items spread between four points in the investigative procedure, namely postmortem reports, SAP 180 forms, chemical pathology laboratories and criminal justice system reports.

For 1999 to 2000 the NIMSS is being piloted with funding from the Department of Arts, Culture, Science and Technology's Innovation Fund on Crime Prevention. It has been introduced into 10 mortuaries around the country and the aim is to evaluate and refine the system before extending it as a uniform reporting system to all medico-legal examination centres in South Africa.

1.3 NIMSS Methodology

The NIMSS records 21 items of information for every deceased that enters the forensic medico-legal system in the participating facilities. To meet the system goals and enable international comparisons, the NIMSS classifies the primary medical cause of death using the International Classification of Disease version 9 (ICD 9) and assigns a probable manner of death code to each case. Spatial and temporal data is recorded, as is the presence of alcohol or any other substances in the deceased through information from forensic laboratory reports. Court findings will be used to assign a final manner of death code and specify the circumstances surrounding violent deaths.

The data are collected by the police and forensic pathologists at each site, and captured into a computerised database by clerks and secretarial staff at the mortuaries. The data are then sent to the consortium where they are combined with other mortuaries' data and data from the forensic chemistry laboratories, cleaned, and finally analysed by specialist research scientists. Quarterly and yearly reports are produced for the South African Police and forensic pathologist at each facility.

1.4 NIMSS Annual Report

The NIMSS annual report summarises the data from all mortuaries that participated during the reporting year. Since this is the first such report, it is hoped that readers will provide suggestions about how the data presentation can be improved to make subsequent annual reports as useful as possible for their purposes. We assume that the main utility of the report will be in providing information for use in presentations and research projects aimed at violence and injury prevention and control. We also hope that the report will serve to raise more questions than answers about the underlying causes and risk factors that drive the patterns of fatal violence and injury among the different age, sex and population groups by which the data have been analysed. For, if these questions can stimulate research to answer them, then the possibilities of violence and injury prevention will be greater than ever before.

Perhaps most importantly, it is emphasised that the annual report provides an overview of the data only, and does not fully reflect the rich amount of information in the surveillance database. This additional information includes, in particular, suburb-level indicators of where injuries occurred, and, of course, many cross-tabular analyses that could not be accommodated in this summary report. Agencies wishing to access this more detailed level of information are invited to send their requests for customised reports to the surveillance consortium.

2. PARTICIPATING FACILITIES AND DATA REPRESENTIVITY

Ten mortuaries in five provinces collected data for the period 1 January to 31 December 1999 (Table 1).

Table 1.Count of cases by province and Mortuary

Province	City	Mortuary	TOTAL
Eastern Cape			
	East London	East London	991
	Port Elizabeth	Louis le Grange	402
	Port Elizabeth	Gelvandale	578
Northern Cape			
	Kimberley	Kimberley	432
K.Z. Natal			
	Durban	Gale Street	2621
Gauteng			
	Pretoria	MEDUNSA	544
	Johannesburg	Germiston	3375
	Johannesburg	Roodepoort	1388
Western Cape			
	Cape Town	Salt River	2483
	Cape Town	Tygerberg	2015
TOTAL			14829

A total of 14 829 fatal injuries were registered. This is nearly 25% of the estimated 60 000 non-natural deaths that occur in the whole country each year. The registered cases reflected the fatal injury profile for largely urban areas. Representivity was therefore low for all provinces. However, for the Cape Town metropole all mortuaries serving the area were included. City-level representivity was lowest for Johannesburg and Durban. In Johannesburg, only two out of seven mortuaries participated, and in Durban only one out of three. Because the registered cases were not adequately representative of most areas in the country, the data were not used to calculate rates, and the subsequent tables and graphs are restricted to simple descriptive analyses of the data on fatal injuries only.

Of the 14 829 non-natural deaths, 21% were female and 79% male. Asians constituted 2.7% of all cases, Whites 10.8%, Coloureds 17.3% and Blacks 69.3%. The majority of victims were young adults, with 36% of cases aged 15 to 29, and 37% aged 30 to 44. Four percent of the victims were aged 0 to 4 years, 15% were aged 45 to 59 years and 6% were 60 years and over.

For the year 2000, the NIMSS will double the case coverage to register approximately 50% of all non-natural deaths. This will involve the establishment of surveillance sites in most of the currently excluded provinces, as well as the addition of extra sites in major urban areas such as Johannesburg, Pretoria, Durban, Port Elizabeth and East London. Further expansion will occur in subsequent years until total case coverage is achieved.

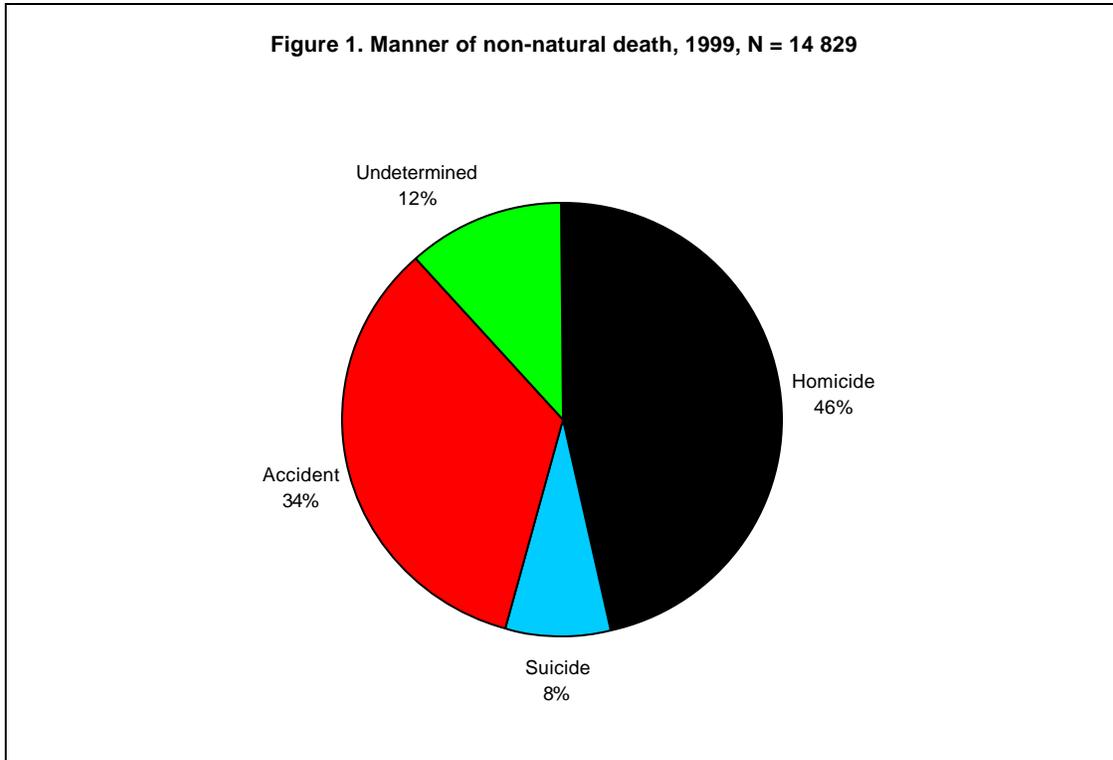
Not all cases had information for every item, and therefore totals in the following graphs and tables vary. Owing to the relatively few cases where date and time of injury were

available, date and time of death have been reported instead. While death would have occurred at the time of injury for a majority of cases, some victims will have died hours or days after the injury itself, and this bias must be kept in mind when reading the relevant tables and charts. Although information on drugs and other substances apart from alcohol was retrieved, this was available for only 91 (0.6%) of all cases. Accordingly, only the findings for blood alcohol content (BAC) are reported as g/100ml.

While the NIMSS also has provision to register perpetrator information and context of violence for homicides and suicides, the collection of this data can only occur after court investigations are concluded. This takes approximately two years, and therefore court information for the cases described here will become available only in 2001.

3. MANNER OF NON-NATURAL DEATH

Figure 1 displays the manner of death for the full sample of 14 829 deaths. Homicide was the leading manner of death and accounted for 46% (N = 6 859) of all cases. Accidents accounted for 34% (N = 5 090) of all fatal injuries, followed by suicide (8% or 1 157 cases). In 12% (N = 1 723) of cases the manner of death was undetermined.



3.1 Manner of non-natural death by victim sex

Table 2 shows the manner of non-natural death by victim sex. In 161 cases victim sex was unknown or unrecorded. Of the remaining 14 668 cases, 79% were male, and overall there were 3.8 males for every female. The leading manner of death in males was homicide (50.8%) and in females accidents (43.5%). The proportion of suicides in males and females was roughly equal (around 8%). The percent of females where manner of death was undetermined was nearly twice that for males. The highest male to female ratio occurred for homicides, where there were 6.5 males for every female, and the lowest male to female ratio was for accident deaths, there were 2.8 males for every female.

Table 2. Manner of non-natural death by victim sex, 1999

	Homicide	Suicide	Accident	Undetermined	TOTAL
Male	5908 (50.8)	894 (7.7)	3727 (32.0)	1102 (9.5)	11631 (100)
Female	908 (29.9)	254 (8.4)	1322 (43.5)	553 (18.2)	3037 (100)
M:F ratio	6.5	3.5	2.8	2.0	3.8

3.2 Manner of non-natural death by victim population group

Manner of non-natural death by victim population group appears in Table 3. Population group was unknown or unrecorded for 216 (1.5%) cases. Among Blacks and Coloureds, homicide accounted for approximately 50% of all deaths and was the leading cause of death. For Asians, homicides and accidents accounted for around a third of all deaths, and in Whites accidents were the most frequent manner of death, accounting for just over one third of all fatal injuries. Suicides accounted for an elevated proportion of deaths in Whites (26.3%), and this was the only group where suicides were more frequent than homicides (20.7%). The percentage of suicides in Asians (13.3%) was nearly three times the 5% of suicides in Blacks and Coloureds.

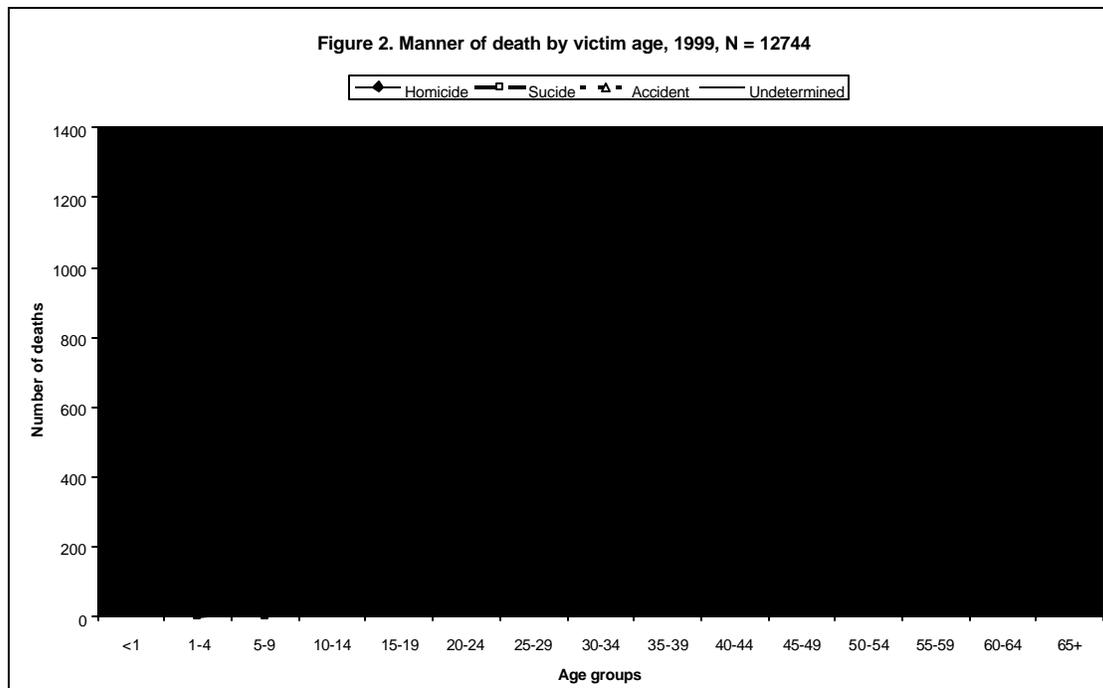
The least variation between population groups occurred for accident deaths, and the most for suicidal deaths. For between 10% and 15% of deaths in all groups the manner of death was undetermined.

Table 3. Manner of non-natural death by victim population group, 1999

	Homicide	Suicide	Accident	Undetermined	TOTAL
Asian	147 (37.5)	52 (13.3)	143 (36.5)	50 (12.8)	392 (100)
Black	5085 (50.2)	542 (5.4)	3395 (33.5)	1100 (10.9)	10122 (100)
Coloured	1243 (49.2)	140 (5.5)	887 (35.1)	257 (10.2)	2527 (100)
White	325 (20.7)	414 (26.3)	599 (38.1)	234 (14.9)	1572 (100)

3.3 Manner of death by victim age

Victim age was available for 12 744 or 86% of the 14 829 non-natural deaths. As shown in Figure 2, manner of death varied considerably between the different age ranges. Accidents were the dominant manner of death from age 0 to 14 years, and accidents in this age range had their highest frequency among 1 to 4 and 5 to 9 year olds. From age 15 to 44 homicide was the leading manner of death, accounting for nearly twice as many



fatalities as accidents in this age range. Deaths due to suicide were the least common in all age groups and peaked among 25 to 29 year olds. The age distribution of cases where manner of death was undetermined closely followed that for suicides from 15 to 64 years of age. For infants below one year of age, manner of death undetermined was the most frequent category, and for persons over 65 years the second most frequent.

3.4 Manner of death by sex and age of victim

Figures 3a and 3b show manner of death by victim age for males and females respectively. For both sexes, the number of homicide deaths rose abruptly at 15-19 years, thereafter remaining high in females until age 40 and in males to age 34. Accident deaths showed more similarities than differences between males and females. Suicide deaths peaked in males aged 20 to 29, and females a decade later, at age 30 to 39. For males and females the curve for manner of death undetermined was similar to that for suicide, except in the three youngest age groups and for victims aged 65 and over.

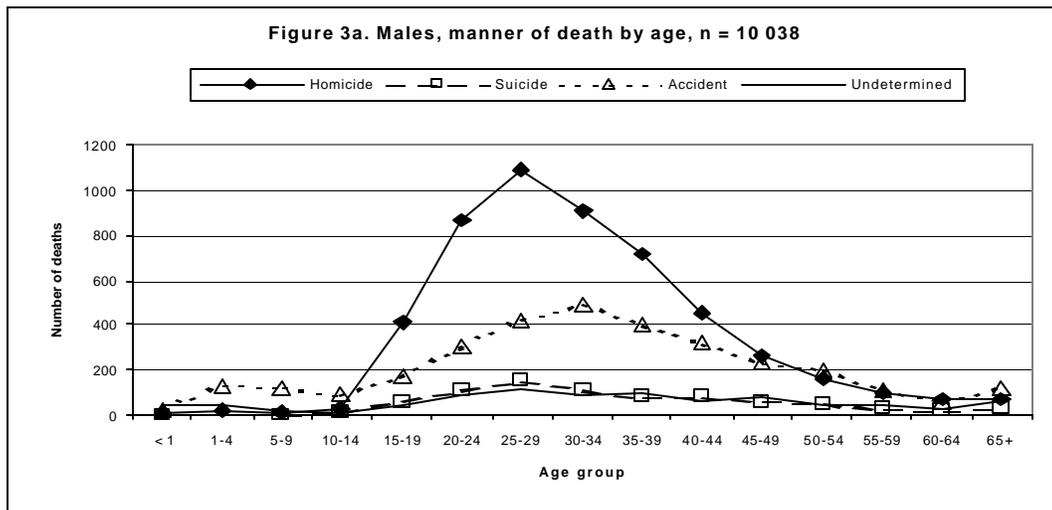
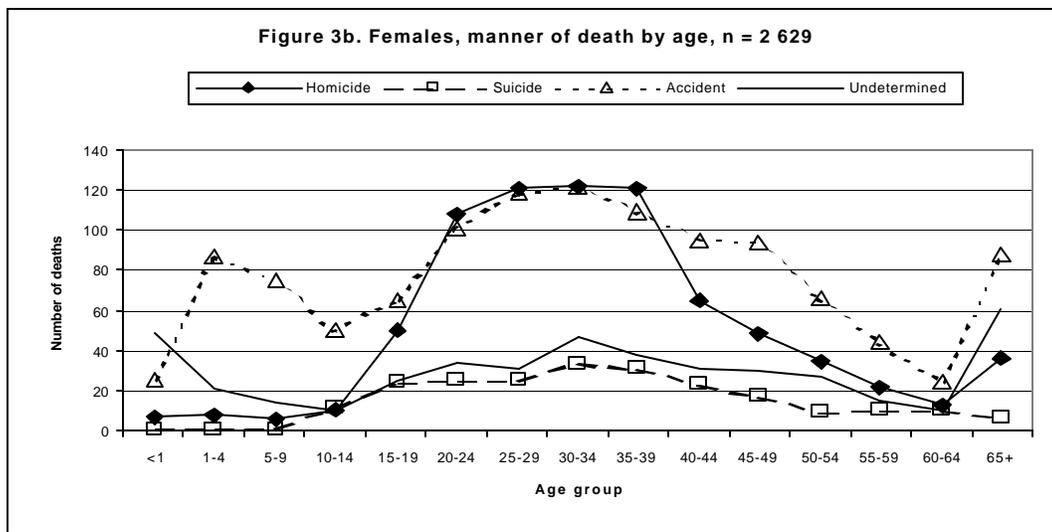


