

A PROFILE OF FATAL INJURIES IN SOUTH AFRICA 2008

*Annual Report for South Africa based on the
National Injury Mortality Surveillance System
(NIMSS)*

*Forensic
Pathology
Services*

*MRC-UNISA
SAPPRU*

*Forensic
Chemistry
Laboratories*

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Glossary

The following terminology is used in this report and is briefly explained and contextualised below:

APPARENT MANNER of death describes the intention prior to the injury that resulted in the death. The apparent manner of death is divided into five different categories: violence, suicide, transport death, unintentional injury death and undetermined death. *Note that this is the apparent manner of death according to the forensic pathologists who perform the medico-legal investigations, and the final manner of death is only determined after court proceedings, which can take between 2 and 5 years to complete.*

The EXTERNAL CAUSE of death refers to the mechanism, circumstance or event that preceded the death. Examples of the external cause of death include firearms, stabbing, motor vehicle collisions, drowning, burns and poisonings, all of which may result in injury and eventually death.

An INJURY can be defined as damage to a person caused by an acute transfer of energy (mechanical/kinetic, thermal, chemical, electrical, radiation) or by a sudden absence of heat (hypothermia) or oxygen (asphyxiation, drowning).¹

NON-NATURAL deaths include all deaths that were not due to, or may not have been due to, natural causes and that in terms of the Inquests Act are subject to medico-legal investigation. We have grouped these non-natural deaths by external cause of death and apparent manner of death.

This report uses SEX rather than GENDER to distinguish between male and female deaths. In general, the term sex is used to describe distinctive physiological features related to being male or female. In contrast, the term gender comprises different occupational, social and psychological attributes that are variously attributed to being male or female. The latter concept depends on societal norms and is not internationally comparative.

SUICIDE refers to fatal self-inflicted *intentional* injuries.

SURVEILLANCE is a process that involves the ongoing and systematic collection, analysis and interpretation of data relating to the occurrence of a health event and the timely dissemination of this information to those who need to know and those who need to apply it. In the NIMSS the health events that are described are attributable to injuries and are described as non-natural deaths.

TRANSPORT deaths are normally also *unintentional* injury deaths, but may include deaths due to culpable homicide. Again, since the NIMSS data are geared towards prevention initiatives, all transport deaths have been grouped together to facilitate international comparison, and the development and evaluation of prevention programmes.

UNDETERMINED deaths are those where the medical examiner is unable to determine whether the manner of death was due to violence, suicide, transport or unintentional injuries, or due to natural causes.

UNINTENTIONAL INJURY deaths include all other *unintentional* non-transport injuries such as those due to burns, falls, poisoning and drowning.

The NIMSS definition of VIOLENCE refers to *intentional* injuries inflicted by another person (perpetrator). This definition excludes deaths due to culpable homicide since the NIMSS data are geared towards prevention initiatives, and intentional and unintentional injuries require different types of intervention.

¹ Berger, L.H. & Mohan, D. 1996. *Injury Control: A global view*. Delhi: Oxford University Press.

Executive Summary

This report constitutes the 10th Annual Report of the National Injury Mortality Surveillance System of fatal injuries for South Africa for the period from 1 January 2008 to 31 December 2008.

The NIMSS collected fatal injury information for 2008 from 62 MLLs in seven of the eight provinces (estimated to be between 39% and 52% of all injury deaths), representing an overall increased case load, but with a number of MLLs not participating as they had previously. Between 2001 and 2007 the NIMSS has had full coverage in 4 cities (Johannesburg, Pretoria, Durban and Cape Town), and for 2006 to 2008 full coverage for the province of Mpumalanga. The 2008 NIMSS Report in addition covers the North West, the Western Cape, Mpumalanga, parts of Limpopo, Gauteng (but excludes Pretoria), Free State (9 months), Northern Cape (except Springbok), parts of the Eastern Cape, but with no Kwa-Zulu Natal data. This NIMSS data for 2008 enables the comparison of injury magnitude and trends in both urban and rural areas of South Africa with current analyses involving these differences in overall injury and traffic-related injury deaths.

The analysis focuses on the 31177 non-natural deaths (cases due to natural causes were excluded) registered at the 62 medico-legal laboratories in South Africa.

Manner of death. Violence was the leading manner of death, accounting for nearly one-third (31.5%, n=9831) of the 31177 non-natural deaths recorded in NIMSS, followed by transport injuries (29.4%, n=9153), non-transport unintentional injuries (17.5%, n=5444) and suicides (10.0%, n=3125). For the remaining 3624 (11.6%) cases, the manner of death was undetermined.

External causes of death. The leading external cause of death was sharp-object related (13.6%, n=4230) followed by firearm-related injuries (10.8%, n=3357) followed by pedestrian injuries (9.8%, n=3046), blunt force (6.9%, n=2157), and passenger injuries (6.8%, n=1132). For children aged 0-4 years, a sudden infant death was the leading cause, while for 5-14 years old it was a pedestrian injury. Among the youth aged 15-29 years, adults aged 30-44 years sharp object were the leading cause while among older adults aged 45-59 years, and those aged 60 years and older, the most common cause of death was a pedestrian injury.

Violence. Just over 40% of the 9831 violent deaths were inflicted by sharp objects, 29.4% (n=2886) by firearms and 20.4% (n=2005) by blunt force injuries. The number of deaths due to violence rose sharply and peaked in the 15-29 year age group and remained high until 44 years. There were just over six male violent deaths for every female death.

Suicide. Hangings accounted for the 46.2% (n=1444) of the 3125 suicides, followed by poisonings (17.0%, n=530) and firearms (13.5%, n=422). Nearly 70% (69.2%, n=2164) of all suicide victims were aged between 15-44 years. Deaths due to suicide were highest among youth aged 15-29 years (35.9%, n=1122) followed by adults aged 30-44 (33.3%, n=1042). There were over four male suicides for every female suicide. The major external causes of suicide among males were hanging (50.2%) and firearms (14.7%), while among females it was poisoning (38.2%) and hanging (29.5%).

Transport-related deaths. Of the 9153 transport-related deaths, pedestrian-related deaths accounted for 33.3% (n=3044), passengers 23.1% (n=2107), drivers 18.2% (n=1667), (motor) cyclists 3.7% (n=337) and railway-related deaths 3.3% (n=299). A further 18.2% (n=1666) of transport-related deaths were due to motor-vehicle collisions, of which the user category was unknown. Transport-related injuries were a leading external cause of death across all age groups. Nearly 60% of all transport-related deaths were

among victims aged between 15-44 years. There were four male transport-related deaths for every female death.

Non-transport injury deaths. Burns (19.0%, n=1034) followed by drowning (14.4%, n=784) were the leading causes of the 5444 other unintentional injury deaths. Nearly 40% of these injury deaths occurred among 15-44 years. There were two male unintentional injury deaths for every female death.

