A PROFILE OF FATAL INJURIES IN MPUMALANGA
2011

Annual report for Mpumalanga based on the National Injury Mortality Surveillance System (NIMSS)

MRC-UNISA Safety and Peace Promotion Research Unit (SAPPRU)
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Medical Research Council & University of South Africa
Safety and Peace Promotion Research Unit (SAPPRU)

in collaboration with

Forensic Pathology Services

and

Forensic Chemistry Laboratories

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

The 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/homicide, 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 autopsies, 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 deaths resulting from injuries due to 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.

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 Inquest Act, 1959 (Act No. 58 of 1959) are subject to medico-legal investigation. The National Health Act, 2003 (Act No. 61 of 2003) “Regulations Regarding the Rendering of Forensic Pathology Service” define “unnatural death” as follows:

For the purposes of the medico-legal investigation of death, the following shall be deemed to be deaths due to unnatural causes-

(a) any death due to physical or chemical influence, direct or indirect, or related complications;
(b) any death, including those deaths which would normally be considered to be a death due to natural causes, which in the opinion of a medical practitioner, has been the result of an act of commission or omission which may be criminal in nature; or
(c) where the death is sudden and unexpected, or unexplained, or where the cause of death is not apparent.

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 related injuries such as those due to burns, falls, poisoning and drowning.

The NIMSS definition of VIOLENCE (HOMICIDE) refers to intentional injuries wilfully inflicted by another person (perpetrator). This definition excludes deaths due to culpable homicide ("the unlawful negligent / unintentional killing of a human being") since the NIMSS data are geared towards prevention initiatives, and intentional and unintentional injuries require different types of intervention.
**EXECUTIVE SUMMARY**

This 2011 Annual Report for Mpumalanga, based on the National Injury Mortality Surveillance System (NIMSS), presents a profile of fatal injuries in the province of Mpumalanga for the period from 1 January 2011 to 31 December 2011. The analysis focuses on the 3802 non-natural deaths registered at 19 forensic pathology service (FPS) facilities in Mpumalanga. Cases due to natural causes were excluded. In 283 cases the age of the victim was unknown, and in 41 cases the sex was unknown, thus percentages reflect those cases for which this information was available.

**Manner of death**
Transport-related injuries were the leading manner of death, accounting for just under half (43.3%, n=1647) of the 3802 non-natural deaths recorded in Mpumalanga, followed by violence (23.1%, n=879), suicide (12.0%, n=456), and other unintentional injuries (11.8%, n=448). For the remaining 372 (9.8%) cases, the manner of death was undetermined.

**External causes of death**
The external cause of death was unknown in 161 cases. The leading external cause of death was motor vehicle passenger injuries (16.8%, n=640), followed by motor vehicle pedestrian injuries (12.7%, n=481), motor vehicle driver injuries (11.0%, n=418), and hanging (8.7%, n=331). Passenger injury was the leading cause of death for the 15-24 year- and the 25-34 year age groups. For children aged 0-14 years and adults older than 65 years, pedestrian injury was the leading cause of death. Adults aged 35–64 years were most likely to die from motor vehicle driver injuries.

**Violence**
Of the 874 violence-related deaths where external cause was known, almost one third (n=276) were caused by blunt objects, 29.2% (n=255) by sharp objects and 28% (n=245) by firearms. Of those cases where age was known (n=827), about a third (32.8%) were in the 25-34 year-old age group. Among all violence-related cases, there were about five male deaths for each female death.

**Suicide**
The external cause was unknown in only one case of suicide. Of those where the external cause was known (n=455), the majority were hangings (69.7%, n=317), followed by ingestion poisoning (13.2%, n=60) and firearms (11.4%, n=52). In those cases where age was known (n=443), the most common age group for suicide victims was 25–34 years (28.4%, n=126), followed by 15-24 years (25.5%, 113). There were about four male suicides for every female suicide. The leading method of suicide among males was hanging (73.9%), and among females, hanging (50.6%) and ingestion poisoning (37.3%) were the most common methods used.