Figure 4 a-d. Manner of death by victim population group and age

Figure 4a. Asian, manner of death by age, n = 362

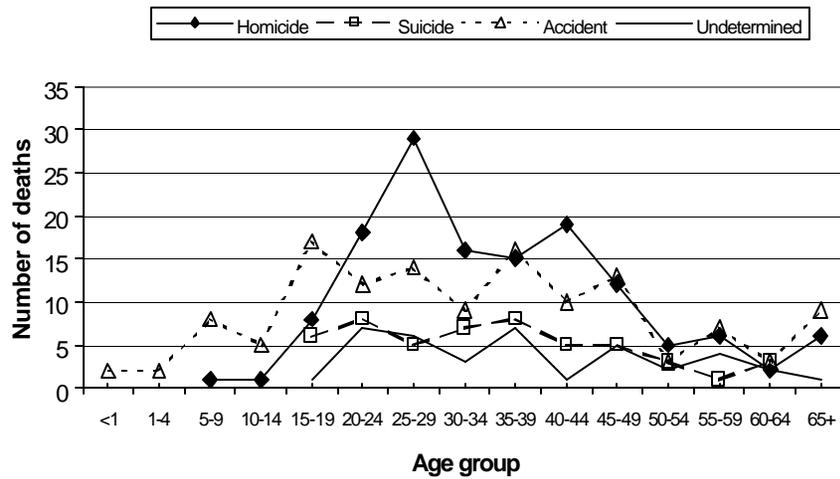


Figure 4b. Black, manner of death by age, n = 8 611

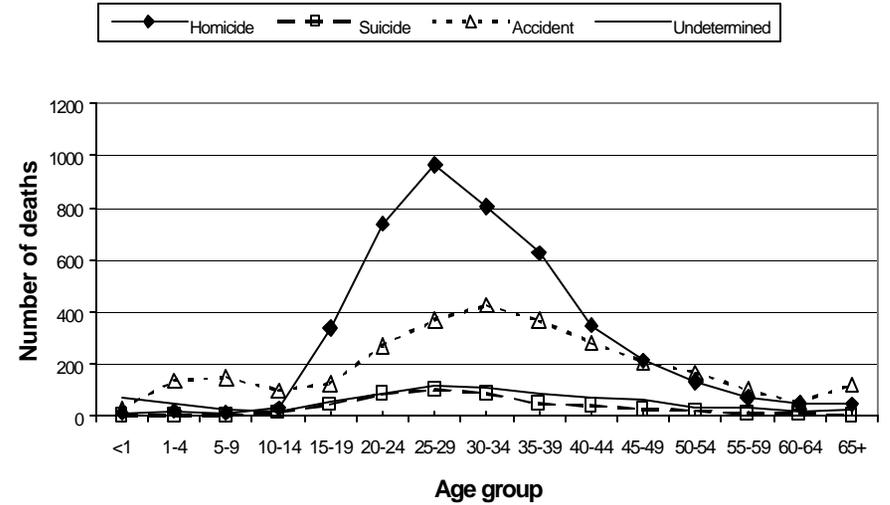


Figure 4c. Coloured, manner of death by age, n = 2 218

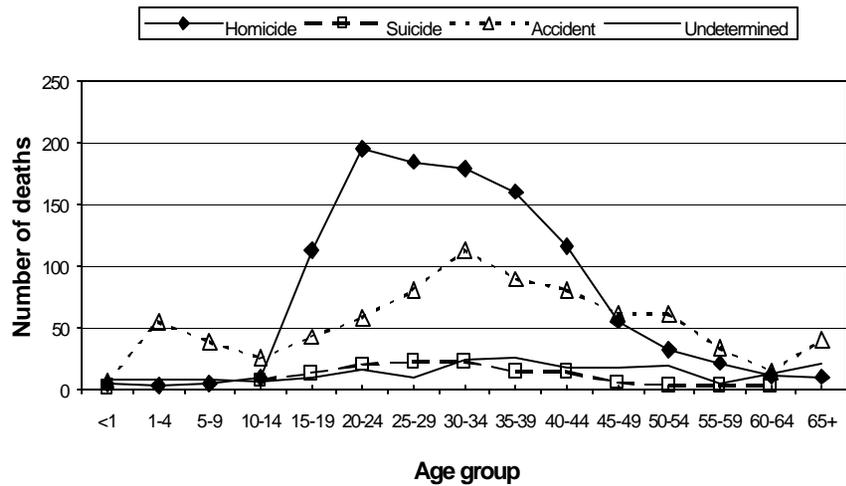
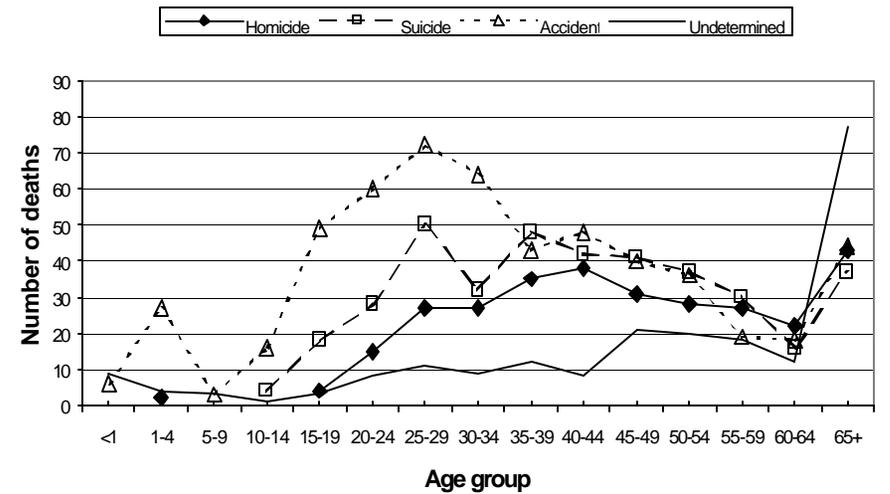


Figure 4d. White, manner of death by age, n = 1 398

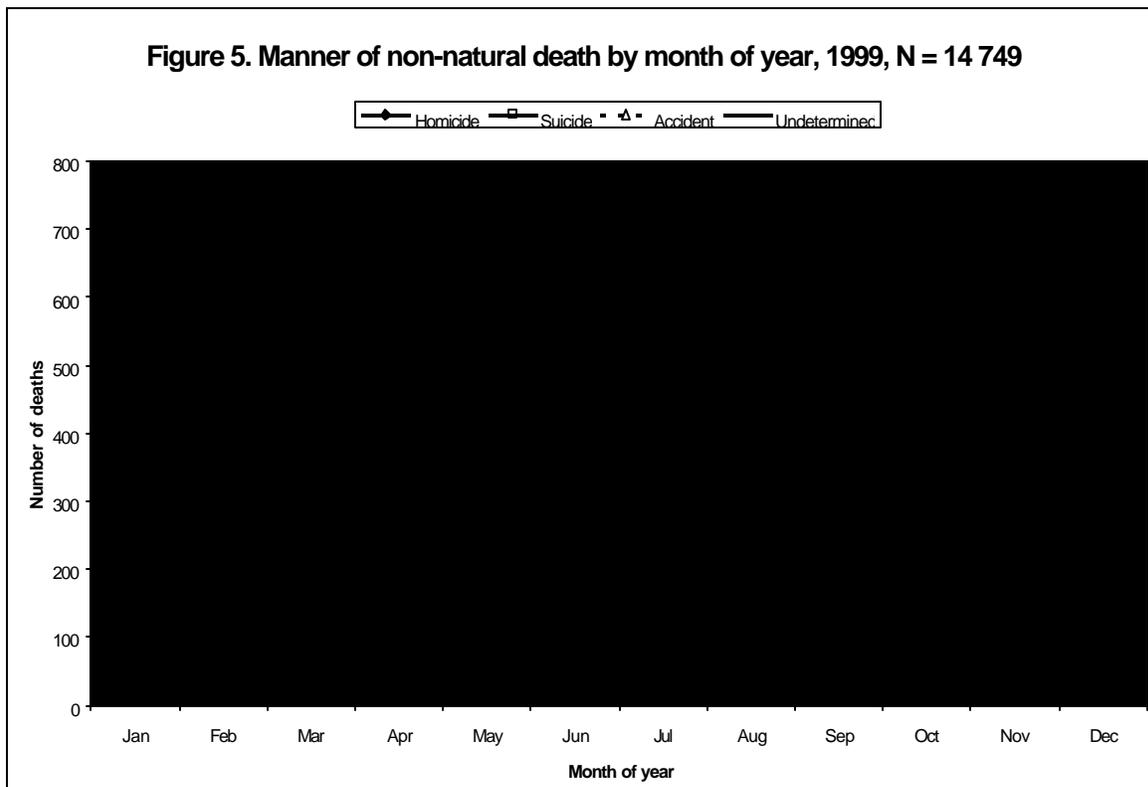


3.5 Manner of death by victim population group and age

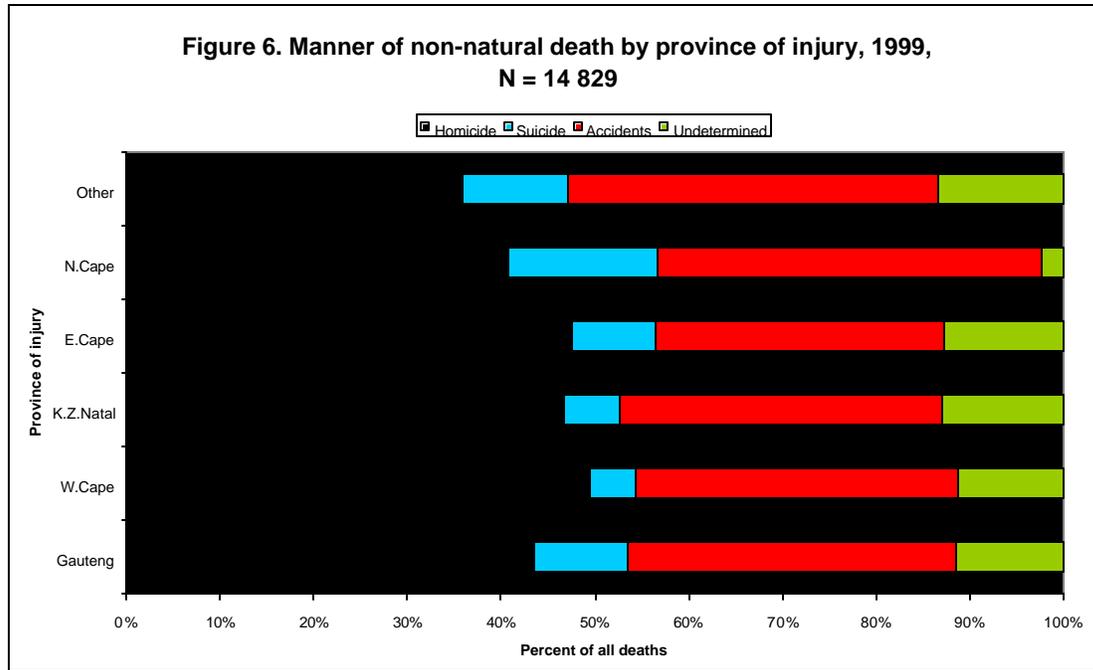
Figures 4a to 4d show manner of death by victim population group and age. The patterns for Blacks and Coloureds are similar, with homicide deaths dominating from age 15 to 44, before and after which accident deaths are predominant. The pattern for Whites differs sharply, with accident deaths predominating up to age 34, followed by suicide and then homicide. In contrast to Blacks and Coloureds, homicide deaths in Whites peak between 35 and 49 years of age, during which period suicide deaths also account for a large number of deaths, and there are a large number of deaths in persons aged 65 and over. The relatively few deaths in Asians make the pattern for that group less clear, although it is more similar to that seen in Blacks and Coloureds than in Whites.

3.6 Manner of non-natural death, seasonal trends

Figure 5 shows the number of cases by month of year and manner of death. The number of cases per month trended upward across the year for all manners of death except suicide. Homicides increased from around 500 per month in February 1999 to over 600 per month from October to December, with a peak in December. Accident deaths peaked in March, October and December, and had their lowest frequency from April to June. Suicides showed the least seasonal variation, although the number of suicides per month was slightly elevated in May and December. Cases where manner of death was undetermined showed a similar seasonal pattern to suicide deaths.



3.7 Manner of non-natural death, provincial variations



The percentage distribution for manner of death by province of injury is shown in Figure 6. Homicide accounted for over 40% of injury deaths in all provinces, and had the highest percentage frequency in the Western Cape. The proportion of suicides was highest in the Northern Cape and lowest in the Western Cape. Owing to the under-representation of rural areas in the data, these patterns are not definitive.

Due in some instances to the very small number of cases that would be available, this report does not include inter-provincial comparisons for each chapter describing the specific external causes of death.

4. EXTERNAL CAUSES OF NON-NATURAL DEATH

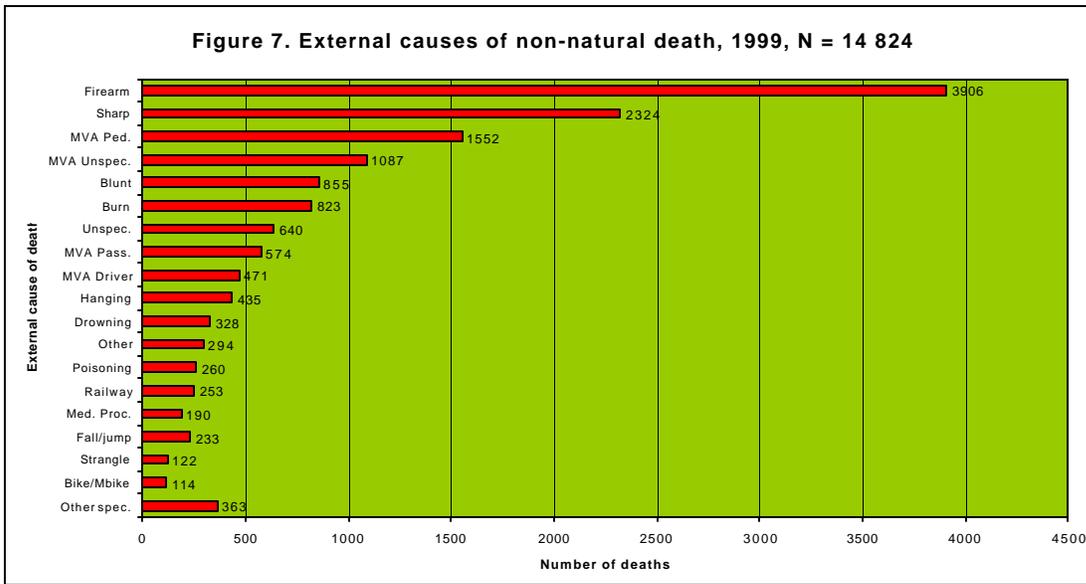
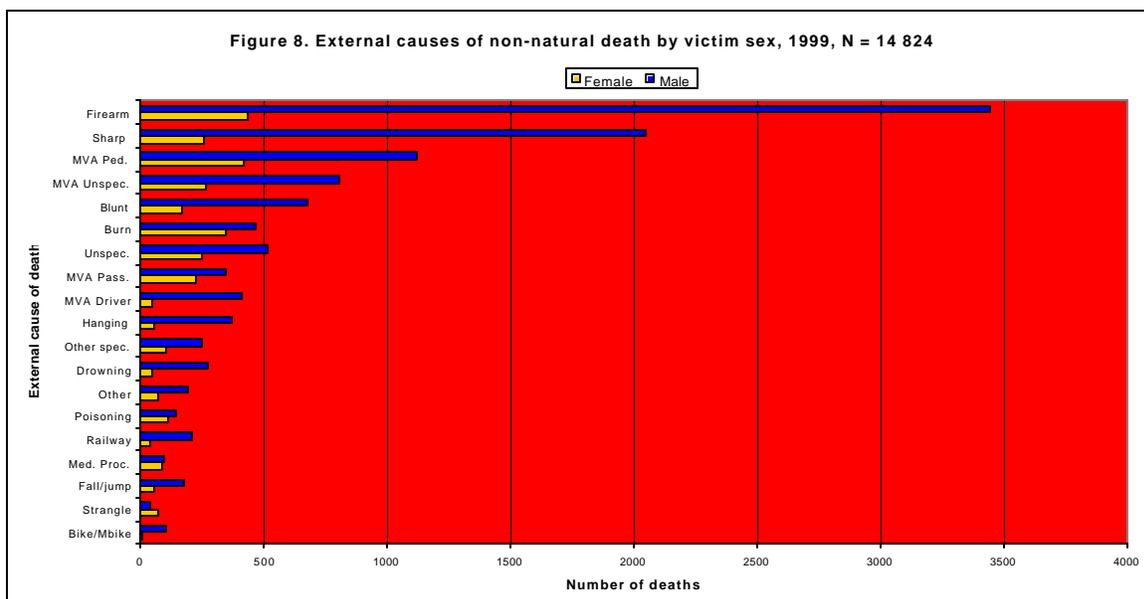


Figure 7 shows that firearms overshadowed all other external causes of non-natural deaths, accounting for 26% of the 14 824 cases where this information was available. The firearm total of 3 906 deaths was over 200 more than the 3 684 deaths due to the four different categories of motor vehicle accidents combined. Sharp instrument deaths totaled 2 324, and together, firearms, sharp instruments and motor vehicle accidents accounted for 10 232 or 69% of all fatal injuries. Pedestrians accounted for the largest number of MVA-related deaths, followed closely by MVAs where the user category was unknown.