Manner of death undetermined. For 3624 cases, the manner of death was undetermined. The external cause of death was known in 38.8% (n=1406) of the undetermined cases. Poisonings accounted for 8.4% (n=303) and burns 8.3% (n=300) of these cases. Most of these deaths (25.0%) were recorded in the 30-44 year age group.

The data on which this report is based can be used in the formulation of injury prevention policy and interventions. The data can assist in the identification of potential victim groups, hazardous locations, times and instruments, and selected high-risk behaviours such as alcohol consumption. The data are a product of a collaborative undertaking by the police, forensic pathologists at each site, clerks and secretarial staff at the MLLs, provincial and national health departments as well as the MRC-UNISA Crime, Violence and Injury Lead Programme (MRC-UNISA CVI) which collects, collates, cleans, manages, and analyses the data. Such an undertaking demands that memoranda of agreement are entered into between the different parties.

Chapter 1

Introduction: The National Injury Mortality Surveillance System (NIMSS)

Injury is one of the major causes of death in South Africa. Despite its magnitude and constant media coverage, the situation remains a cause for concern. External causes of death are vital for monitoring demographic, seasonal and socio-economically related trends in these major causes of death and disability. Since 1991 and Act No. 52 of 1992 which precluded entry of the external cause of death in the death register for injury cases, such information has been missing from the national vital statistics on causes of death. Police data systems only record information for violence, and the national transport information system records information for an uncertain subgroup of motor vehicle collision deaths. Death due to suicide and other unintentional causes, where the manner of death is undetermined, are not tracked by any agency.

The National Injury Mortality Surveillance System (NIMSS) was established in 1999 to fill this gap by providing more comprehensive information about deaths due to external causes. The information is collated from existing investigative procedures at medico legal laboratories and state forensic chemistry laboratories. All deaths due to external causes are included, allowing an overview of how the different categories of external cause (e.g. gunshots, drowning) contribute to the profile of non-natural mortality in men, women, and children.

At the time of this report, there is a provincial system in the Western Cape Province operating in medico legal laboratories that collects information about fatal injuries. Mpumalanga province is currently piloting a provincial automated system with the financial, human resources and technical support of UNISA and the MRC-UNISA CVI. This report is part of an exercise to establish a provincial automated system for Gauteng Province, which is also supported by UNISA and the MRC-UNISA CVI. There are currently no alternative sources for the information about fatal injuries that the NIMSS analyses and disseminates. The ultimate goal of the NIMSS is to establish a permanent system that will register all such deaths that occur annually in South Africa, and develop partnerships to inform initiatives for the prevention of non-natural fatality.

1.1 Goals of the NIMSS

The goals of 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 for high-risk groups and for 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 death profile.

The utility of the information collected by 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 are expected to reduce some of the major causes of fatal injury. Although limited in coverage, these reports provide a baseline profile for future monitoring and an information platform to reinforce the ongoing extension and improvement of the system. In achieving its 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, NIMSS is able to provide important information for the allocation of resources, auditing of costs and rationalisation of services. The current absence of information prevents proper assessment of costs, inhibits evaluation and impedes proper planning.

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

Injury prevention agencies include national and local government, the South African Police Services, non-governmental organisations, business and parastatals. For the agencies, NIMSS is able to 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

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 laboratory results, and criminal justice system reports.

At its inception in 1999, NIMSS was piloted with funding from the then Department of Arts, Culture, Science and Technology's Innovation Fund on Crime Prevention. For 2000, 15 MLLs in five provinces contributed data to the NIMSS. For 2007, 39 MLLs in 7 provinces contributed their data, including all cases from Mpumalanga and Gauteng, giving the NIMSS a rural representivity. Extension to other MLLs will continue as long as funding permits.

1.3 NIMSS methodology

NIMSS records 21 items of information for every deceased that enters the forensic medico-legal system in the participating facilities. In order to meet the system's goals and enable international comparisons, 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 are recorded, as is the presence of alcohol in the deceased through information from forensic laboratory reports. The final manner of death is only available after court findings, which are often only available up to 4 years after the death. 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 MLLs. The data are then sent to the Crime, Violence and Injury Lead Programme offices in Cape Town, where they are combined with other MLLs' data and data from the forensic chemistry laboratories, cleaned, and finally analysed by researchers. Quarterly and yearly reports are produced for the South African Police and forensic pathologists at each facility.

1.4 NIMSS annual report

The NIMSS annual report summarises the data from all MLLs that participated during the reporting year. 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 stimulate further research about the underlying causes and risk factors that drive the patterns of fatal violence and injury among the different age, sex and racial groups for which the data have been analysed.

If these questions can stimulate research to answer them, then the possibilities for prevention of violence and injury 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 CVI Lead Programme.

Chapter 2

Participating Facilities and Data Representivity

The NIMSS remains the most detailed source of information on the “who, what, when and where” of fatal injuries in South Africa and also a useful source of information with which to monitor the effectiveness of prevention initiatives, injury trends and the accuracy of other data sources.

In 2009 the NIMSS collected fatal injury information for 2008 from 62 MLLs in seven different provinces (between 39% and 52% of all injury deaths), representing an overall increased case load, but with a number of MLLs not participating as they had previously. Since 2001 the NIMSS has had full coverage in 4 cities (Johannesburg, Pretoria, Durban and Cape Town), and for 2006 to 2008 full coverage for the province of Mpumalanga. The 2008 NIMSS Report in addition covers the two MLLs in North West, the whole of the Western Cape and Mpumalanga, one mortuary in Limpopo, Gauteng (but excludes Pretoria), the whole of Free State (9 months), Northern Cape (except Springbok), four MLLs in the Eastern Cape, with no Kwa-Zulu Natal data. This NIMSS data has on 2009 enabled the comparison of injury magnitude and trends in both urban and rural areas of South Africa with current analyses involving these differences in overall injury and traffic-related injury deaths.

The analysis focuses on the 31177 non-natural deaths (cases due to natural causes were excluded) registered at the 62 medico-legal laboratories in South Africa.

Province	Number of MLLs	Case total
Eastern Cape	4	3107
Free State	7	3146
Gauteng	9	13514
Limpopo	1	467
Mpumalanga	18	4624
North West	2	533
Northern Cape	4	1319
Western Cape	17	10085
Total	62	36795

Not all cases had information for every item, and therefore totals in the subsequent graphs and tables may vary. Additionally, descriptive findings in this report (including charts and tables) are the result of an automated report generating process and hence, patterns emerging from some of the graphs with few cases should be interpreted with caution. 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.

Chapter 3

The National Injury Mortality Profile for South Africa

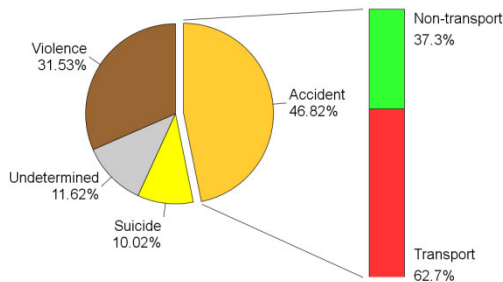
Introduction

A total of 36795 cases were recorded in NIMSS for South Africa for the period 1 January 2008 to 31 December 2008, including 5618 (15.3%) cases that were due to natural causes. The rest of the analysis is restricted to the 31177 non-natural deaths that occurred in the catchment area. However, the section that deals with the pathology service includes the natural deaths in order to provide an accurate assessment of facility caseload.