**Transport-related deaths**
Of the 1647 transport-related deaths, passengers accounted for 38.9% (n=640), pedestrians for 29.2% (n=481), drivers for 25.4% (n=418), motor- and bicyclists for 2.5% (n=41), and railway-related injuries for 0.7% (n=12). There were three aviation deaths, and for 3.2% of transport-related deaths the user category was unknown.
Transport-related injury was the leading manner of death across all age groups, with 27.9% of fatalities occurring in the 25-34 year age group. The male to female ratio for transport-related deaths was about 4:1.

**Other unintentional injury deaths**
Burns (29.0%, n=129) and drowning (25.6%, n=114) were the leading causes of the 445 other unintentional injury deaths where external cause was known (the external cause was unknown in three cases). Of those cases where age was known (n=415), the most common age group was 0-14 years (24.6%, n=110). The male to female ratio for unintentional injury deaths was 3:1.

**Undetermined manner of injury-related death**
For 372 cases, the manner of injury-related death was undetermined. The external cause was unknown in 40.9% (n=152) of the undetermined deaths. Abortions and stillbirths\(^2\) accounted for 43.2% of those cases where the external cause of death was known, and poisoning (ingestion) accounted for 20.5% of cases. The most common age group for undetermined deaths was the 0-14 year age group (30.4% of fatalities).

\(^2\) The manner of death is generally not known for abortions and stillbirths and may also include circumstances that are not injury related. Accordingly, these cases have not been considered for analyses.
CHAPTER 1:
INTRODUCTION

Background

Injury is a major cause of mortality in South Africa, accounting for 157.8 deaths per 100 000 population, which is nearly twice the global average (Seedat, Van Niekerk, Jewkes, Suffla & Ratele, 2009). Injury surveillance is vital for monitoring demographic, seasonal and socio-economically related trends in the 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 a subgroup of motor vehicle collision deaths. Data on suicides and other unintentional injury deaths are also not systematically 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 forensic pathology services (FPS) 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 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 FPS facilities in five provinces contributed data to the NIMSS. For the current reporting period in 2011, data from 28 FPS facilities in 2 provinces were included, with provincial coverage for Gauteng (with exception for Pretoria) and full coverage for Mpumalanga. The latter provided the NIMSS with rural representivity.

Goals of the NIMSS

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.

Specifically, the NIMSS seeks to:
- Provide ongoing and systematic information about the incidence, causes and consequences of all non-natural deaths at local, regional and national levels;

- Enable the early identification of new injury trends and emerging problem areas so that adequate interventions can be established timeously;
- Determine priorities for injury and violence prevention action for high-risk groups and for socio-environmental risk factors;
- Help evaluate direct and indirect violence and injury prevention and control measures; and
- 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 pathology services; the National Crime Prevention Strategy; and violence and injury prevention agencies at local, provincial and national level.

For forensic pathology services, NIMSS is able to provide important information for the allocation of resources, auditing of costs and computerization of services. The current absence of information prevents proper assessment of costs, inhibits evaluation and impedes proper planning.

For the National Crime Prevention Strategy and other research agencies, 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 violence-related 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 business and parastatals. For these agencies, NIMSS is able to provide descriptive information needed for the design and implementation of preventive interventions at municipal, metropolitan, provincial and national levels.

**NIMSS methodology**

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, post-mortem reports, SAP 180 forms, chemical pathology laboratory results, and criminal justice system reports.

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 may only be available up to 5 years after the death. In most instances, the data are collected by the police and forensic pathologists at each site, and captured into a computerized database by administrative and secretarial staff at the FPS facilities. The data are then sent to the Safety and Peace Promotion Research Unit offices in Cape Town, where they are combined with other FPS facilities’ data and data from the forensic chemistry laboratories, cleaned, and finally analysed by researchers.
CHAPTER 2:
PARTICIPATING FACILITIES AND DATA REPRESENTIVITY

Table 1 shows nineteen participating forensic pathology service (FPS) facilities in Mpumalanga, and the number of non-natural deaths recorded at each facility for 2011.