4.1 External causes of non-natural death by victim sex

Figure 8 displays the external causes of death for males and females. For both sexes, gunshots were the leading external cause of death. However, in males but not in females there was a massive excess of firearm and sharp instrument deaths compared to all other



external causes. In females by contrast, the external causes of death were more evenly spread between the six leading causes, and the number of deaths due to firearms, MVA pedestrian incidents, and burns were almost equal. Strangulation was the only external cause where females outnumbered males. Roughly equal numbers of males and females died as a result of medical procedures, and the excess of males over females was noticeably lower for poisonings, MVA passenger deaths and burns.

4.2 External causes of non-natural death by victim age

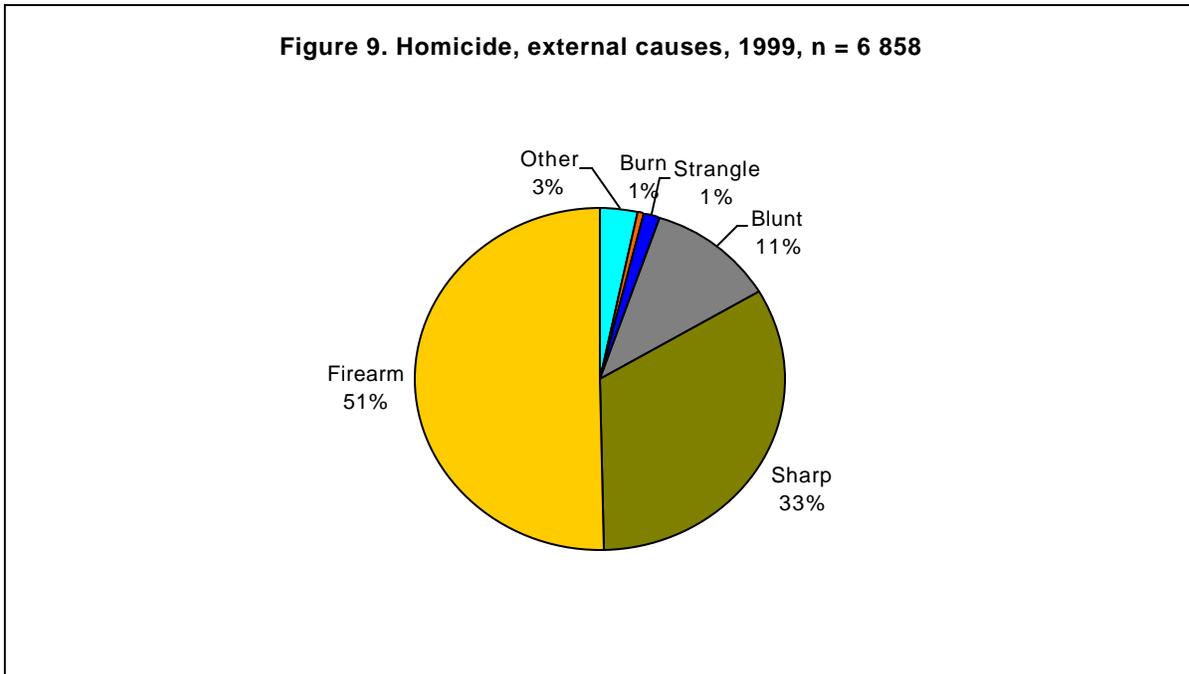
Table 4 displays the frequency ranking of the top 10 external causes by age group. In infants under one year, burns were the most frequent cause of death. In children aged 1 to 4 pedestrian deaths ranked first, with burns a very close second in this age range. From 1 to 14 years of age pedestrian injuries, burns and drowning were the top three causes of death. From 15 to 44 years old firearms and sharp instruments were the first and second leading external causes of injury deaths, followed by pedestrian MVAs. Firearms also ranked first in the age groups 45 to 64, while from age 65 and over pedestrian collisions marginally exceeded firearms as the leading external cause.

Table 4. 10 leading external causes of fatal injuries by age group, 1999

Rank	Age Groups										Total
	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	
1	Burn 13	MVA Ped. 69	MVA Ped. 102	MVA Ped. 41	Firearm 891	Firearm 1299	Firearm 740	Firearm 309	Firearm 134	MVA Ped. 67	Firearm 3475
2	MVA Pass. 6	Burn 58	Drowning 28	Drowning 34	Sharp 506	Sharp 825	Sharp 463	MVA Ped. 161	MVA Ped. 76	Firearm 61	Sharp 2030
3	Drowning 6	Drowning 51	MVA Unspec. 27	Firearm 22	MVA Ped. 159	MVA Ped. 352	MVA Ped. 300	Sharp 133	Sharp 62	MVA Unspec. 35	MVA Ped. 1330
4	MVA Ped. 3	MVA Pass. 23	Burn 21	MVA Pass. 20	MVA Unspec. 152	MVA Unspec. 275	Blunt 214	MVA Unspec. 131	MVA Unspec. 50	Burn 32	MVA Unspec. 897
5	Blunt 3	MVA Unspec. 18	MVA Pass. 19	MVA Unspec. 18	Blunt 127	Blunt 207	MVA Unspec. 189	Blunt 100	Blunt 32	Blunt 27	Blunt 731
6	Sharp 2	Firearm 8	Firearm 10	Hanging 14	MVA Pass. 111	Burn 198	Burn 143	Burn 82	MVA Pass. 32	MVA Pass. 27	Burn 675
7	MVA Unspec. 2	Blunt 7	Blunt 6	Burn 13	Hanging 88	Hanging 133	MVA Driver 113	MVA Driver 72	Burn 29	Sharp 23	MVA Pass. 513
8	Firearm 1	Sharp 3	Sharp 3	Sharp 10	Burn 86	MVA Driver 132	MVA Pass. 94	MVA Pass. 61	MVA Driver 28	MVA Driver 19	MVA Driver 427
9	MVA Driver 0	Hanging 3	Hanging 1	Blunt 8	MVA Driver 63	MVA Pass. 120	Hanging 67	Hanging 43	Hanging 19	Hanging 9	Hanging 377
10	Hanging 0	MVA Driver 0	MVA Driver 0	MVA Driver 0	Drowning 43	Drowning 49	Drowning 39	Drowning 24	Drowning 8	Drowning 3	Drowning 285

5. HOMICIDE

Just over half of all 6 858 homicides were inflicted by firearms, followed by a third inflicted by knives and other sharp instruments, and 11% where blunt instruments were used (Figure 9).



5.1 Homicide, seasonal trends

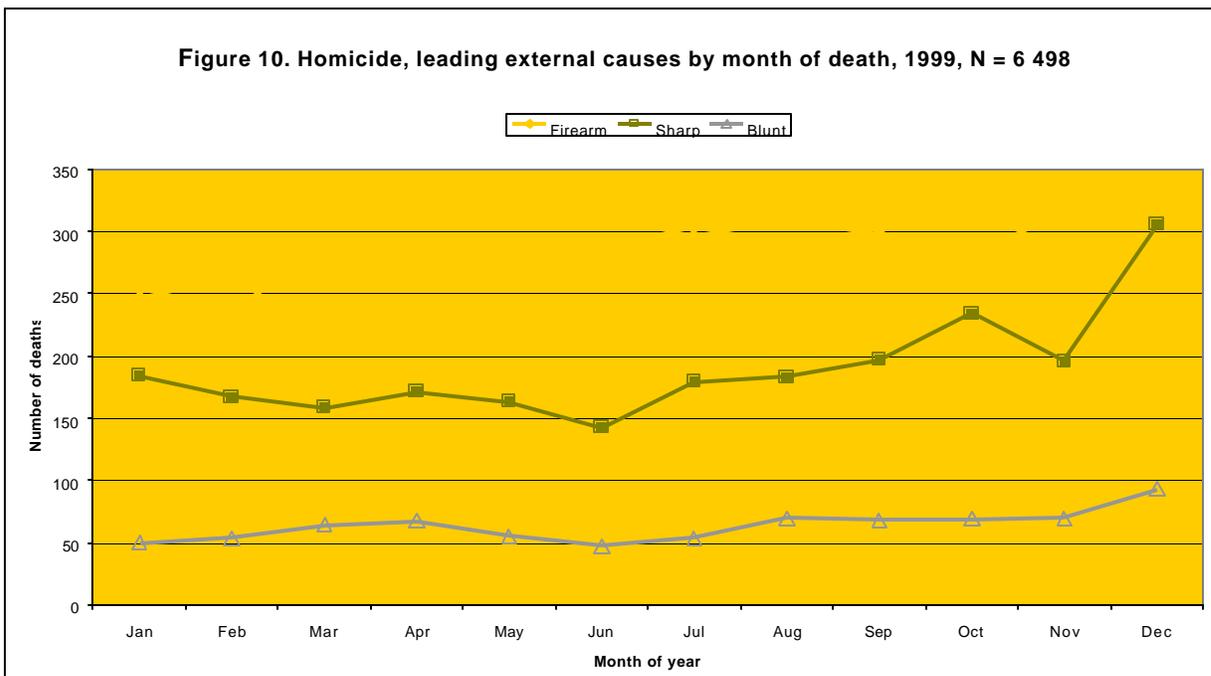


Figure 10 shows seasonal trends for the three leading external causes of homicide. The number of firearm deaths increased from 250 per month in January and February to approximately 300 per month in March and for the rest of the year. Sharp instrument homicides, by contrast, decreased steadily from January to June before increasing steeply from 150 in June to over 200 per month in October and November, and over 300 in December. Homicides inflicted by blunt instruments also showed an upward trend over the year, with seasonal peaks in March, April and December.

5.2 Homicide, external causes by sex of victim

Table 5. Homicide, external causes by sex of victim, 1999

	Firearm	Sharp	Blunt	Strangle	Burn	Other	TOTAL
Female	367 (40.4)	256 (28.2)	145 (16.0)	63 (6.9)	20 (2.2)	57 (6.3)	908 (100)
Male	3054 (51.7)	2021 (34.2)	616 (10.4)	26 (0.4)	28 (0.5)	162 (2.7)	5907 (100)
M:F ratio	8.3	7.9	4.2	0.4	1.4	2.8	6.5

Table 5 shows that there were 6.5 male homicide victims for every female victim. Firearm homicides predominated both for males (51.7% of all homicides), and females (40.4% of homicides). There were 8.3 males for every female victim of firearm homicide, and around eight males per female were killed with sharp instruments. Homicide by strangulation was over six times more frequent in females (6.9%) than males (0.4%), while homicide inflicted by burning was four times more frequent in females (2.2%) than in males (0.5%). Sharp and blunt instrument homicides showed the least percentage variation between sexes, although females were more likely to be killed by blunt instruments and males by sharp instruments.

5.3 Homicide, external causes by victim population group

Table 6. Homicide, external causes by victim population group, 1999

	Firearm	Sharp	Blunt	Strangle	Burn	Other	TOTAL
Asian	96 (65.3)	22 (15.0)	13 (8.8)	3 (2.0)	4 (2.7)	9 (6.1)	147
Black	2627 (51.7)	1652 (32.5)	589 (11.6)	56 (1.1)	38 (0.7)	122 (2.4)	5084
Coloured	500 (40.2)	544 (43.8)	123 (9.9)	9 (0.7)	2 (0.2)	65 (5.2)	1243
White	198 (60.9)	50 (15.4)	36 (11.1)	21 (6.5)	3 (0.9)	17 (5.2)	325

Table 6 compares the external causes of homicide by victim population group. The highest percentage of firearm homicides occurred in Asians (65.3%) and Whites (60.9%). Firearms accounted for 51.7% of all homicides in Blacks, and 40.2% in Coloureds. In Coloureds, sharp instruments (43.8%) accounted for slightly more homicides than firearms (40.2%), and Coloureds were the only group where firearms did not account for majority of homicides. Across all groups, a roughly equal percentage of homicides was inflicted by blunt instruments, while in Whites the proportion of homicides by strangulation (6.5%), and in Asians by burning (2.7%), were considerably higher than for the other population groups.

5.4 Homicide, external causes by age of victim

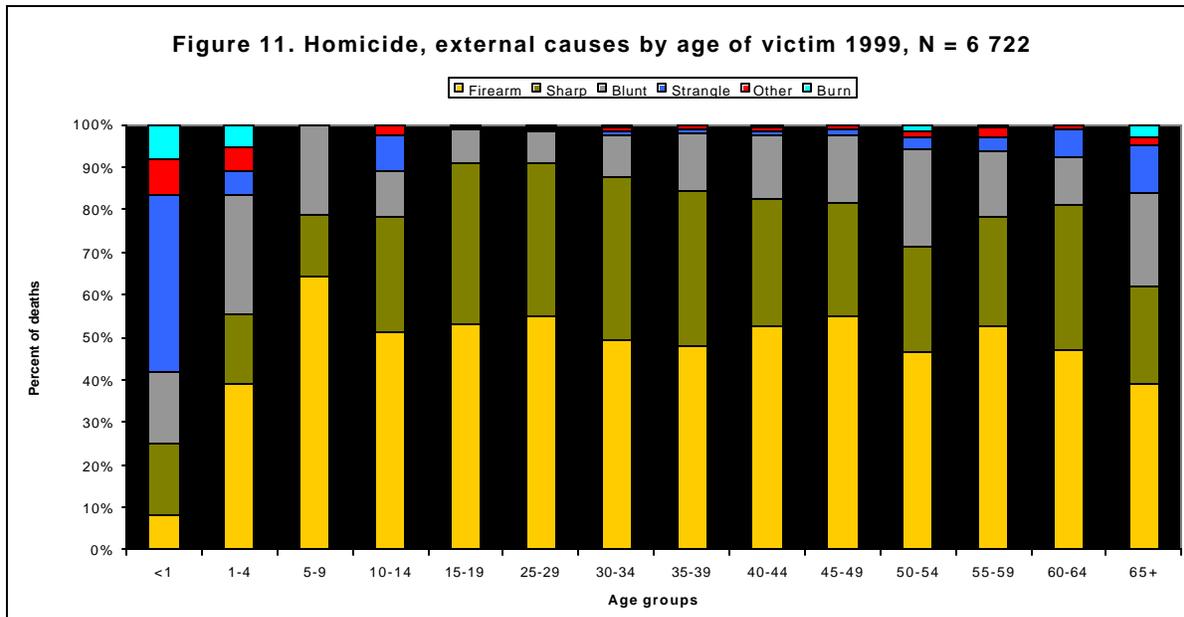


Figure 11 shows the different methods of homicide as a proportion of all homicides in each victim age group. The patterns in the two youngest and the two oldest age groups differed most. For infants under one year, homicide by strangulation was conspicuous, for children aged 1 to 4 blunt instrument homicides stood out, and in both these youngest groups the proportion of burn-inflicted homicides was relatively high. From age 5 to 59 around 50% of homicides involved firearms, and another 30% sharp instruments. In the age groups 60 to 64 and 65 years and over, the percentage of strangulation homicides again increased, although firearms and sharp instruments remained the most frequent methods.