3.1 Overall manner of death

Violence was the leading manner of death, accounting for nearly one-third (31.5%, n=9831) of the 31177 non-natural deaths recorded in NIMSS, followed by transport injuries (29.4%, n=9153), non-transport unintentional injuries (17.5%, n=5444) and suicides (10.0%, n=3125). For the remaining 3624 (11.6%) cases, the manner of death was undetermined.

Figure 1. Overall manner of death (N = 31177)



3.1.1 Manner of death by age

The average age of the victims was 33.1 (\pm 17.6 years). The leading manner of death(s) amongst the:

- 0-14 age group was non-transport (43%);
- 15-24 age group was violence (44.8%);
- 25-34 age group was violence (41.5%);
- 35-44 age group was violence (33.1%) and
- 45+ age group was transport (32.2%);

Figure 2.1. Violence by age (n = 9151)

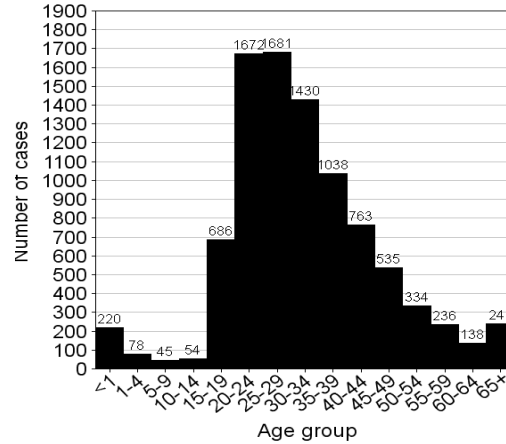


Figure 2.2. Suicide by age (n = 2904)

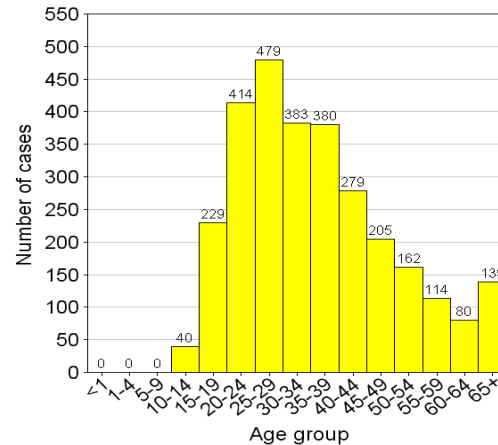


Figure 2.3. Transport deaths by age (n = 8462)

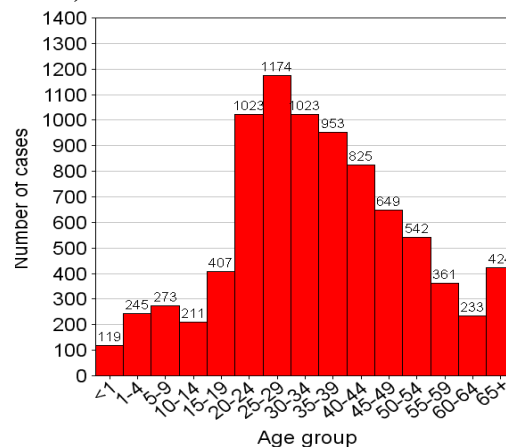


Figure 2.4. Non-transport deaths by age (n = 4969)

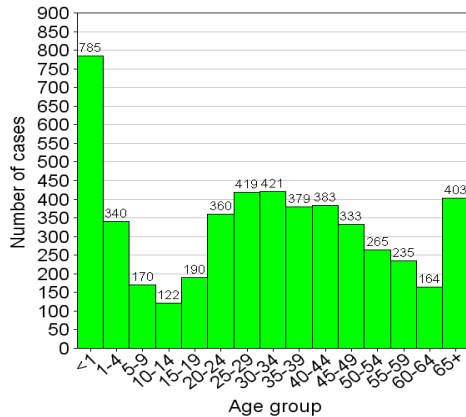
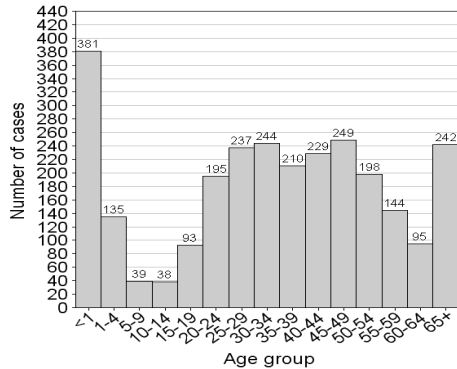


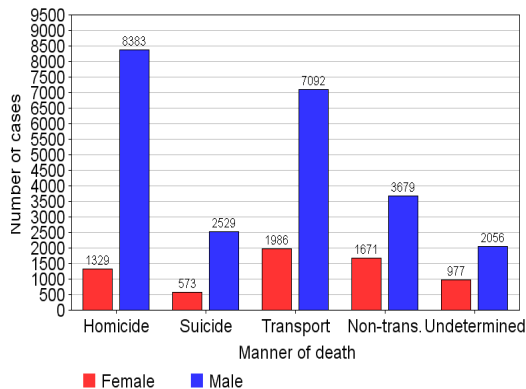
Figure 2.5. Undetermined deaths by age (n = 2729)



3.1.2 Manner of death by sex

Of the cases recorded in South Africa, 23739 (78.4%) were male and 6536 (21.6%) were female. The leading cause of death amongst males was violence (35.3%). The leading cause of death amongst females was transport (30.4%).

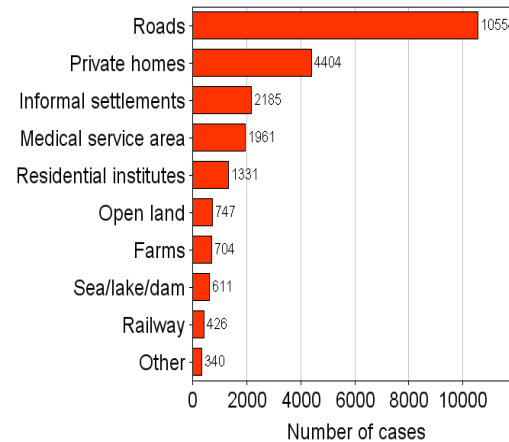
Figure 3. Manner of death by sex (n = 30275)



3.2 Scene of injury

The scene of injury was known in 24249 (77.8%) cases. The scene that accounted for the majority of deaths was roads (43.5%).