Table 1: Participating forensic pathology services

<table>
<thead>
<tr>
<th>City/Town</th>
<th>MLL</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balfour</td>
<td>Balfour</td>
<td>64</td>
</tr>
<tr>
<td>Barberton</td>
<td>Barberton</td>
<td>40</td>
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<tr>
<td>Belfast</td>
<td>Belfast</td>
<td>102</td>
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<tr>
<td>Bethal</td>
<td>Bethal</td>
<td>145</td>
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<tr>
<td>Delmas</td>
<td>Delmas</td>
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</tr>
<tr>
<td>Embhuleni</td>
<td>Embhuleni</td>
<td>107</td>
</tr>
<tr>
<td>Ermelo</td>
<td>Ermelo</td>
<td>158</td>
</tr>
<tr>
<td>Evander</td>
<td>Evander</td>
<td>288</td>
</tr>
<tr>
<td>Kwamhlanga</td>
<td>Kwamhlanga</td>
<td>296</td>
</tr>
<tr>
<td>Lydenburg</td>
<td>Lydenburg</td>
<td>78</td>
</tr>
<tr>
<td>Mapulaneng</td>
<td>Mapulaneng</td>
<td>408</td>
</tr>
<tr>
<td>Middelburg</td>
<td>Middelburg</td>
<td>277</td>
</tr>
<tr>
<td>Mmamethlake</td>
<td>Mmamethlake</td>
<td>45</td>
</tr>
<tr>
<td>Piet Retief</td>
<td>Piet Retief</td>
<td>173</td>
</tr>
<tr>
<td>Standerton</td>
<td>Standerton</td>
<td>88</td>
</tr>
<tr>
<td>Themba</td>
<td>Themba</td>
<td>628</td>
</tr>
<tr>
<td>Tonga</td>
<td>Tonga</td>
<td>286</td>
</tr>
<tr>
<td>Volksrust</td>
<td>Volksrust</td>
<td>86</td>
</tr>
<tr>
<td>Witbank</td>
<td>Witbank</td>
<td>424</td>
</tr>
</tbody>
</table>

**TOTAL** | **3802**

Not all cases had information for every item, and therefore totals in the subsequent graphs and tables may 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 the 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:
INJURY MORTALITY PROFILE FOR
MPUMALANGA

RESULTS

A total of 4213 cases were recorded in the Mpumalanga catchment area for January 2010 to December 2011, including 411 (9.8%) cases that were due to natural causes. The rest of the analysis is restricted to the 3802 non-natural deaths that were recorded at these participating FPS facilities.

3.1. Overall manner of death
Transport-related injury was the leading manner of death, accounting for just under half (43.3%, n=1647) the 3802 non-natural deaths recorded in Mpumalanga, followed by violence (23.1%, n=879), suicide (12%, n=456), and other unintentional injuries (11.8%, n=448). For the remaining 372 (9.8%) cases, the manner of death was undetermined.

3.1.1 Manner of death by age
The average age of the victims was 34 (± 18 years).

The leading manner of death amongst the:
• 0-14 age group was transport (34.5%);
• 15-24 age group was transport (39.7%);
• 25-34 age group was transport (46.7%);
• 35-44 age group was transport (42.5%);
• 45-54 age group was transport (50.9%);
• 55-65 age group was transport (45%); and
• 65+ age group was transport (37.3%).

Figure 1. Overall manner of death (N=3802)

Figure 2.1. Violence-related deaths by age (n=827)

Figure 2.2. Suicides by age (n=443)
3.1.2 Manner of death by victim sex
Of the cases recorded in the Mpumalanga catchment area, 2948 (77.5%) were male and 813 (21.4%) were female. The gender was unknown in 41 cases. The leading manner of death amongst males was transport (43.4%). The leading manner of death amongst females was also transport (45.3%).