5.5 Homicide, scene of injury by sex of victim

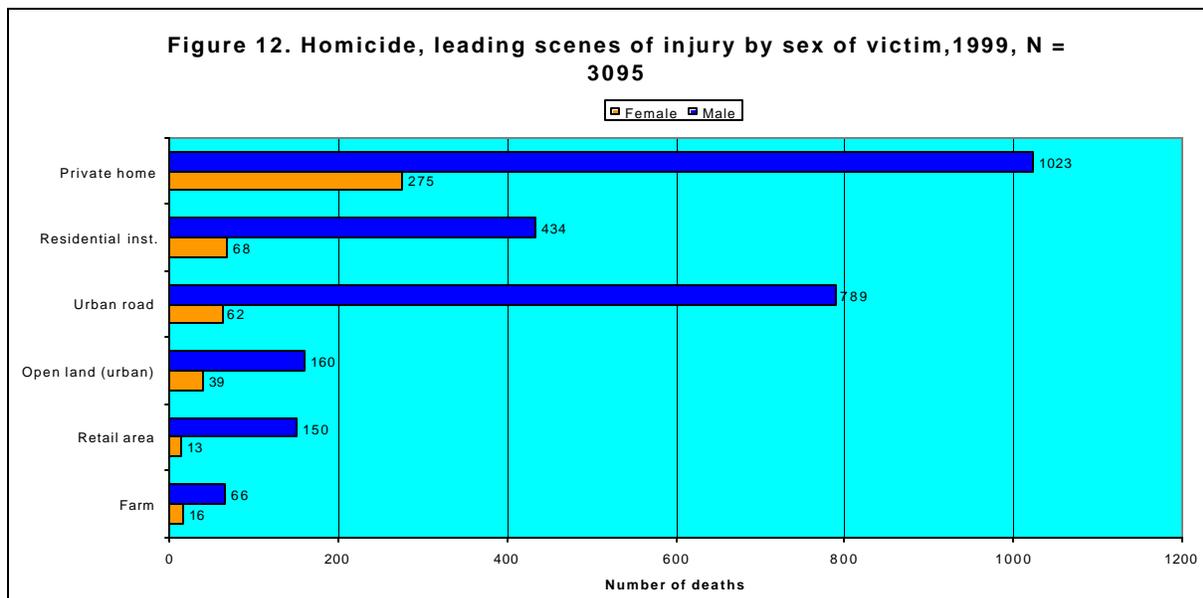
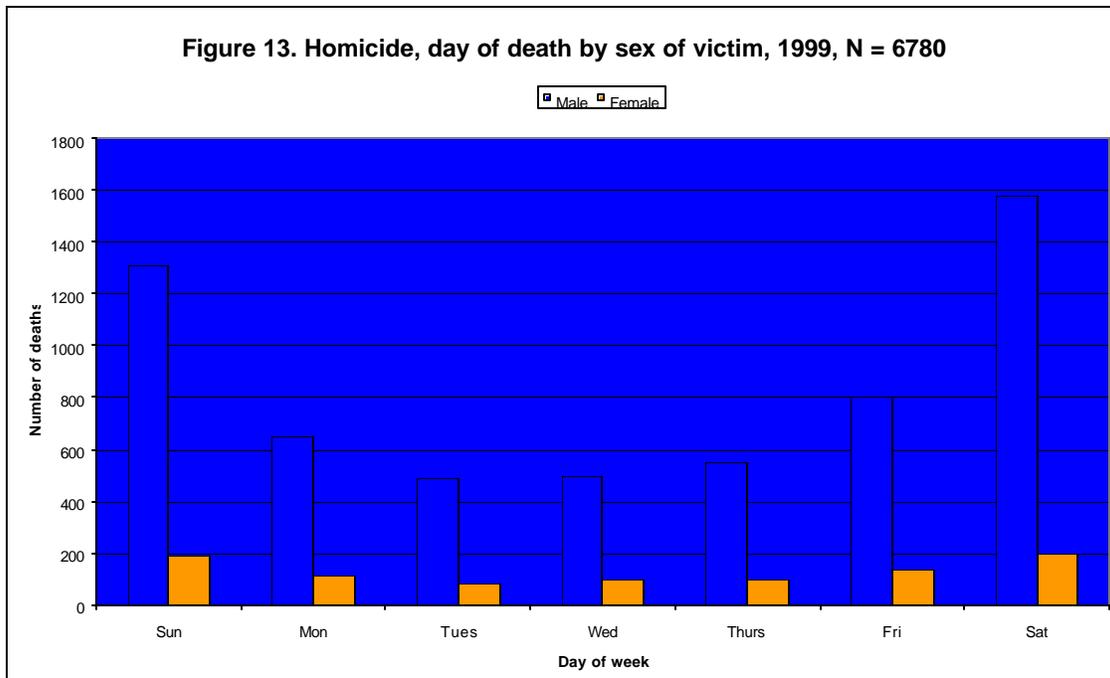


Figure 12 shows the number of homicides in males and females by the top six scenes of injury. Private home was the most frequent scene for males and females, followed by 'residential institution' (e.g. hostels). Urban roads, open land in urban areas, retail areas, and farms also featured among the leading scenes of homicide.

5.6 Homicide, day and time of death

Figures 13 and 14 show the distribution of homicide deaths by day of week and hour of day for males and females. For both sexes, the late evening and very early morning hours of Saturday and Sunday were the most frequent days and times of homicide deaths. Homicides in males but not in females showed a slight peaking between 06:00 and 07:00, and in both sexes there was a mid-morning increase of homicide deaths between 08:00



and 10:00. Mid-day, mid-week was the period of fewest homicides for both males and females.

5.7 Homicide and victim blood alcohol content

BACs were ascertained for 2 469 (36%) of the 6 859 homicide victims. Figure 15 shows the proportion of all homicides by blood alcohol content, and Table 7 displays the distribution of BAC levels by external cause of homicide.

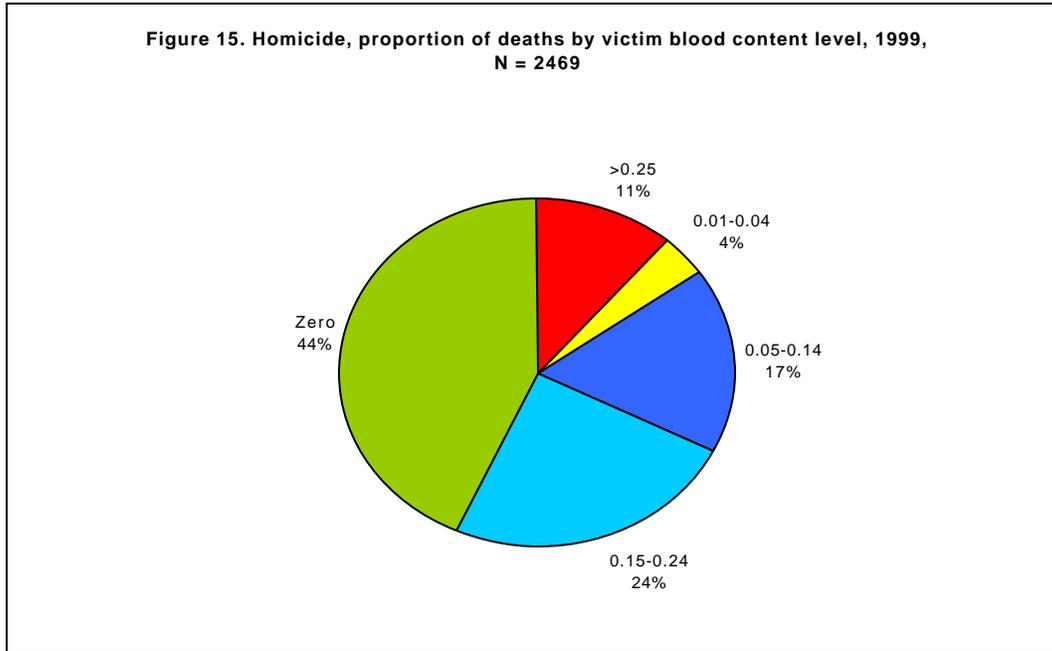


Figure 15 shows that 56% of the homicide victims sampled had positive BACs. Of these, four percent had BACs of 0.04 or less, a quarter had between 0.15 and 0.24 g/100 ml, and 11% had 0.25 grams or more. Table 7 shows that the lowest proportion of alcohol related cases occurred where homicide was inflicted by a firearm (60.6% of these deaths had zero alcohol), and by strangulation (where 65.5% had zero blood alcohol). By contrast, nearly 80% of the sharp instrument and over half of the blunt instrument homicide victims had positive BACs. The mean BAC level for positive cases was 0.17 for all homicides, and ranged from a high of 0.19 in sharp instrument homicides to a low of 0.15 in firearm homicides.

Table 7. Homicide, victim blood alcohol level by external cause of death, 1999

	Firearm	Sharp	Blunt	Strangle	Other	All
>0.25	45 (3.8)	201 (19.7)	27 (16.4)	2 (6.9)	8 (11.4)	283 (11.5)
0.15-0.24	193 (16.3)	358 (35.1)	30 (18.2)	4 (13.8)	11 (15.7)	596 (24.1)
0.05-0.14	177 (14.9)	211 (20.7)	26 (15.8)	3 (10.3)	13 (18.6)	430 (17.4)
0.01-0.04	52 (4.4)	27 (2.6)	9 (5.5)	1 (3.4)	2 (2.9)	91 (3.7)
Zero	718 (60.6)	223 (21.9)	73 (44.2)	19 (65.5)	36 (51.4)	1069 (43.3)
TOTAL	1185 (100)	1020 (100)	165 (100)	29 (100)	70 (100)	2469 (100)
Mean positive BAC (?SD)	0.15 (0.08)	0.19 (0.08)	0.18 (0.10)	0.19 (0.08)	0.17 (0.09)	0.17 (0.08)

6. SUICIDE

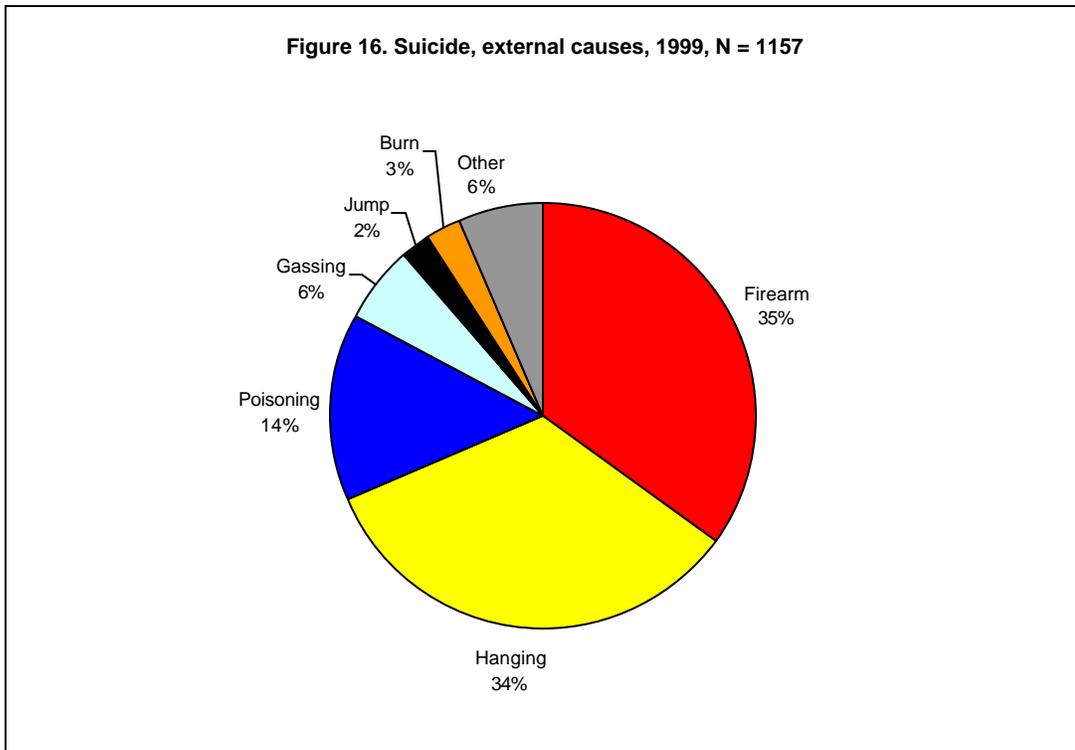


Figure 16 shows that firearms and hanging were the leading causes of suicide, each accounting for approximately a third of all 1 157 suicides. Poisoning by ingestion (e.g. of drugs, pesticide) was used in 14% of cases, and gassings accounted for 6% of suicides.

6.1 Suicide, seasonal trends

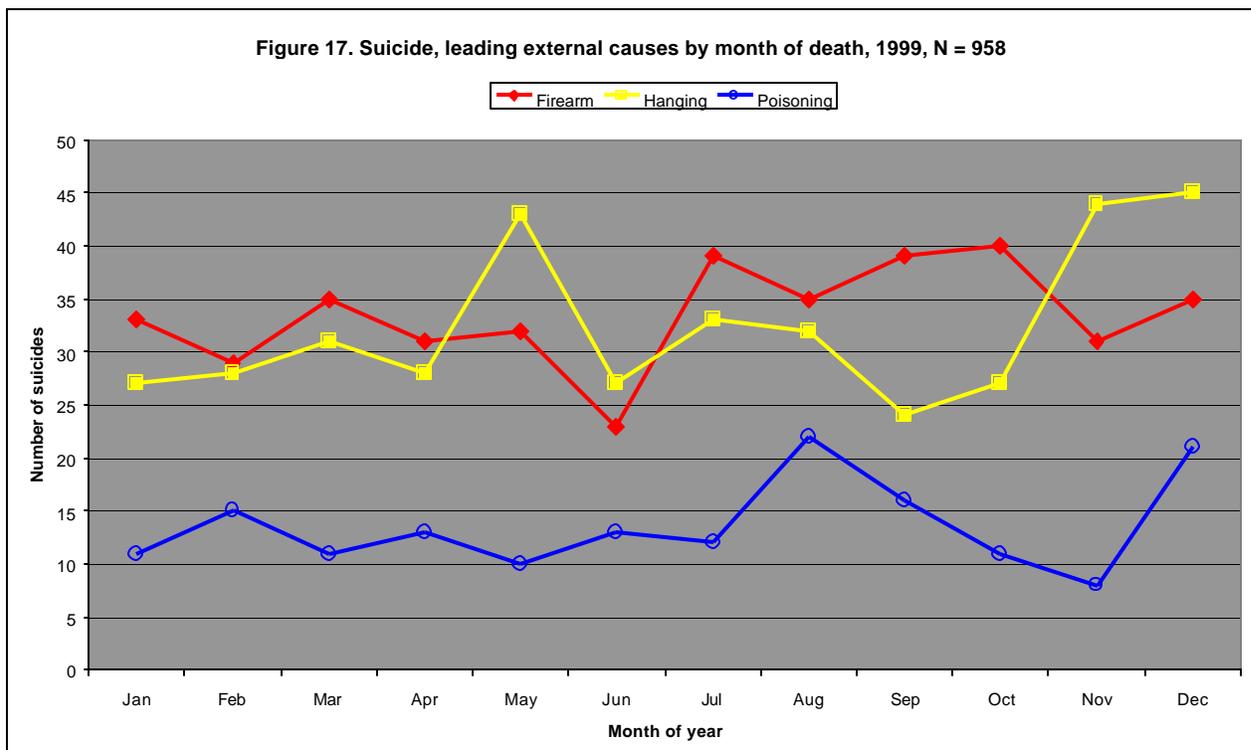


Figure 17 shows the trends from January to December 1999 for the three leading external causes of suicide. Firearms and hangings showed no sustained changes over the first half of the year. From August to November firearm suicides increased in inverse proportion to the number of hanging suicides. In November the pattern was reversed with a steep increase in hanging suicides and a decrease in firearm suicides. The number of suicides by poisoning remained relatively stable for the first seven months, before nearly doubling in August. Thereafter poisoning suicides decreased until November, before again doubling in December.

6.2 Suicide, external causes by sex of victim

Table 8. Suicide, external causes by sex of victim, 1999

	Firearm	Hanging	Poisoning	Gassing	Jump	Burn	Other	TOTAL
Male	338 (37.8)	337 (37.7)	86 (9.6)	51 (5.7)	18 (2.0)	10 (1.1)	54 (6.0)	894 (100)
Female	66 (26.0)	48 (18.9)	76 (29.9)	16 (6.3)	6 (2.4)	23 (9.1)	19 (7.5)	254 (100)
M:F ratio	5.1	7.0	1.1	3.2	3.0	0.4	2.8	3.5

The external causes of suicide by victim sex are shown in Table 8. The leading external causes in males were firearms (37.8%) and hanging (37.7%), while in females most suicides were by poisoning (29.9%) and firearms (26.0%). The proportion of male suicides through hanging was twice that for females, while the percentage of female poisoning suicides was nearly three times that for males, and the percentage of burn suicides in females over eight times that in males. Roughly equal proportions of males and females killed themselves by gassing, jumping and other methods.

6.3 Suicide, external causes by victim population group

Table 9. Suicide, external causes by victim population group, 1999

	Firearm	Hanging	Poisoning	Gassing	Jump	Burn	Other	TOTAL
Asian	17 (32.7)	15 (28.8)	8 (15.4)	0 (0.0)	1 (1.9)	2 (3.8)	9 (17.3)	52 (100)
Black	143 (26.4)	254 (46.9)	63 (11.6)	8 (1.5)	6 (1.1)	27 (5.0)	41 (7.6)	542 (100)
Coloured	36 (25.7)	49 (35.0)	36 (25.7)	2 (1.4)	4 (2.9)	4 (2.9)	9 (6.4)	140 (100)
White	206 (49.8)	68 (16.4)	56 (13.5)	57 (13.8)	13 (3.1)	0 (0.0)	14 (3.4)	414 (100)

Table 9 shows the distribution of external causes of suicide by victim population group. Firearms accounted for the largest proportion of suicides in Whites (49.8%) and Asians (32.7%). Suicide by hanging was the predominant method for Blacks (46.9%) and Coloureds (35.0%). Gassing was a particularly common method of suicide in Whites where it accounted for 13.8% of all suicides, while poisoning suicides were most frequent in Coloureds (25.7%).