Figure 4. Top 10 scenes of injury (n = 23263)

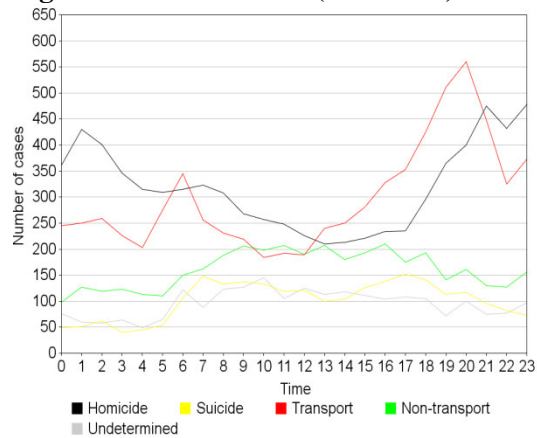


3.3 Time of death

The peak period(s) of death for:

- **violence** was 20h00 - 00h00 (23.2%), 01h00 - 03h00 (10.8%);
- **suicide** was 15h00 - 19h00 (22.9%), 07h00 - 11h00 (22.7%), 12h00 - 13h00 (5%);
- **transport** related deaths was 18h00 - 22h00 (27.1%) 23h00 - 00h00 (5.2%); and
- **non-transport** related deaths was 09h00 - 12h00 (15.8%), 15h00 - 17h00 (10.4%), 13h00 - 14h00 (5.4%), 18h00 - 19h00 (5%).

Figure 5. Time of death (n = 23425)



3.4 Day of death

The peak days of death for:

- **violence** were Saturday (24.5%), Sunday (24.1%) and Monday (12.3%);
- **suicide** were Sunday (17.2%), Tuesday (15.7%) and Monday (15.3%);
- **transport** related deaths were Saturday (22.1%), Sunday (18.9%) and Friday (15.4%); and
- **non-transport** were Sunday (17.1%), Saturday (17%) and Monday (14.8%).

Figure 6. Day of death (n = 28846)

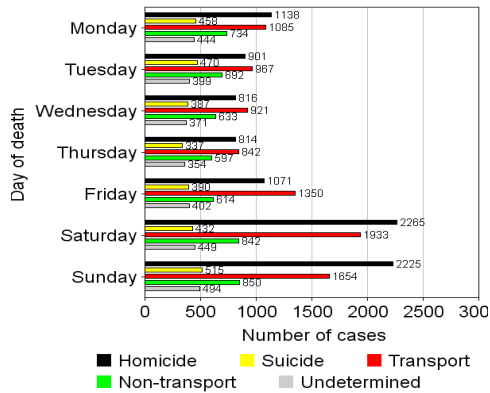


Figure 7. Day of violence deaths by sex (n = 9185)

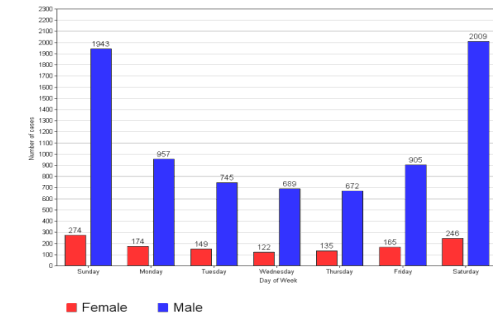


Figure 8. Day of suicide deaths by sex (n = 2980)

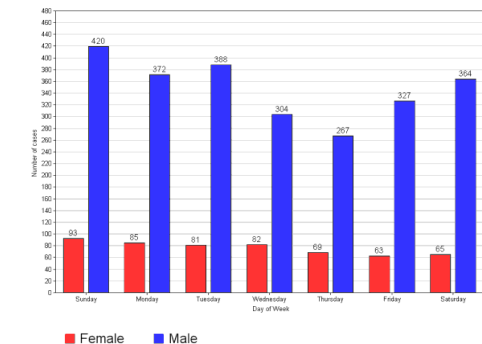
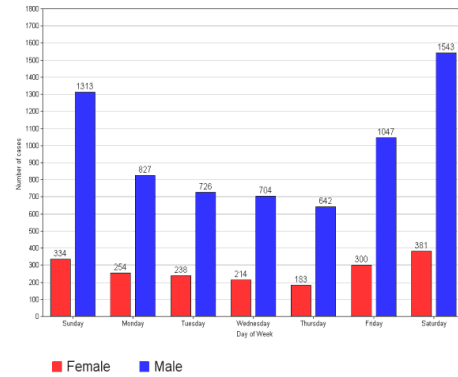


Figure 9. Day of transport deaths by sex (n = 8706)

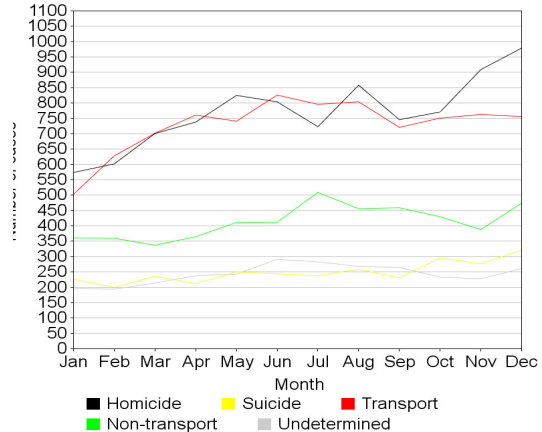


3.5 Monthly variation

The peak month for:

- **violence** was December (10.6%), followed by November (9.8%), followed by August (9.3%);
- **suicide** was December (10.7%), followed by October (9.9%), followed by November (9.3%);
- **transport** related deaths was June (9.4%), followed by August (9.2%), followed by July (9.1%); and
- **non-transport** related deaths was July (10.3%), followed by December (9.6%), followed by September (9.3%).

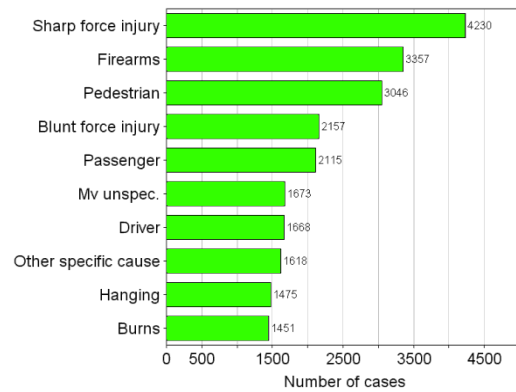
Figure 10. Monthly variation (n = 28847)



3.6 External cause of death

The cause of death was unknown in 9.5% of the cases. The leading external cause of death was sharp-object related (13.6%, n=4230) followed by firearm-related injuries (10.8%, n=3357) followed by pedestrian injuries (9.8%, n=3046), blunt force (6.9%, n=2157), and passenger injuries (6.8%, n=1132). For children aged 0-4 years, a sudden infant death was the leading cause, while for 5-14 years old it was a pedestrian injury. Among the youth aged 15-29 years, adults aged 30-44 years sharp object were the leading cause while among older adults aged 45-59 years, and those aged 60 years and older, the most common cause of death was a pedestrian injury.