3.2. Scene of injury
The scene of injury was known in 3519 (92.6%) cases. The scene that accounted for the majority of deaths was roads (46.1%).
3.3. Time of death
The peak periods of death for:
• Violence were 0h00-03h00 (19.3%) and 20h00-23h00 (18.9%);
• Suicide were 12h00-15h00 (21.8%), and 08h00-11h00 (20.8%);
• Transport-related deaths were 16h00-19h00 (23.6%) and 20h00-23h00 (22.5%); and
• Other unintentional injury deaths were 12h00-15h00 (21.8%) and 16h00-19h00 (21.5%).

3.4. Day of death
The peak days of death for:
• Violence were Saturday (22.9%), Sunday (22.2%), and Monday (14.5%);
• Suicide were Sunday (18.9%), Wednesday (15.2%), and Saturday (14.7%);
• Transport-related deaths were Saturday (23.2%), Sunday (20.1%), and Friday (13.1%); and
• Other unintentional injury deaths were Monday (17.8%), Saturday (15.7%), and Thursday (15.3%).

3.5. Monthly variation
The peak months for:
• Violence-related death were October (12%), December (11.7%), and November (11.5%);
• Suicide were January (11%), August (11%), and December (11%);
• Transport-related death were December (10.7%), September (10.6%), and October (10%); and
• Other unintentional injury death were July (11.9%), January (9.9%), June (9.9%) and October (9.9%).
3.6. External cause of death

Of the 3546 cases where the external cause of death was known, the leading external cause of death was motor vehicle passenger injury (18%, n=640), followed by motor vehicle pedestrian injury (13.6%, n=481), motor vehicle driver injury (11.8%, n=418), and hanging (9.3%, n=331).

Passenger injury was the leading cause of death for children younger than 5 years (19.3%) and 20-34 year-olds (21.2%). Pedestrian injury was the leading cause of death for children aged 5-12 years (32.9%) and adults older than 65 years (17.1%). For children aged 13-19 years, hanging was the leading cause of death (17.1%). Driver injury was the leading cause for 35-54 year-olds (16.2%) and 55-64 year-olds (16.1%).

3.6.1. External cause of violence-related death by victim age

Of the 875 violence-related deaths where the external cause was known, nearly one-third (31.5%, n=276) were caused by blunt objects, followed by 29.1% (n=255) by sharp objects and 28% (n=245) by firearms.

Nearly one-third of the violence-related deaths occurred in the 25-34 year-old group. The male to female ratio for violence-related deaths was 5:1. Age was unknown in 52 of the 879 cases. Of the remaining cases, the average age of the victims was 34.9 (± 15.7 years).

The leading external cause(s) of death for violence in the:

- **0-14** age group was blunt force (20%) and sharp force (20%) injury;
- **15-24** age group was blunt force injury (43.7%);
- **25-34** age group was blunt force injury (34.7%) and firearms (31.7%);
- **35-44** age group was firearms (35.5%);
- **45-54** age group was sharp force injury (41.9%);
- **55-64** age group was sharp force injury (37.3%); and
- **65+** age group was sharp force injury (35.6%).
3.6.2 External cause of suicide by sex
The leading external cause of suicide among both males and females was hanging (73.9% and 50.6%, respectively), and for females, ingestion poisoning was the second leading cause, accounting for more than a third of cases (37.3%). The second leading cause of suicide deaths among males was firearm-related injury (11.8%). The male to female ratio for suicide was 4:1.

3.6.3 External cause of suicide by age
Hanging accounted for the majority (69.7%, n=317) of the 455 suicides where external cause was known (external cause was unknown in one case), followed by ingestion poisoning (13.2%, n=60) and firearms (11.4%, n=52). The 25-34 year age group accounted for 28.4% of suicide cases. Age was unknown in 13 of the 456 cases. Of the remaining cases, the average age of the victims was 35.1 (± 14.8) years.