6.4 Suicide, external causes by age of victim

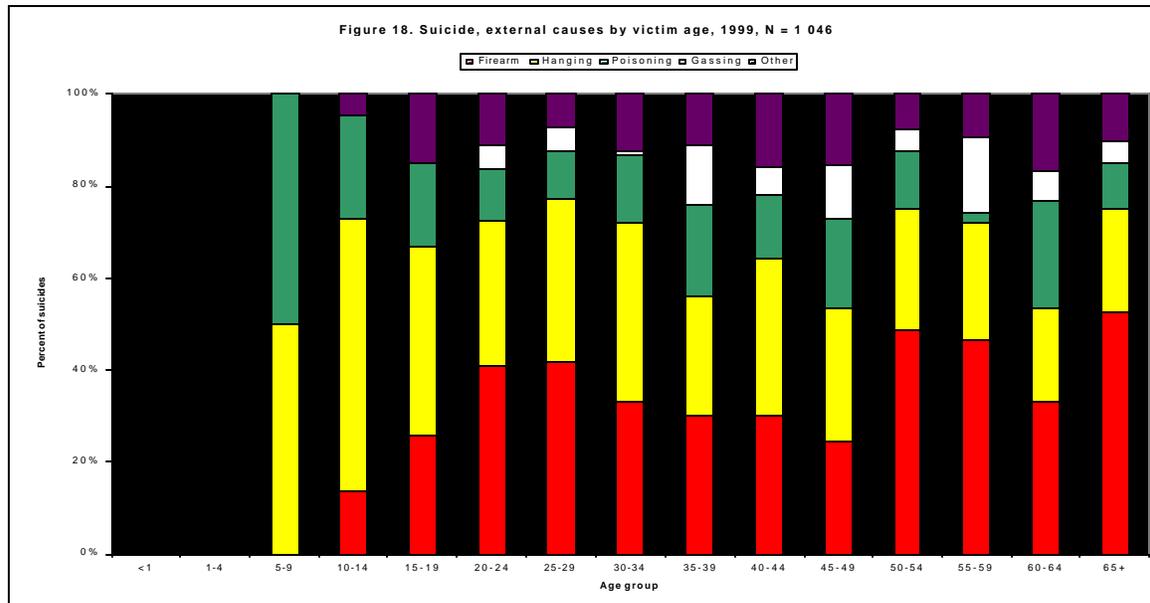
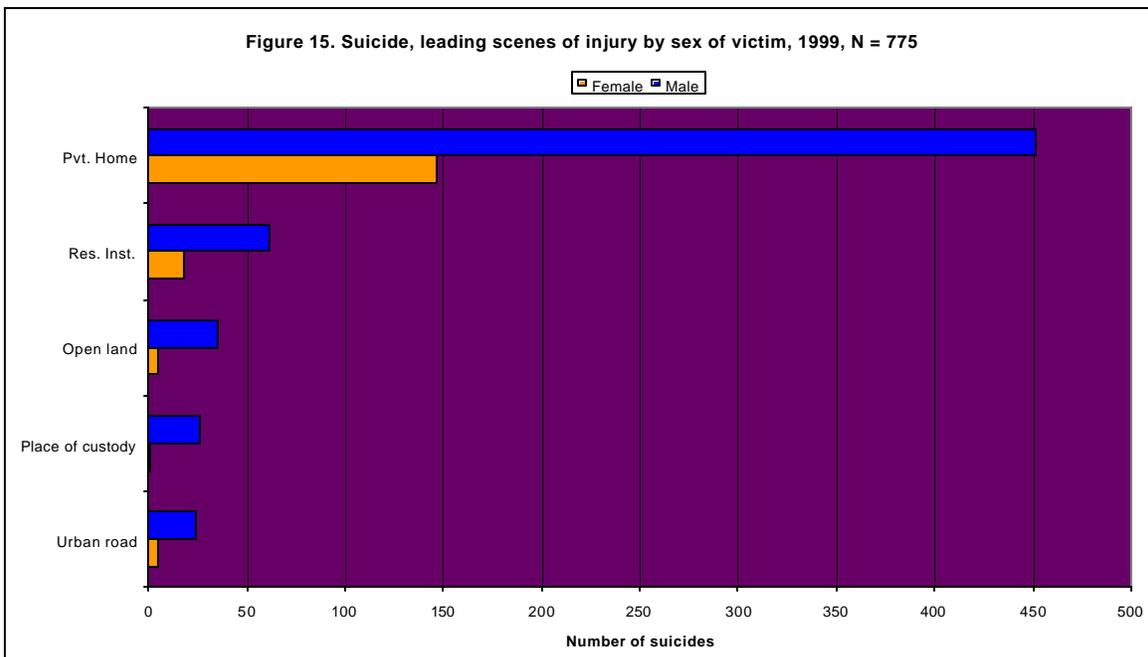


Figure 18 shows the three leading external causes of suicide as a proportion of all suicides in each age group. Hangings predominated among victims aged 5 to 19 years, but by 20 to 24 years of age accounted for an approximately equal percentage of suicides as firearms. From age 50 onwards the proportion of firearm suicides increased markedly and was largest among 55 to 59 year olds and suicide victims aged 65 and over.

6.5 Suicide, scene of injury by sex of victim

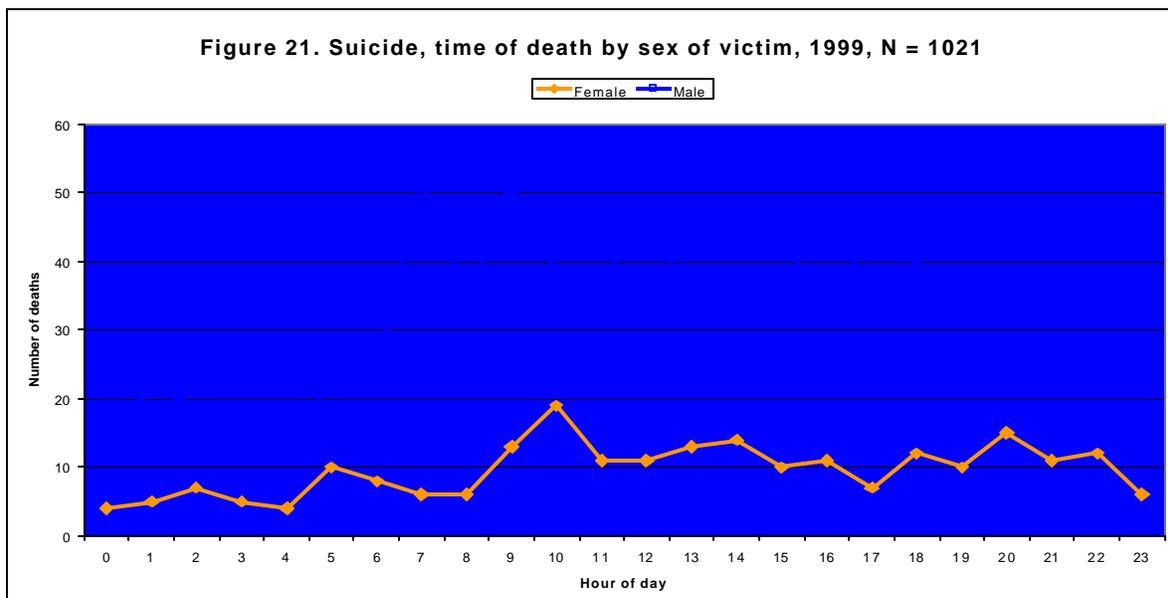
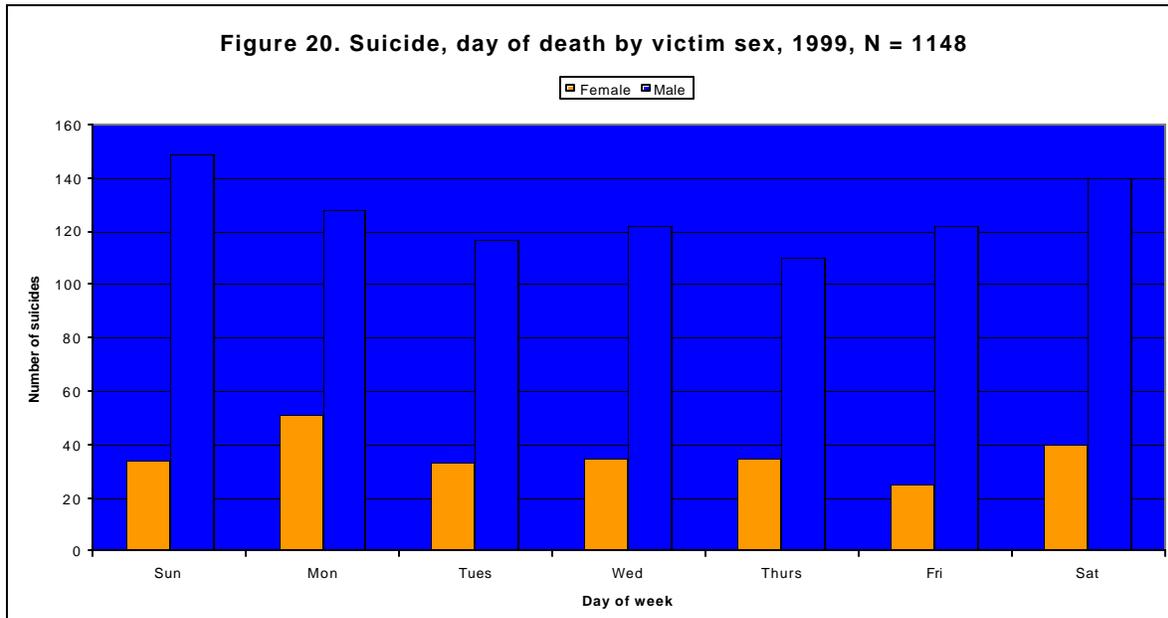
Figure 19 shows the number of male and female suicides by the leading scenes of suicide. Private home was the most frequent site of suicide for males and females, followed by



residential institutions, open land, places of custody, and urban roads. The distribution of males and females between the different scenes was similar, although there was a preponderance of male suicides at or in places of custody.

6.6 Suicide, day and time of death

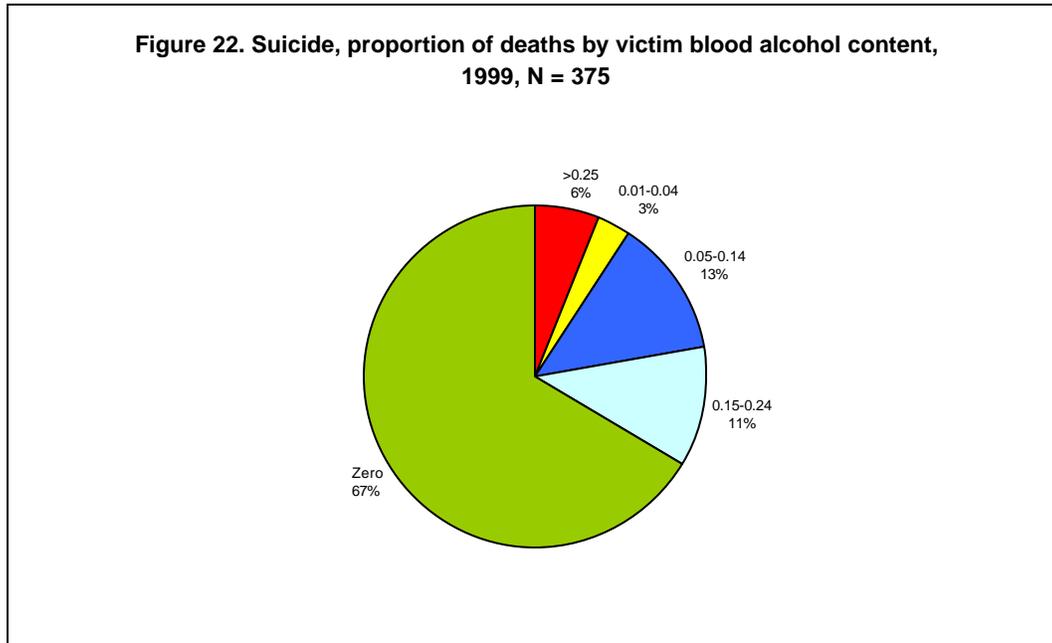
Figures 20 and 21 show the distribution of suicides by day of week and hour of day for males and females. For males there were slightly more cases on Saturdays and Sundays than on other weekdays, while female suicides were more evenly spread across the week. Suicide deaths were least frequent in the very early morning hours from 0:00 to 06:00 and



most frequent from 08:00 to 22:00. The time patterns for males and females were similar.

6.7 Suicide and victim blood alcohol content

BACs were obtained for 375 (32.4%) of the 1 157 suicides. Figure 22 shows the proportion of cases by BAC level, and Table 10 the distribution of BACs levels across the external causes of suicide.



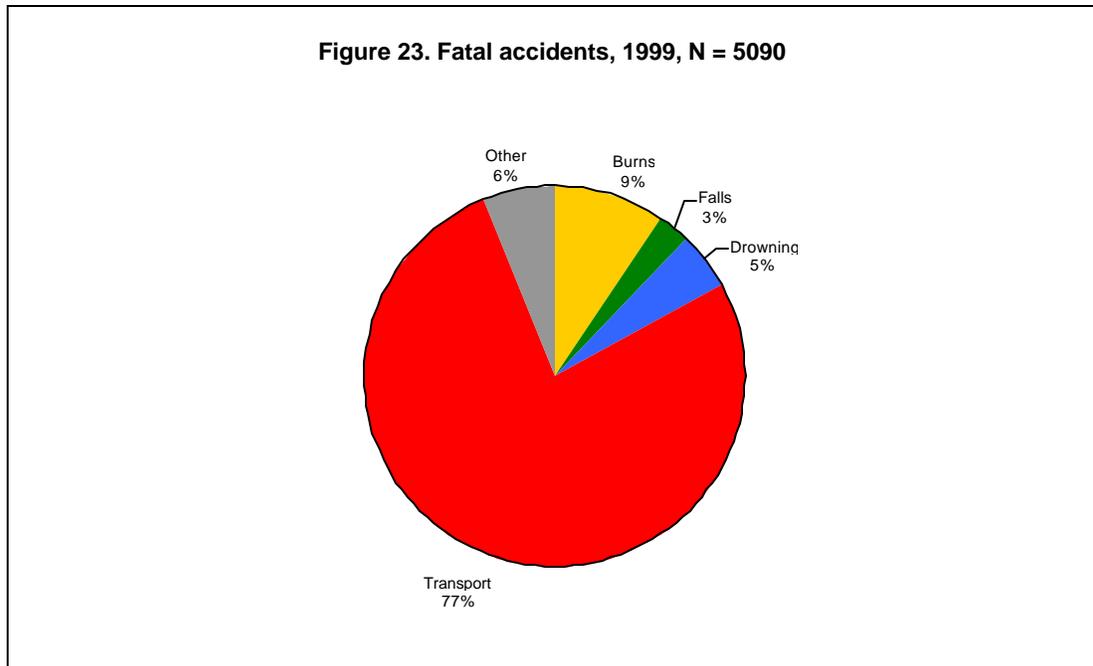
As Figure 19 shows, a majority (67%) of suicides had zero blood alcohol. Of the suicide victims where BACs were positive, 13% had from 0.05 to 0.14 g/100ml, and 11% from 0.15 to 0.24. Table 12 shows that more than half of the victims of suicide by gassing had elevated BACs, in contrast to around a third of suicides by other methods.

Table 10. Suicide, victim blood alcohol content by external cause of death, 1999

	Firearm	Hanging	Poisoning	Gassing	Other	TOTAL
>0.25	7 (5.4)	10 (6.7)	5 (10.0)	2 (6.9)	0 (0.0)	23 (6.1)
0.01-0.04	2 (1.5)	2 (1.3)	2 (5.0)	5 (17.2)	0 (0.0)	11 (2.9)
0.05-0.14	20 (15.4)	19 (12.7)	3 (7.5)	3 (10.3)	4 (22.2)	49 (13.1)
0.15-0.24	19 (14.6)	13 (8.7)	2 (5.0)	5 (17.2)	4 (21.5)	43 (11.5)
Zero	82 (63.1)	106 (70.7)	29 (72.5)	14 (48.3)	18 (71.0)	249 (66.4)
TOTAL	130 (100.0)	150 (100.0)	41 (100.0)	29 (100.0)	26 (100.0)	376 (100)
Mean positive BAC (?SD)	0.17 (0.09)	0.18 (0.11)	0.20 (0.14)	0.13 (0.10)	0.15 (0.06)	0.17 (0.10)

7. FATAL ACCIDENTS

Accident deaths accounted for 5 090 or 32.3% of all 14 829 non-natural deaths. Figure 23 shows that transport collisions accounted for the large majority (77%) of accident fatalities. Burns were the second leading cause of accident deaths, accounting for 9% of fatalities, and third most frequent was drowning (5%).



7.1 Fatal accidents by victim sex

The distribution of the external causes of fatal accidents by victim sex appears in Table 11. Across all external causes, there were 2.8 males for every female victim. For males and females three quarters of all accident deaths were transport-related. The proportions of drowning and burn deaths were also similar for males and females, while the female percentage of accidental burn deaths (14.3%) was twice as high as for males (7.7%).