Figure 11. Top 10 external causes of death (n = 22790)



3.6.1 External cause of violence by age

Just over 40% of the 9831 violent deaths were inflicted by sharp objects, 29.4% (n=2886) by firearms and 20.4% (n=2005) by blunt force injuries. The number of deaths due to violence rose sharply and peaked in the 15-34 year age group and remained high until 44 years. There were just over six male violent deaths for every female death. Age was unknown in 680 of the 9831 cases. Of the remaining cases, the average age of the victims was 31 (± 13.7 yrs). The leading external cause of death for violence in the:

- 0-14 age group was blunt force injury (25.8%);
- 15-24 age group was sharp force injury (49.4%);
- 25-34 age group was sharp force injury
- 35-44 age group was sharp force injury
- 45-54 age group was sharp force injury

- 55-64 age group was firearms (31.6%); and
- 65+ age group was blunt force injury (34.9%).

Figure 12.1. Sharp force injury violence by age (n = 3790)

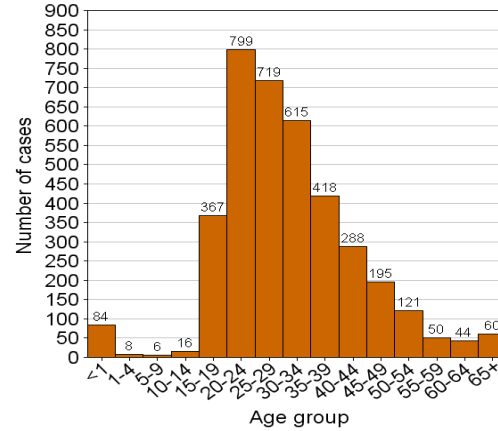


Figure 12.2. Firearm violence by age (n = 2756)

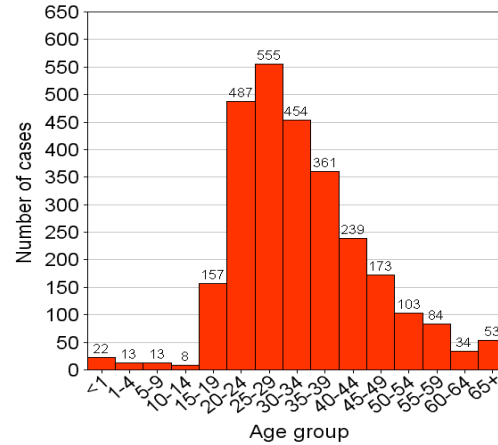
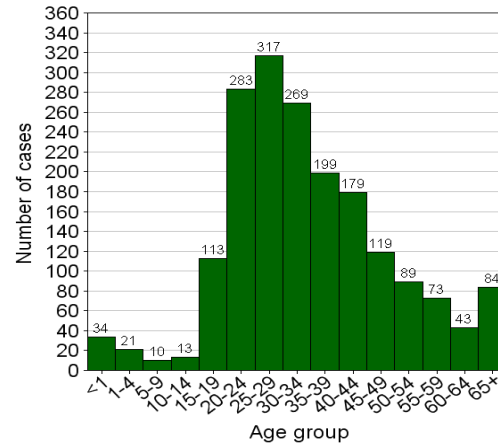


Figure 12.3. Blunt force injury violence by age (n = 1846)



3.6.2 External cause of suicide by age

Hangings accounted for the 46.2% (n=1444) of the 3125 suicides, followed by poisonings (17.0%, n=530) and firearms (13.5%, n=422). Nearly 70% (69.2%, n=2164) of all suicide victims were aged between 15-44 years. Deaths due to suicide were highest among youth aged 15-29 years (35.9%, n=1122) followed by adults aged 30-44 (33.3%, n=1042). There were over four male suicides for every female suicide. The major external causes of suicide among males were hanging (50.2%) and firearms (14.7%), while among females it was poisoning (38.2%) and hanging (29.5%).

Age was unknown in 221 of the 3125 cases. Of the remaining cases, the average age of the victims was 35 (± 14.4 yrs). The leading external cause of death for suicide in the:

- 0-14 age group was hanging (55%);
- 15-24 age group was hanging (54.1%);
- 25-34 age group was hanging (50.5%);
- 35-44 age group was hanging (44.8%);
- 45-54 age group was hanging (34.6%);
- 55-64 age group was hanging (39.7%); and
- 65+ age group was hanging (41%) followed by firearms (30.2%).

Figure 13.1. Hanging suicide by age (n = 1361)

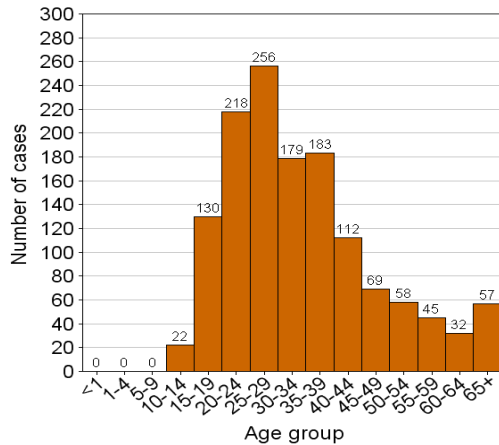


Figure 13.2. Poisoning suicide by age (n = 492)

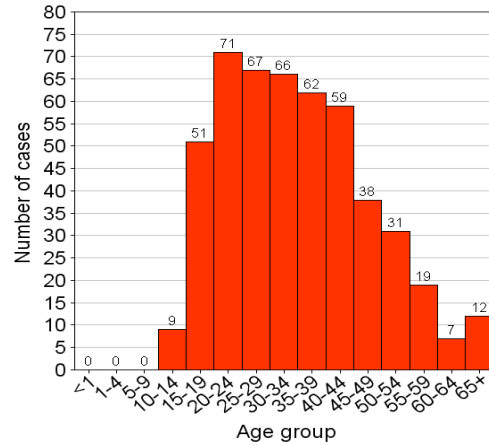


Figure 13.3. Firearm suicide by age (n = 409)

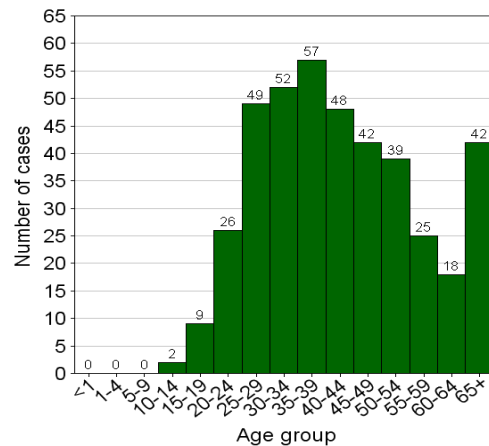
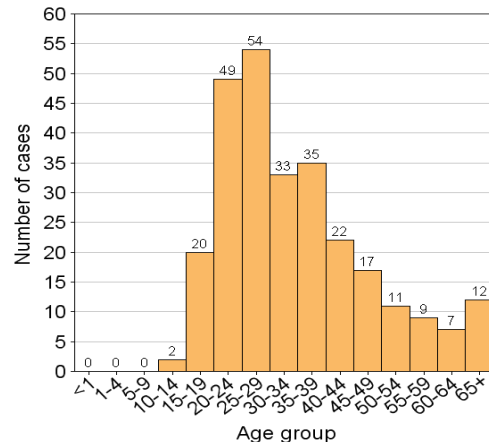