Table 11. Fatal accidents by sex of victim, 1999

	Burns	Falls	Drowning	Transport	Other	TOTAL
Male	286 (7.7)	110 (3.0)	196 (5.3)	2896 (77.7)	239 (6.4)	3727 (100)
Female	189 (14.3)	29 (2.2)	43 (3.3)	984 (74.4)	77 (5.8)	1322 (100)
M:F ratio	1.5	3.8	4.6	2.9	3.1	2.8

7.2 Fatal accidents by victim population group

Table 12. Fatal accidents by victim population group, 1999

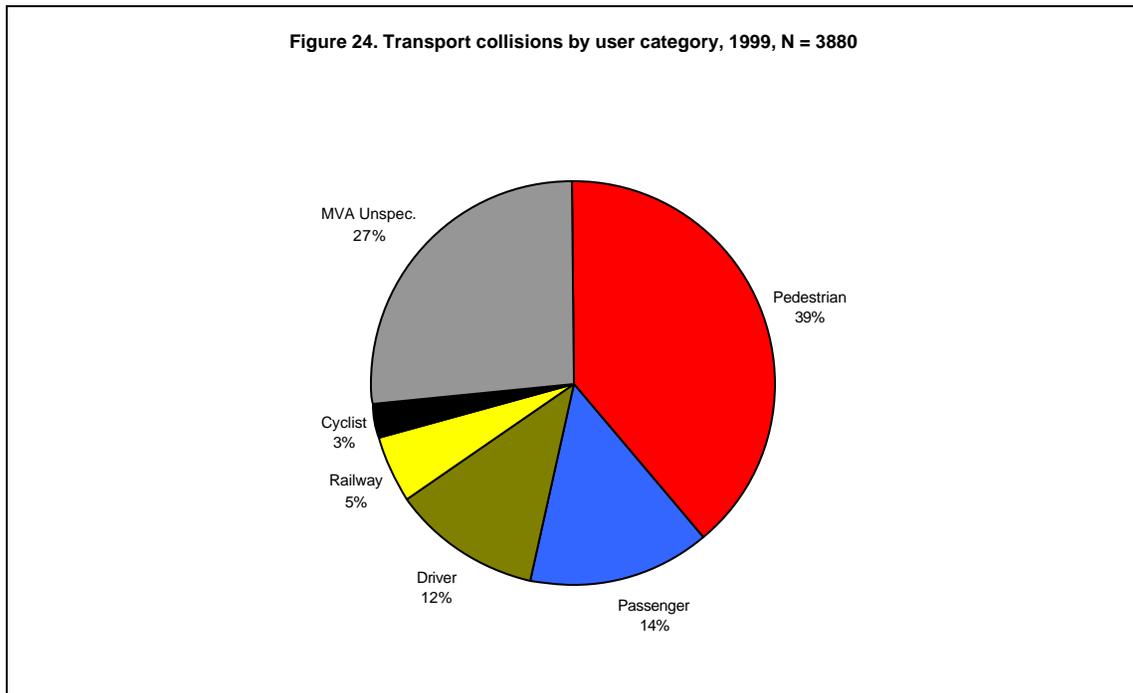
	Burns	Falls	Drowning	Transport	Other	TOTAL
Asian	5 (3.5)	5 (3.5)	8 (5.6)	113 (79.0)	12 (8.4)	143 (100)
Black	392 (11.5)	67 (2.0)	152 (4.5)	2582 (76.1)	202 (5.9)	3395 (100)
Coloured	52 (5.9)	42 (4.7)	45 (5.1)	699 (78.8)	49 (5.5)	887 (100)
White	25 (4.2)	25 (4.2)	33 (5.5)	465 (77.6)	51 (8.5)	599 (100)

Table 12 shows that the proportions of transport-related and drowning deaths were approximately equal across all population groups, transport accounting for over three quarters of all deaths in every group, and drowning around 5% of all deaths per group. Fall deaths were proportionately more common in Whites and Coloureds. Burn deaths were markedly elevated among Blacks, accounting for 11.5% of all fatal accident deaths as against 3.5% to 6% in the other population groups.

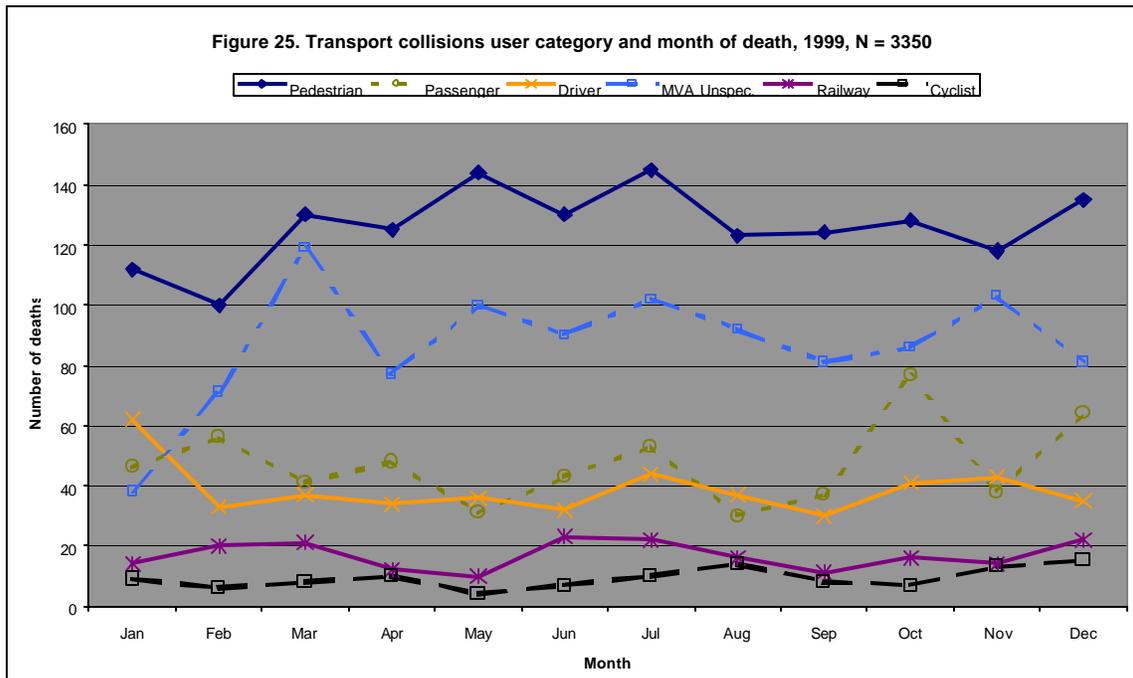
Sections 7.1 and 7.2 describe the detailed profiles for transport-related deaths (section 7.1), and deaths due to burns, falls, drowning and other accidents (section 7.2).

7.1 TRANSPORT-RELATED DEATHS

Figure 24 shows that of all 3 880 deaths due to transport collisions, 39% involved pedestrian MVAs, followed by a further 27% killed in MVAs where victim user status was unspecified.



7.1.1 Transport-related deaths, seasonal trends



The seasonal trends for transport-related deaths by user category appear in Figure 25. Except for driver deaths that remained stable, all other categories of MVA deaths increased from January to July and levelled out from August onwards. There were peaks for pedestrian deaths in January, May, July and December, and except for January and December the pattern for MVA unspecified was similar to that for pedestrians. Passenger deaths showed peaks in February, April, June-July, October and December. Railway and cyclist deaths showed seasonal fluctuations but no upward or downward trends in frequency.

7.1.2 Transport-related deaths by user category and sex of victim

Table 13. Transport-related deaths by user category and victim sex, 1999

	Pedestrian	Passenger	Driver	MVA Unspec.	Railway	Cyclist	TOTAL
Male	1096 (37.8)	343 (11.8)	413 (14.3)	779 (26.9)	163 (5.6)	102 (3.5)	2896 (100)
Female	413 (42.0)	218 (22.2)	51 (5.2)	258 (26.2)	36 (3.7)	8 (0.8)	984 (100)
M:F ratio	2.7	1.6	8.1	3.0	4.5	12.8	2.9 (100)

Table 13 displays the distribution of user categories by sex of victim for all transport-related deaths. Overall, there were 2.9 males for every female victim of transport-related death, with the highest ratio of males to females among drivers (8.1) and the lowest among passengers (1.6). Approximately equal percentages of male and female deaths were pedestrians and unspecified MVAs. The proportion of female passenger deaths (22.2%) was twice that for males, while the 14.3% of male driver deaths was nearly three times the proportion of female driver deaths.

7.1.3 Transport-related deaths by user category and victim population group

Table 14. Transport-related deaths by user category and victim population group, 1999

	Pedestrian	Passenger	Driver	MVA Unspec.	Railway	Cyclist	TOTAL
Asian	27 (23.9)	18 (15.9)	20 (17.7)	45 (39.8)	0 (0.0)	3 (2.7)	113 (100)
Black	1057 (40.9)	332 (12.9)	202 (7.8)	793 (30.7)	160 (6.2)	38 (1.5)	2582 (100)
Coloured	367 (52.5)	137 (19.6)	77 (11.0)	64 (9.2)	33 (4.7)	21 (3.0)	699 (100)
White	51 (10.9)	69 (14.8)	158 (33.9)	134 (28.8)	5 (1.1)	48 (10.3)	465 (100)

As shown in Table 14, the proportion of pedestrian deaths was lowest in Whites (10.9%) and Asians (23.9%), and highest in Blacks (40.9%) and Coloureds (52.5%). Passenger deaths occurred in roughly equal proportion across the population groups, while the percentage of White driver deaths was extremely high relative to the other groups. Railway deaths were far more frequent in Blacks and Coloureds, and the highest proportion of cyclist deaths was in Whites.

7.1.4 Transport-related deaths, user categories by age of victim

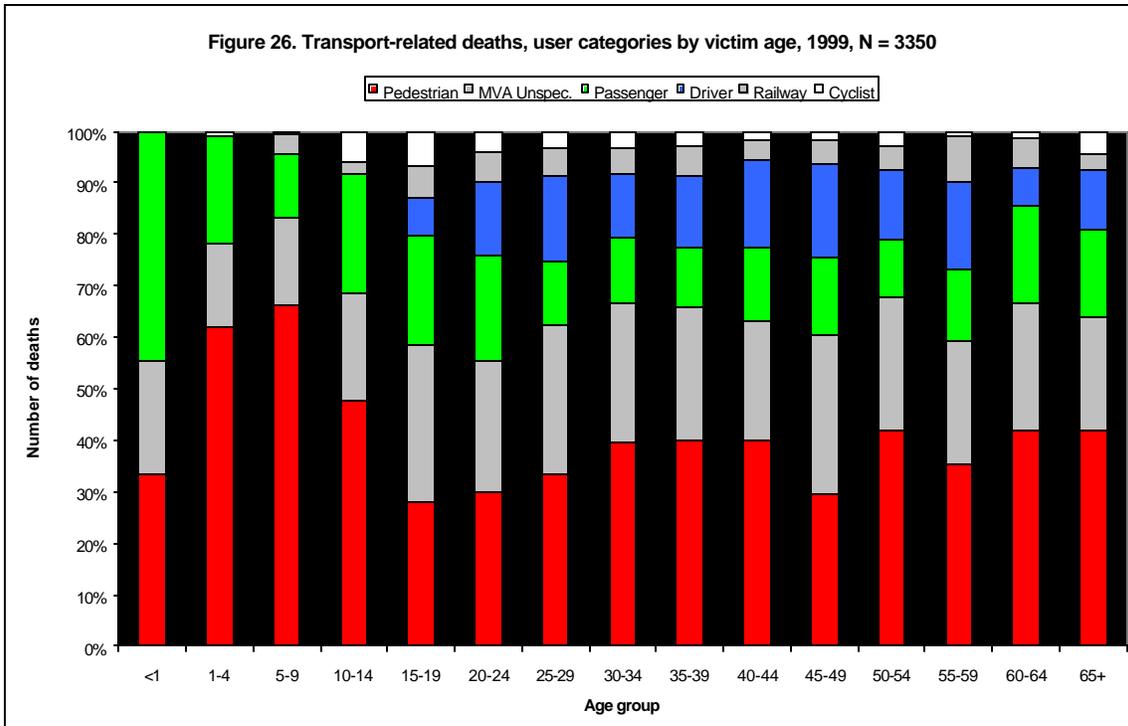


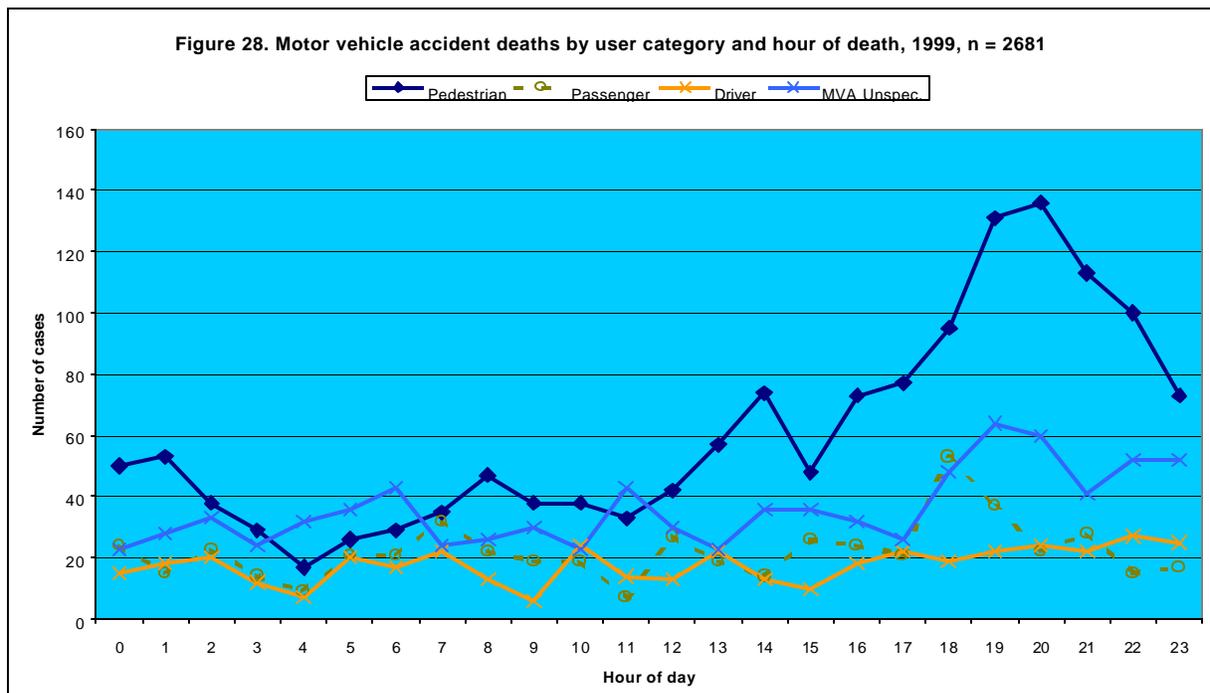
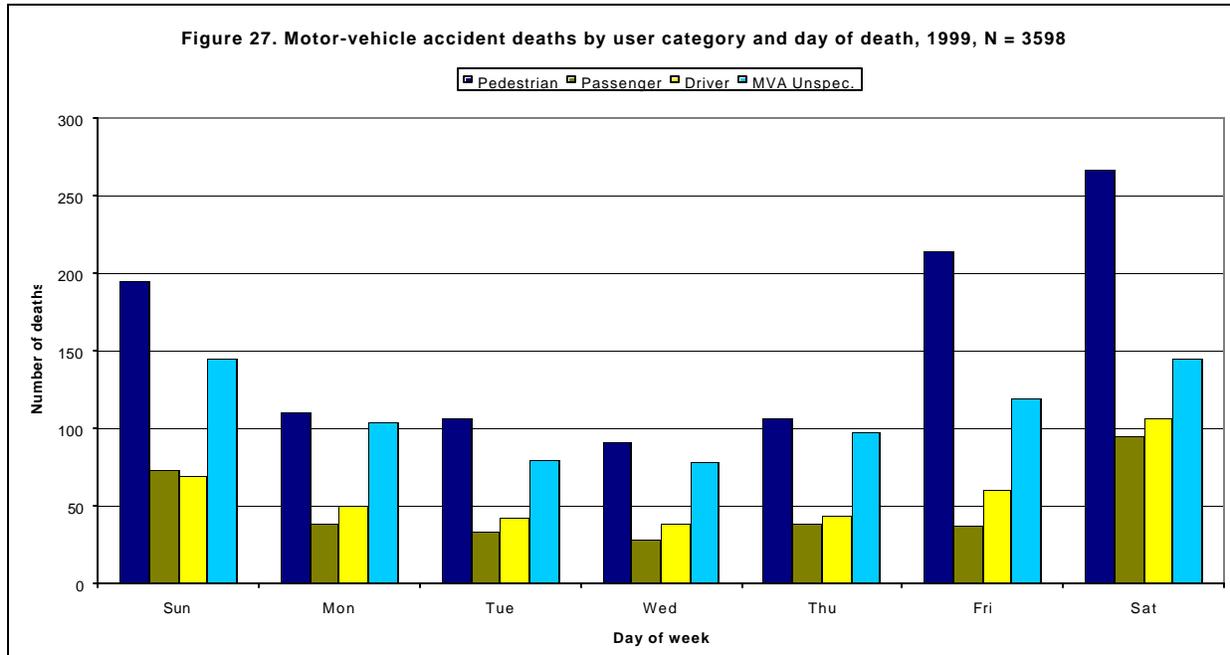
Figure 26 shows the user categories as a percentage of all transport-related deaths in each age group. Nearly half of all victims under one year of age were passengers and under a third pedestrians. By age 1 to 4 years, over 60% of all deaths were pedestrians, and just 10% passengers, with similar proportions among 5 to 9 year olds. From age 10 the pedestrian component of transport-related accidents reduced to between 30% and 40%, and from 20 years onward the proportion of driver deaths increased until age 60. Cycling deaths were most frequent in the 15 to 24 year age range, while railway deaths accounted for around 5% of transport-related deaths from age 10 onward.

7.1.5 Transport-related deaths, user category by scene of injury

Almost all motor vehicle-related and cyclist fatalities were recorded as occurring on urban public roads. The main scenes of injury for railway accidents were railway stations and stretches of railway line in between stations, each of which accounted for around half of the railway-related deaths.

7.1.6 Transport-related deaths, day and time of death

Figures 27 and 28 display the distribution of transport-related deaths by day of week and hour of day for the four categories of motor-vehicle users only. By day of week, the number of deaths in these MVA categories was constant from Monday through Thursday. Pedestrian and MVA unspecified deaths more than doubled on Fridays. Saturdays were marked by a further increase in pedestrian deaths, alongside a doubling of passenger



deaths. By time of day, pedestrian fatalities showed peaks between 07:00 and 09:00, from 12:00 to 14:00, and from 17:00 to 20:00. The number of driver deaths remained relatively constant across daylight hours, with a slight increase from 19:00 to 23:00. Cyclist deaths (not shown) were more frequent on weekends, and showed peaks between 05:00 and 09:00 and at dusk from 17:00 to 19:00. Railway injuries (not shown) were more evenly distributed through the week, and peaked from 06:00 to 10:00 and again from 15:00 to 21:00.