Figure 13.4. Strangulation, suffocation or asphyxia suicide by age (n = 271)



3.6.3 External cause of transport by age

Of the 9153 transport-related deaths, pedestrian-related deaths accounted for 33.3% (n=3044), passengers 23.1% (n=2107), drivers 18.2% (n=1667), (motor) cyclists 3.7% (n=337) and railway-related deaths 3.3% (n=299). A further 18.2% (n=1666) of transport-related deaths were due to motor-vehicle collisions, of which the user category was unknown. Transport-related injuries were a leading external cause of death across all age groups. Nearly 60% of all transport-related deaths were among victims aged between 15-44 years. There were four male transport-related deaths for every female death. Age was unknown in 691 of the 9153 cases. Of the remaining cases, the average age of the victims was 34 (± 16.6 yrs). The leading external cause of death for transport in the:

- 0-14 age group was pedestrian (54.6%);
- 15-24 age group was passenger (30.4%);
- 25-34 age group was pedestrian (28.8%),
- 35-44 age group was pedestrian (32.3%);
- 45-54 age group was pedestrian (30.6%);
- 55-64 age group was pedestrian (35.2%); and
- 65+ age group was pedestrian (38.9%).

Figure 14.1. Pedestrian deaths by age (n = 2805)



Figure 14.2. passenger deaths by age (n = 1964)

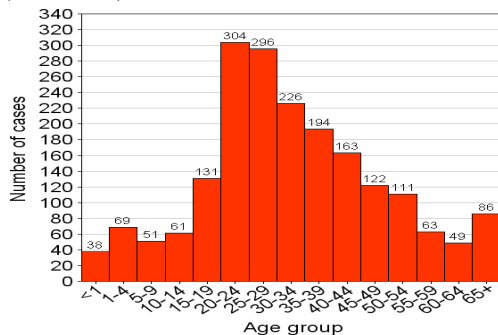


Figure 14.3. Driver deaths by age (n = 1575)

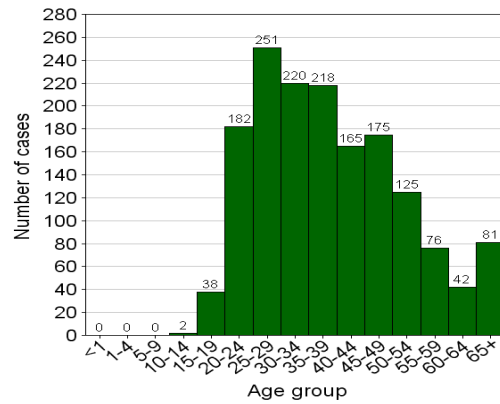


Figure 14.4. MVA Unspecified deaths by age (n = 1492)

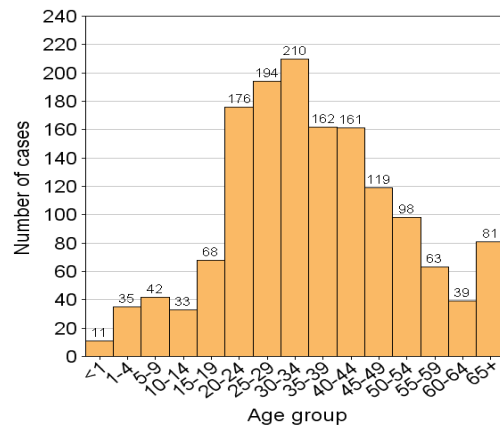
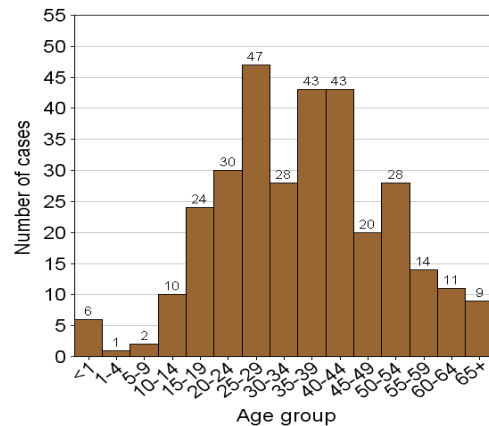


Figure 14.5. Cyclist deaths by age (n = 316)



3.6.4 External cause of non-transport deaths by age

Burns (19.0%, n=1034) followed by drowning (14.4%, n=784) were the leading causes of the 5444 other unintentional injury deaths. Nearly 40% of these injury deaths occurred among 15-44 years. There were two male non-transport deaths for every female death. Age was unknown in 475 of the 5444 cases. Of the remaining cases, the average age of the victims was 30 (± 22.9 yrs). The leading cause for non-transported related deaths in the:

- 0-14 age group was burns death (33.5%);
- 15-24 age group was drowning (23.0%);
- 25-34 age group was burns (30.9%);
- 35-44 age group was burns (26.3%);
- 45-54 age group was burns (17.9%);
- 55-64 age group was burns (14.4%); and
- 65+ age group was burns (21.4%).

Figure 15.1. Burn deaths by age (n = 959)

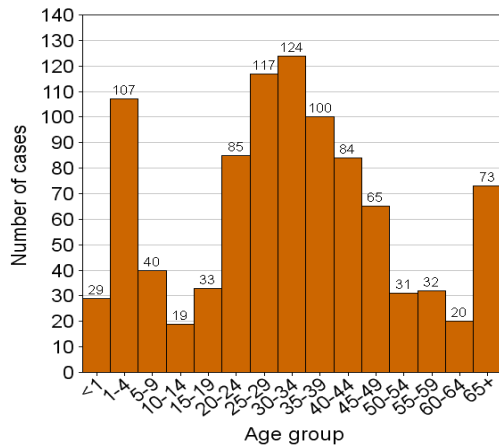


Figure 15.2. Other specific cause deaths by age (n = 889)

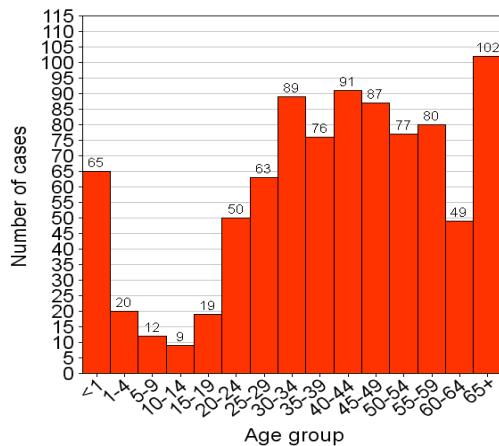
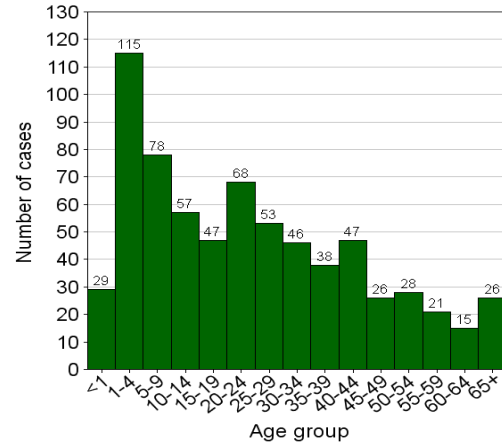


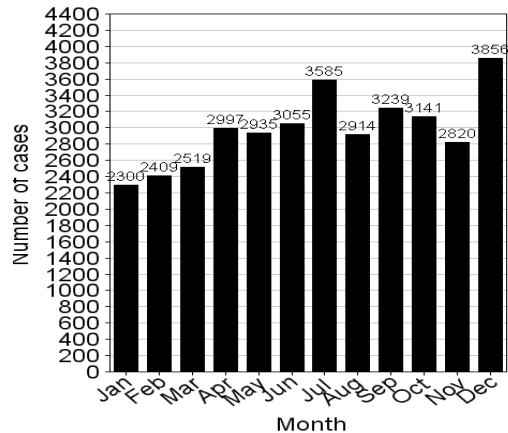
Figure 15.3. Drowning deaths by age (n = 694)



3.7. Monthly caseload

The monthly caseload was highest in December (10.8%), followed by July (10.0%), followed by September (9.1%). The monthly caseload was lowest in January (6.4%).

Figure 18. Monthly caseload (N = 35770)



3.8. Blood alcohol levels

Blood alcohol concentration (BAC) levels were obtained in 10613 of the 31177 cases. The average BAC for those who tested positive was 0.18 ± 0.10 g/100ml

Figure 19. Blood Alcohol Levels (n = 10613)

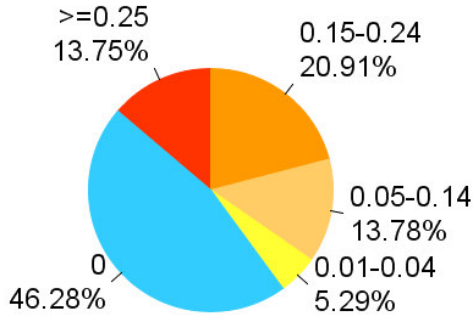


Table III: Blood alcohol levels per transport user

Transport user	BAC's done n(%)	BAC positive n(%)	Mean BAC	Std. Dev.
Driver (1667)	748 (44.87)	431 (57.62)	0.17	0.08
Passenger (2107)	449 (21.31)	203 (45.21)	0.13	0.09
Pedestrian (3044)	1131 (37.16)	708 (62.6)	0.21	0.09
Railway case (299)	155 (51.84)	63 (40.65)	0.2	0.09
Cyclist (337)	162 (48.07)	70 (43.21)	0.16	0.08
Unspecified (1666)	397 (23.83)	231 (58.19)	0.17	0.09
Total	3042	1706	0.21	0.1

3.8.1. Blood alcohol level by apparent manner

Of the 31177 who were fatally injured, blood alcohol concentration were available in 10613 (34.0%).

Table II: Blood alcohol levels per apparent manner

Apparent manner	BAC's done n(%)	BAC positive n(%)	Mean BAC	Std. Dev.
Violence (9831)	4291 (43.65)	2597 (60.52)	0.18	0.09
Suicide (3125)	1274 (40.77)	519 (40.74)	0.14	0.1
Transport (9153)	3062 (33.45)	1706 (55.72)	0.18	0.09
Non-transport (5444)	1215 (22.32)	537 (44.2)	0.19	0.11
Undetermined (3624)	771 (21.27)	342 (44.36)	0.18	0.11
Total	10613	5701	0.17	0.1

3.8.2 Blood alcohol level by transport user

Of the 9153 who were fatally injured in transport collisions, blood alcohol concentration were available in 3062 (33.5%) of the cases.

Chapter 4

Conclusion

This report presented a profile of the fatal injuries in South Africa for the period from 1 January 2008 to 31 December 2008. The analysis focused on the 31177 non-natural deaths registered at 62 MLLs in seven different provinces. The absence of data from MLLs that previously participated in the NIMSS hampers a full description of the burden of injury mortality for South Africa which limits the extent to which prevention and policy initiatives can be adequately formulated. An undertaking by the provincial and city municipal health authorities that all MLLs participate in the collaborative endeavour to ensure comprehensive coverage is a priority.

The data for this report are a product of a collaborative undertaking by the police, forensic pathologists at each site, clerks and secretarial staff at the MLLs, provincial and national health departments as well the MRC-UNISA Crime, Violence and Injury Lead Programme (MRC-UNISA CVI) which collects, collates, cleans, manages, and analyses the data. Such an undertaking demands that memoranda of agreement are entered into between the different parties.

The 10th Annual Report of the NIMSS has identified fatal injuries, especially as a consequence of violence and motor vehicle collisions the top South African public health priorities. Most of the violence-related deaths occurred in and around the home. Just over four out of ten of all violence-related deaths were inflicted by sharp-objects and a further three out of ten by firearms. The majority of the injury deaths occurred among African and Coloured males in the economically active age range of 15-44 years. The leading manner of non-natural death for males was sharp-object-related violence while among females it was transport (in particular due to pedestrian-related injuries).

Most prominent external causes of death among the other age groups include burns for infants and children younger than five years, pedestrian injuries to children between five and 14 years of age, and then firearm injuries from 15 years onwards.

The NIMSS data can be used in the formulation of injury prevention policy and interventions. The data assists in the identification of potential victim groups, hazardous locations, times and instruments, and selected high-risk behaviours such as alcohol consumption.

The Crime, Violence and Injury Lead Programme, which is co-directed by the MRC and UNISA, is committed to facilitating the use of NIMSS data by a wide range of stakeholder groups, but especially the forensic medico-legal services; the National Crime Prevention Strategy; and violence and injury prevention agencies at local, provincial and national level.

The NIMSS could provide additional information, including for example suburb-level indicators of where injuries occurred and, of course, many cross-tabular analyses that could not be accommodated in this report.