7.1.7 Transport-related deaths by user category and blood alcohol content

BACs were available for 1 160 or 29.8% of the 3 880 transport-related deaths. Figure 29 shows the proportion of all transport fatalities by blood alcohol level, and Table 15 the distribution of BACs by user category.

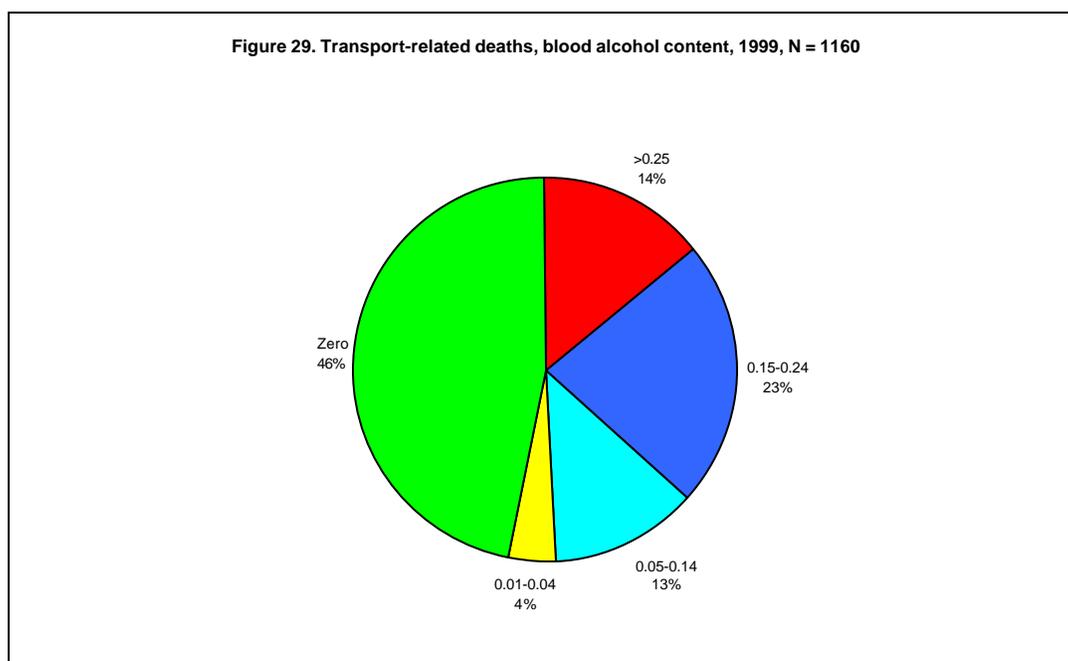


Figure 29 shows that 56% of all transport-related deaths tested had elevated BACs. Of these, 4% had levels up to 0.04, nearly a quarter were between 0.15 and 0.24 (or four to six times the legal limit for drivers), and 14% had levels of 0.25 or more. Table 15 shows that the proportion of cases with zero blood alcohol levels was highest for MVA passengers, MVA unspecified, and railway deaths.

Table 15. Transport-related deaths by user category and blood alcohol content, 1999

	Pedestrian	Passenger	Driver	MVA Unspec.	Railway	Cyclist
>0.25	138 (22.9)	4 (2.6)	15 (7.0)	7 (4.6)	13 (12.8)	1 (2.7)
0.15-0.24	159 (28.5)	22 (14.2)	42 (22.6)	19 (14.6)	10 (10.6)	9 (24.3)
0.05-0.14	61 (10.9)	21 (13.5)	31 (16.7)	24 (18.5)	4 (4.3)	5 (13.5)
0.01-0.04	15 (2.7)	8 (5.2)	13 (7.0)	1 (0.8)	4 (4.3)	3 (8.1)
Zero	195 (34.9)	100 (64.5)	87 (46.8)	80 (61.5)	64 (68.1)	19 (51.4)
TOTAL	568 (100)	155 (100)	188 (100)	131 (100)	95 (100)	37 (100)
Mean positive BAC (?SD)	0.22 (0.09)	0.13 (0.07)	0.16 (0.09)	0.16 (0.10)	0.22 (0.11)	0.14 (0.08)

The highest proportion of transport-related deaths with elevated BACs and the highest mean levels were among pedestrians, where 65% had blood alcohol levels over zero, and the mean level was 0.22 (over 5 times the legal limit for drivers). Over 50% of all driver deaths also had elevated blood alcohol levels, although the mean blood alcohol level for drivers (0.16) was considerably less than for pedestrians.

7.2 BURNS, FALLS, DROWNING AND OTHER ACCIDENT DEATHS

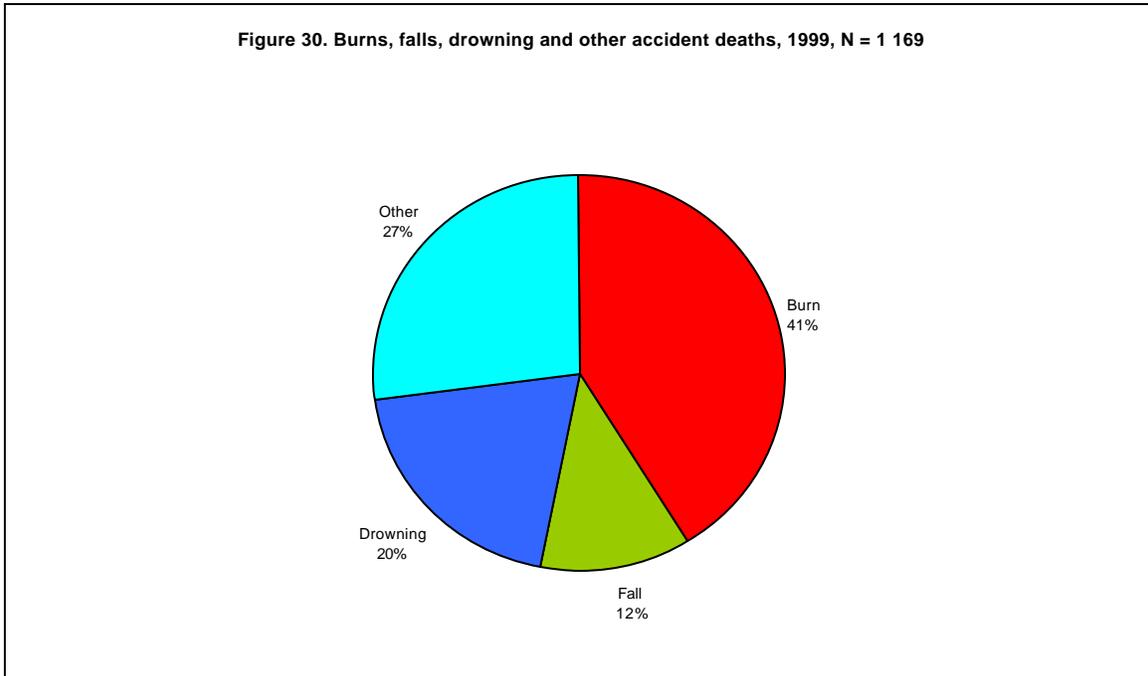
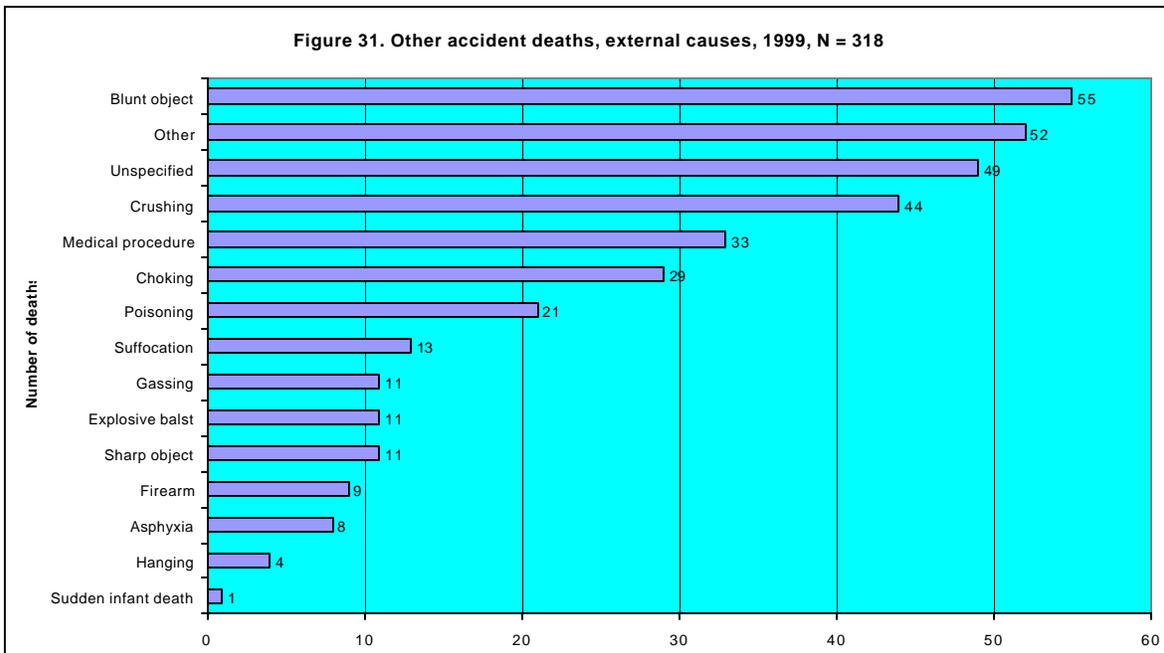


Figure 30 shows that there were 1 169 deaths due to burns, falls, drowning and other accidents. Most were due to burns (41%), followed by other accidents (27%), drowning (20%) and falls (12%).

7.2.1 External causes of other accident deaths

Figure 31 shows the external causes for the 318 deaths due to accidents other than burns, falls and drowning. Blunt objects (e.g. falling masonry) were the leading external cause, followed by cases where the external cause was unspecified. Crushing injuries were third



most common, and were incurred mainly as a result of mine accidents. Medical procedures involved mainly anaesthetic deaths, and were concentrated among 35 to 49 year olds. Deaths due to accidental choking and poisoning (e.g. by paraffin ingestion) occurred predominantly among 0 to 4 year olds. Included among the 'other' external causes were a person gored by a wildebeest (gnu), two persons who froze to death, and one sports injury.

7.2.2 Burns, falls, drowning and other accident deaths, seasonal trends

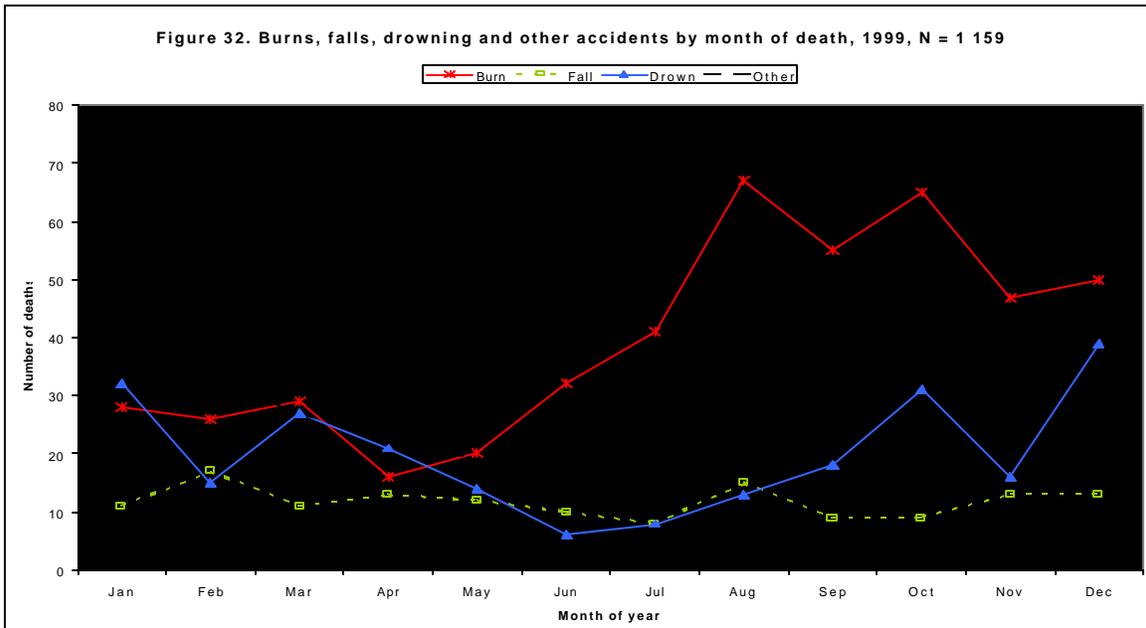


Figure 32 indicates that fall deaths were evenly distributed across January to December, whereas burns and drowning showed marked seasonal fluctuations. Other accidents showed excesses for certain months (e.g. February, August, December) but no systematic trends. Burn deaths averaged around 30 per month from January to March, before decreasing in April and May and then rising dramatically to around 60 per month for August to October, and again decreasing to 50 per month in November and December. Drowning deaths had their lowest frequency in the winter months from May to August and their highest frequencies in the summer holiday periods of December, January and March.

7.2.3 Burns, falls, drowning and other accident deaths by sex of victim

Table 16. Burns, falls, drowning and other accident deaths by sex of victim, 1999

	Burns	Drowning	Falls	Other	TOTAL
Male	286 (34.4)	110 (13.2)	196 (23.6)	239 (28.8)	831 (100)
Female	189 (55.9)	29 (8.6)	43 (12.7)	77 (22.8)	338 (100)
M:F ratio	1.5	3.8	4.6	3.1	2.5

As shown in Table 16, the proportion of burn deaths in females (55.9%) was substantially higher than in males (34.4%), whereas drowning deaths were more common in males (13.2%) than in females (8.6%). Deaths due to falls and other accidents showed the least

difference between males and females. Overall, there were 2.5 males for every female death. Falls had the highest male to female ratio (4.6) and burns the lowest (1.5).

7.2.4 Burns, falls, drowning and other accident deaths by victim population group

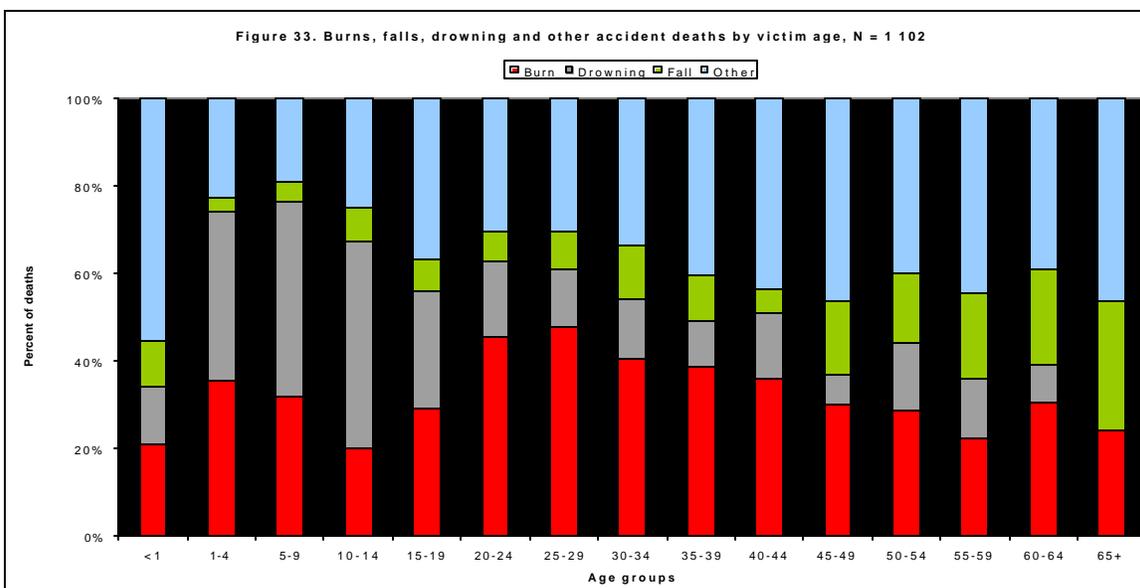
Table 17. Burns, falls, drowning and other accident deaths by victim population group

	Burns	Drowning	Falls	Other	TOTAL
Asian	5 (16.7)	5 (16.7)	8 (26.7)	15 (40.0)	30 (100)
Black	391 (48.5)	67 (8.3)	150 (18.6)	198 (24.6)	806 (100)
Coloured	52 (27.7)	42 (22.3)	45 (23.9)	49 (26.1)	188 (100)
White	25 (18.6)	25 (18.6)	33 (24.6)	51 (38.1)	134 (100)

The percentage of burn deaths in Blacks (48.5%) and Coloureds (27.7%) was substantially higher than in Whites and Asians (both around 17%). The percent of drowning deaths was highest in Coloureds (22.3%) and lowest in Blacks (8.3%). Fall deaths were less frequent in Blacks (18.6%) than in other groups. Deaths due to other accidental causes accounted for around 40% of cases in Asians and Whites as against only a quarter of the deaths in Blacks and Coloureds.