Appendix I: NIMSS Participating MLLs

Province	City	Mortuary	Total
EASTERN CAPE	ALIWAL NORTH	ALIWAL NORTH	347
EASTERN CAPE	MDANTSANE	MDANTSANE	761
EASTERN CAPE	QUEENSTOWN	QUEENSTOWN	855
EASTERN CAPE	EAST LONDON	WOODBROOK	1144
FREE STATE	BETHLEHEM	BETHLEHEM	311
FREE STATE	BLOEMFONTEIN	BLOEMFONTEIN	955
FREE STATE	BOTSHABELO	BOTSHABELO	303
FREE STATE	KROONSTAD	KROONSTAD	307
FREE STATE	PHUTHADITSHABA	PHUTHADITSHABA	334
FREE STATE	SASOLBURG	SASOLBURG	353
FREE STATE	WELKOM	WELKOM	583
GAUTENG	BRONKHORSTSPRUIT	BRONKHORSTSPRUIT	273
GAUTENG	DIEPKLOOF	DIEPKLOOF	1765
GAUTENG	GA-RANKUWA	GA-RANKUWA	1245
GAUTENG	GERMISTON	GERMISTON	3141
GAUTENG	HEIDELBERG	HEIDELBERG	301
GAUTENG	JOHANNESBURG	JOHANNESBURG	2755
GAUTENG	ROODEPOORT	ROODEPOORT	1455
GAUTENG	SEBOKENG	SEBOKENG	1461
GAUTENG	SPRINGS	SPRINGS	1118
MPUMALANGA	BALFOUR	BALFOUR	109
MPUMALANGA	BARBERTON	BARBERTON	30
MPUMALANGA	BELFAST	BELFAST	148
MPUMALANGA	BETHAL	BETHAL	406
MPUMALANGA	DELMAS	DELMAS	153
MPUMALANGA	ERMELO	ERMELO	287
MPUMALANGA	EVANDER	EVANDER	235
MPUMALANGA	HAZYVIEW	HAZYVIEW	81
MPUMALANGA	KWAMHLANGA	KWAMHLANGA	385
MPUMALANGA	LYDENBURG	LYDENBURG	108
MPUMALANGA	MAPULANENG	MAPULANENG	363
MPUMALANGA	MIDDELBURG	MIDDELBURG	316
MPUMALANGA	NELSPRUIT	NELSPRUIT	678
MPUMALANGA	PIET RETIEF	PIET RETIEF	264
MPUMALANGA	STANDERTON	STANDERTON	143
MPUMALANGA	TONGA	TONGA	270
MPUMALANGA	VOLKSRUST	VOLKSRUST	106
MPUMALANGA	WITBANK	WITBANK	540
NORTH WEST	KLERKSDORP	KLERKSDORP	53

Province	City	Mortuary	Total
NORTH WEST	POTCHEFSTROOM	POTCHEFSTROOM	480
NORTHERN CAPE	CALVINIA	CALVINIA	55
NORTHERN CAPE	DE AAR	DE AAR	200
NORTHERN CAPE	KIMBERLEY	KIMBERLEY	669
NORTHERN CAPE	UPINGTON	UPINGTON	395
WESTERN CAPE	BEAUFORT WEST	BEAUFORT WEST	124
WESTERN CAPE	GEORGE	GEORGE	514
WESTERN CAPE	HERMANUS	HERMANUS	355
WESTERN CAPE	KNYSNA	KNYSNA	220
WESTERN CAPE	LAINGSBURG	LAINGSBURG	90
WESTERN CAPE	MOORREESBURG	MOORREESBURG	196
WESTERN CAPE	MOSELBAY	MOSELBAY	176
WESTERN CAPE	OUTDSHOORN	OUTDSHOORN	181
WESTERN CAPE	PAARL	PAARL	438
WESTERN CAPE	RIVERSDALE	RIVERSDALE	80
WESTERN CAPE	CAPE TOWN	SALT RIVER	3091
WESTERN CAPE	STELLENBOSCH	STELLENBOSCH	546
WESTERN CAPE	CAPE TOWN	TYGERBERG	2992
WESTERN CAPE	VREDENBURG	VREDENBURG	162
WESTERN CAPE	VREDENDAL	VREDENDAL	236
WESTERN CAPE	WOLSELEY	WOLSELEY	163
Total (62 MLLs)			36795

Appendix II: NIMSS Data Collection Questionnaire

NIMSS DATA COLLECTION FORM

Mortuary _____ **Police No.** _____ **Officer collecting body (Surname)** _____

PM no. _____ **PM Date** **Pathologist (Surname)** _____

Date & Time of Injury **Race** **Sex**

Date & Time of Death **Age** **Years** **Months**

Medical treatment of injury prior to death (check only ONE) 1 None 2 Emergency care at scene 3 Hospital care

Province of injury (may differ to province of death) **Scene of injury (may differ to scene of death)**

1 Gauteng	7 Mpumalanga	1 Private house & yard (inc. pool)	9 Medical service area
2 W. Cape	8 Northern Province	2 Residential institute	10 Industrial & construction area, mine
3 K.Z. Natal	9 North West	18 Informal settlement/squatter camp	11 Farm, primary production area
4 E. Cape	10 Unknown	3 Bar, shebeen, N'Club, disco	12 Sea, lake, river, dam
5 N. Cape	11 Other (specify) _____	4 Amusement park, sports area	13 Open land, beach
6 Free State		5 Road/street/highway	14 Countryside
		6 Railway track, station	15 In custody, prison
		7 Shop, bank, retail area	16 Place unknown
		8 School, educational area	17 Other (specify) _____

Town of injury _____ **Suburb or district** _____ **Closest police station to injury scene** _____

External Cause or Circumstance of Injury

1 Firearm Discharge	9 Fall/push/jump from height	17 Motor vehicle Driver	24 Abandoned baby
2 Sharp Object	10 Other fall/push/jump	18 Motor vehicle Unspecified	25 Electrocutation
3 Blunt Object	11 Crushing	19 Railway casualty	26 Explosive blast
4 Strangulation, suffocation, asphyxia	12 Choking, aspiration	20 Bicycle, motor cycle	27 Natural cause
5 Hanging	13 Drowning, immersion	30 Aviation casualty	28 Unknown
6 Poisoning, ingestion	14 Lightning	21 Medical Procedure	29 Other Specific Cause
7 Poisoning, gassing	15 Motor vehicle Pedestrian	22 Sudden Infant Death	
8 Burn	16 Motor vehicle Passenger	23 Abortion, still birth	

Apparent Manner of Death

1 Homicide 2 Suicide 3 Accident 4 Natural 5 Undetermined

Samples Taken (check all)

1 None 2 Blood 3 Tissue 4 Other fluid

Alcohol and Other Substances (for completion by surveillance consortium staff)

Blood Alcohol Level
 Eye Fluid Alcohol
 Other Substances (Specify) _____

For completion following court investigation: homicides and suicides only

Type of Intentional Violence **Perpetrator – Victim Relationship**

1 Interpersonal	6 Rape, Sexual	1 Spouse, Partner	5 Friend	9 Unknown
2 Self Directed	7 Child Abuse	2 Parent	6 Official/Legal Authority	10 Other Specified Person(s)
3 Legal Intervention	9 Unknown	3 Other relative	7 Stranger	
4 Gang, Syndicate	8 Other (specify) _____	4 Unrelated Caregiver	8 Acquaintance	
5 War/civil Insurrection				

Context of Violent Attack (Code from court record)

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