7.2.5 Burns, falls, drowning and other accident deaths by age of victim

Figure 32 shows the proportion of all deaths per age group due to burns, falls, drowning



and other accidents deaths by victim age. Burn deaths had the highest percentage frequency from 20 to 39 years of age, and in children under one year of age accounted for over a fifth of all deaths. Drowning accounted for 5% of deaths in children under one, and over 20% of deaths in children aged 1 to 14. The percentage of fall deaths increased from age 45 onward and was highest among the 65 years and over age group. Death due to other accidental causes accounted for a very high percentage of deaths in children under one year, and 40% or more of the deaths from age 35 onward.

7.2.6 Burns, falls, drowning and other accident deaths by scene of injury

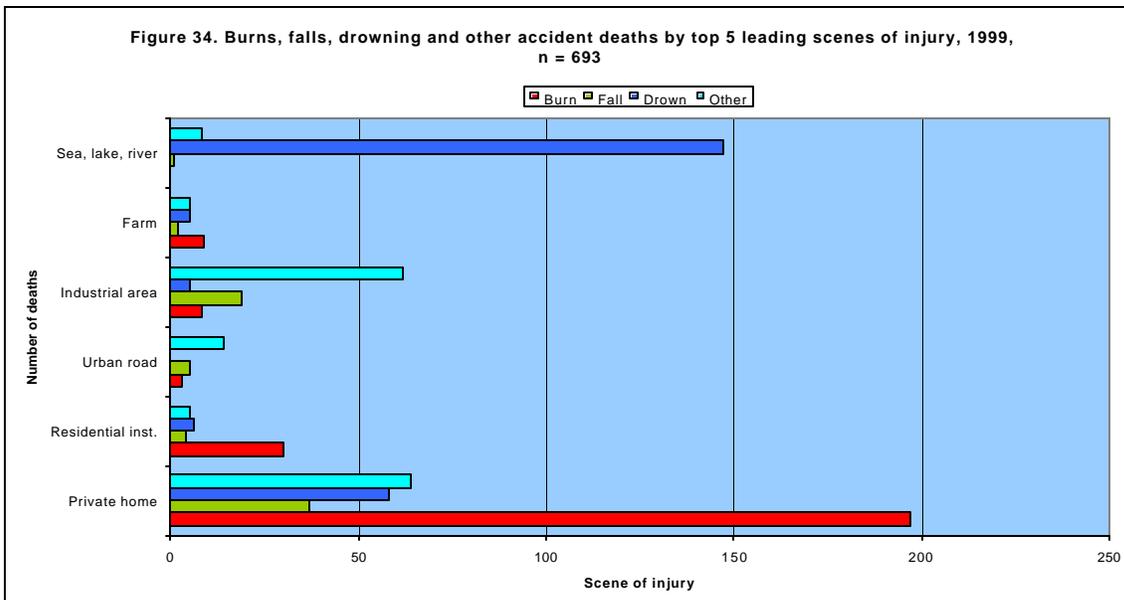
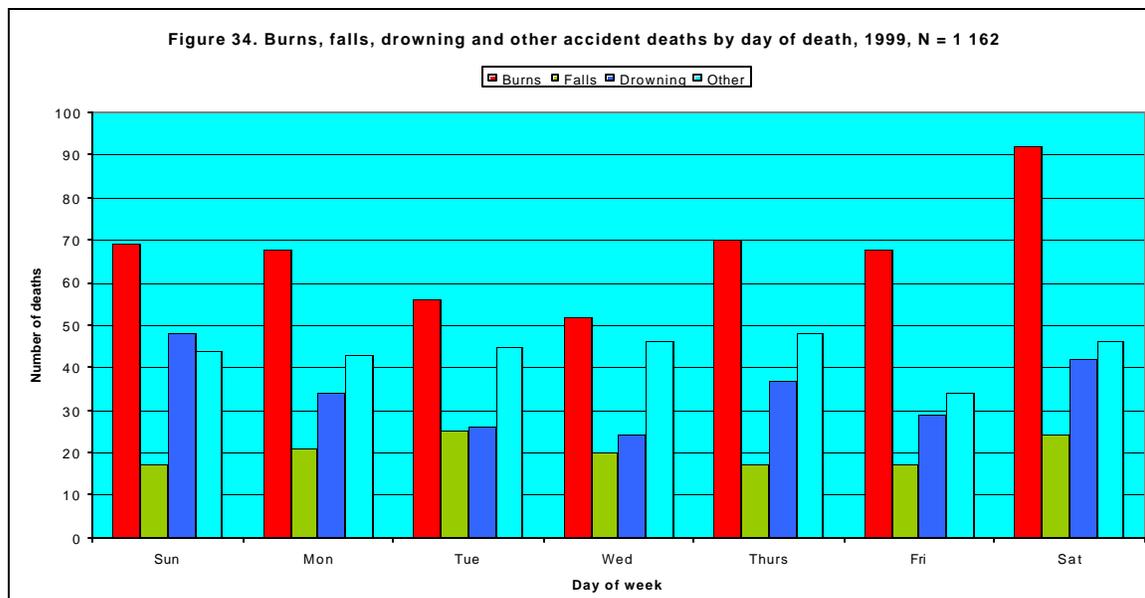
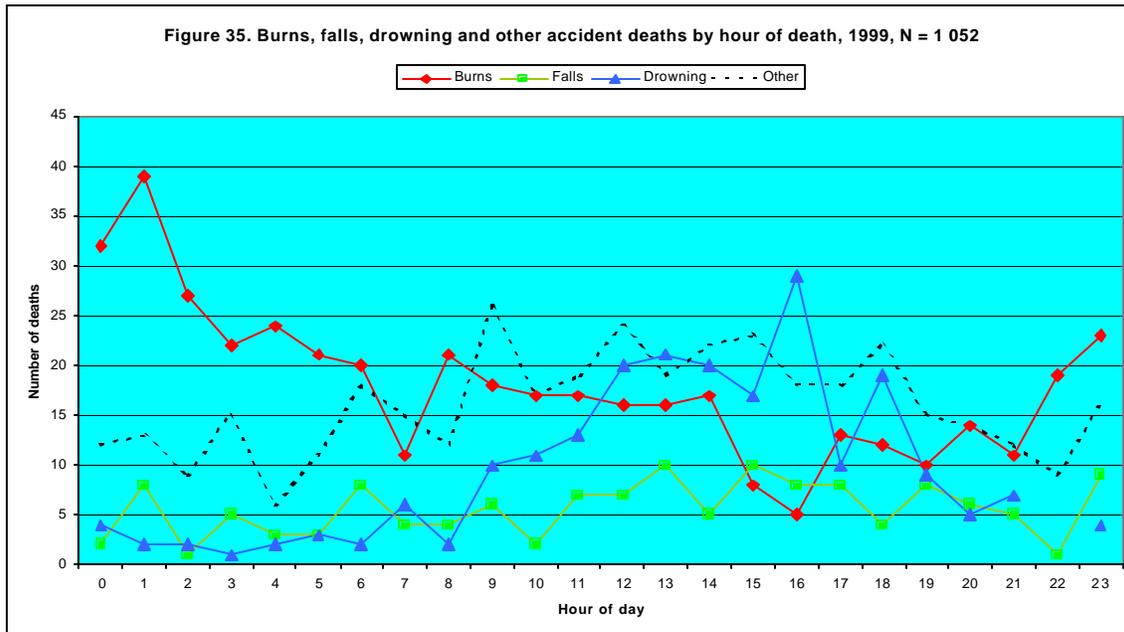


Figure 34 shows that burn deaths occurred most frequently in private homes, and were the leading cause of death in residential institutions (e.g. hostels) and on farms. Drowning deaths were most frequent in the sea, lakes and rivers, although a large number of drownings also occurred in private homes. Fall deaths were most common in private homes, followed by industrial areas. Deaths due to other accidental causes occurred with almost equal frequency in private homes and industrial areas.

7.2.7 Burns, falls, drowning and other accident deaths by day and time of death

The day and time of death for burns, falls and drowning appear in Figures 34 and 35.





Drowning was somewhat more frequent on weekends than weekdays, and occurred most often in the morning and early to late afternoon. Burn deaths were more equally spread throughout the week and had their peak frequency in the very early morning from 01:00 to 05:00 and another peak in the evening from 22:00. Fall deaths occurred most often in the afternoon and early evening. Deaths due to other accidental causes were evenly spread across the weekdays, and occurred most often in the daytime, from 08h00 to 18h00.

7.2.8 Burns, falls, drowning and other accident deaths by victim blood alcohol content

BACs were obtained for 319 or 28.7% of all deaths due to burns, falls, drowning and other accidents. Figure 36 shows that the majority (61%) of these cases had zero blood alcohol, and that 28% of those with elevated BACS 28% had 0,15 or more g/100ml.

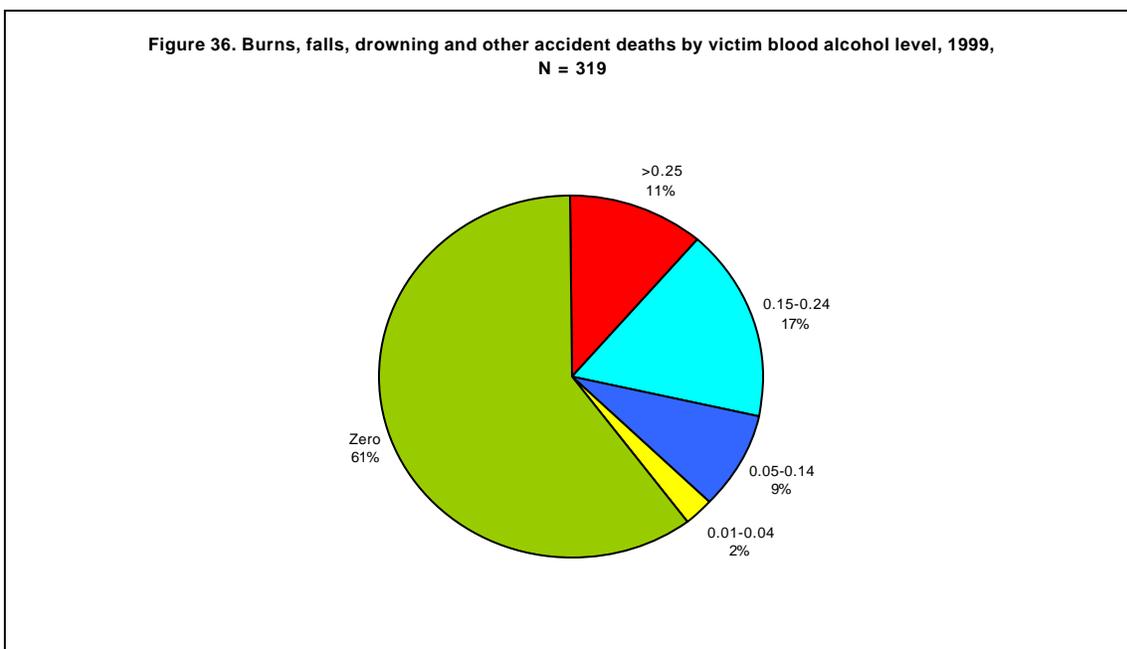


Table 18 indicates that the highest proportion of victims with positive blood alcohol levels was among burn victims where only 41.4% had zero blood alcohol levels, and over a fifth had BACs of 0.25 or greater. Around 40% of the deaths due to drowning and other accidents had elevated blood alcohol levels. Fall deaths had the lowest proportion of cases with elevated blood alcohol levels (29%).

**Table 18. Burns, falls, drowning and other accident deaths
by victim blood alcohol content, 1999**

	Burn	Fall	Drown	Other
>0.25	25 (21.6)	2 (5.7)	6 (8.8)	7 (4.1)
0.15-0.24	23 (19.8)	6 (17.1)	14 (20.6)	17 (10.0)
0.05-0.14	17 (14.7)	2 (5.7)	6 (8.8)	6 (3.6)
0.01-0.04	3 (2.5)	0 (0.0)	3 (4.4)	2 (1.2)
Zero	48 (41.4)	25 (71.4)	39 (57.3)	100 (59.2)
TOTAL)	116 (100)	35 (100)	68 (100)	132 (100)
Mean positive BAC (?SD)	0.21 (0.09)	0.19 (0.06)	0.18 (0.09)	0.17 (0.09)

8. MANNER OF DEATH UNDETERMINED

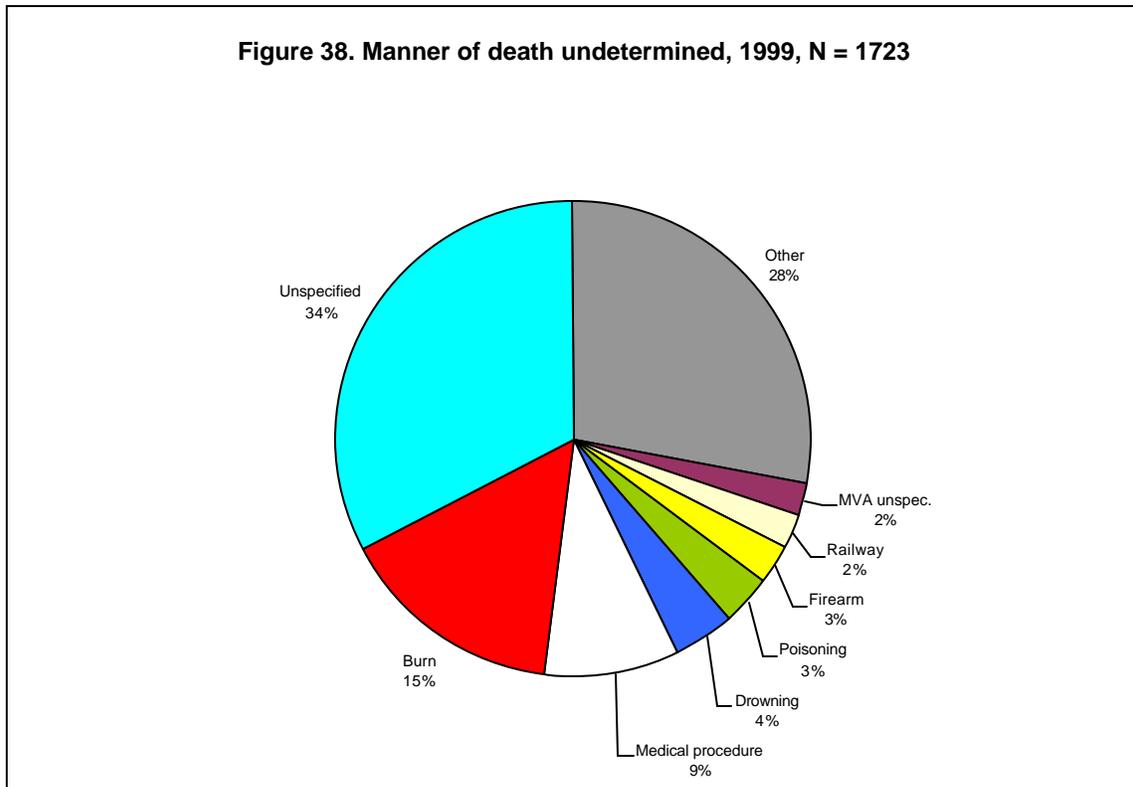


Figure 38 displays the external causes of death for the 1723 cases where manner of death was undetermined as to whether homicide, suicide or accident.

8.1 Undetermined manner of death by sex of victim

The distribution of external causes by sex of victim for cases where the manner of death was undetermined is shown in Table 19. The percentages of male deaths involving drowning, firearms and railway incidents were substantially higher than for females.

Table 19. Undetermined manner of death by sex of victim, 1999

	Male	Female	TOTAL
Other	338 (69.3)	150 (30.7)	488 (100)
Railway	34 (87.2)	5 (12.8)	39 (100)
Firearm	42 (87.5)	6 (12.5)	48 (100)
Poisoning	36 (60.0)	24 (40.0)	60 (100)
Drowning	64 (88.9)	8 (11.1)	72 (100)
Medical procedure	80 (51.9)	74 (48.1)	154 (100)
Burn	142 (55.5)	114 (44.5)	256 (100)
Unspecified	365 (68.0)	172 (32.0)	537 (100)

8.2 Undetermined manner of death by victim population group

Table 20 shows the distribution of deaths where manner was undetermined by victim population group. The proportion of burn deaths with manner undetermined was relatively high among Blacks and Coloureds, as was the percentage of undetermined drown deaths in Asians.

Table 20. Manner of death undetermined by victim population group, 1999

	Asian	Black	Coloured	White
Other	19 (38.8)	319 (29.0)	37 (14.4)	68 (29.1)
MVA unspec.	2 (4.1)	33 (3.0)	3 (1.2)	0 (0.0)
Railway	0 (0.0)	26 (2.4)	13 (5.1)	0 (0.0)
Firearm	4 (8.2)	31 (2.8)	6 (2.3)	7 (3.0)
Poisoning	2 (4.1)	39 (3.5)	7 (2.7)	12 (5.1)
Drowning	7 (14.3)	51 (4.6)	7 (2.7)	4 (1.7)
Medical procedure	4 (8.2)	36 (3.3)	27 (10.5)	87 (37.2)
Burn	3 (6.1)	204 (18.5)	47 (18.3)	4 (1.7)
Unspecified	8 (16.3)	361 (32.8)	110 (42.8)	52 (22.2)
TOTAL	49 (100)	1100 (100)	257 (100)	234 (100)

8.3 Undetermined manner of death by victim age

Figure 39 shows the tri-modal distribution of deaths where the manner was undetermined. There were concentrations of such deaths in the two youngest age groups, in the middle age ranges, and in the age group 65 and over.