The leading external cause of death for suicide in the:
- 0-14 age group was hanging (77.8%);
- 15-24 age group was hanging (83.2%);
- 25-34 age group was hanging (63.5%);
- 35-44 age group was hanging (61.2%);
- 45-54 age group was hanging (63.6%);
- 55-64 age group was hanging (77.8%); and
- 65+ age group was hanging (66.7%).
3.6.4 External cause of transport-related death by age

Of the 1647 transport-related deaths, passenger injuries accounted for 38.9% (n=640), pedestrian injuries for 29.2% (n=481), driver injuries for 25.4% (n=418), motor- and bicycle injuries for 2.5% (n=41), and railway-related injuries for 0.7% (n=12). There were three aviation-related deaths, and for 3.2% of transport-related deaths, the user category was unknown.

Transport-related injury was the leading manner of death across all age groups, with 27.9% of fatalities occurring in the 25-34 year age group. The male to female ratio for transport-related deaths was about 4:1.

Age was unknown in 125 of the 1647 cases. Of the remaining cases, the average age of the victims was 34.6 (± 16.2 years). The leading external cause(s) of death for transport-related injury in the:
- **0-14** age group was motor vehicle pedestrian (55.8%) and motor vehicle passenger (40.6%);
- **15-24** age group was motor vehicle passenger (49%);
- **25-34** age group was motor vehicle passenger (44.8%);
- **35-44** age group were motor vehicle driver (34.5%) and motor vehicle passenger (29.1%);
- **45-54** age group were motor vehicle driver (35.6%) and motor vehicle passenger (30.9%);
- **55-64** age group were motor vehicle driver (35.7%) and motor vehicle passenger (33.9%); and
- **65+** age group was pedestrian (45.8%).
3.6.5 External cause of other unintentional injury death by age

Burns (29.0%, n=129) and drowning (25.6%, n=114) were the leading causes of the 448 other unintentional injury deaths (the external cause was not known in three cases). Of those cases where age was known (n=415), most cases occurred among children in the 0-14 year age group (24.6%, n=110). The male to female ratio for unintentional injury deaths was 3:1.

Age was unknown in 33 of the 448 cases. Of the remaining cases, the average age of the victims was 31 (± 11.4 years). The leading cause for other unintentional injury deaths in the:

- **0-14** age group was drowning (46.4%);
- **15-24** age group was drowning (32.1%);
- **25-34** age group was burns (45.1%);
- **35-44** age group was burns (26.6%);
- **45-54** age group was drowning (35.7%);
- **55-64** age group was burns (19.2%) and drowning (19.2%); and
- **65+** age group was burns (47.2%).
Figure 12.1. Drowning deaths by age (n=104)

Figure 12.2. Burn deaths by age (n=120)

Figure 12.3. Poisoning deaths by age (n=32)

Figure 12.4. Electrocution deaths by age (n=26)
CHAPTER 4:
MORTALITY RATES FOR MPUMALANGA

Table 2 shows the number and mortality rates for the main external causes of injury in Mpumalanga for 2010 to 2011. Age standardized injury mortality rates were calculated using population data from the 2011 census, and compared with the rates from 2010 that were based on population data from the 2001 census. Provincial annual exponential growth rates for 2009 and 2010, derived from the Actuarial Society of South Africa (ASSA)\(^4\), were applied to the adjusted 2001 census data for Mpumalanga. Since the population for 2011 was derived directly from the 2011 census, no adjustment was needed. The difference in methods used for the denominator data across the comparison years should however be kept in mind when comparing these rates.

Table 2: Age-standardised mortality rates per 100 000 population for Mpumalanga, 2010 and 2011

<table>
<thead>
<tr>
<th>Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>3 400 700</td>
<td>3 422 211</td>
<td>4 039 939</td>
</tr>
<tr>
<td>Violence</td>
<td>Total deaths</td>
<td>Rate/100 000 pop.</td>
<td>Total deaths</td>
</tr>
<tr>
<td>- sharp force</td>
<td>332</td>
<td>10.7</td>
<td>279</td>
</tr>
<tr>
<td>- firearm</td>
<td>294</td>
<td>9.6</td>
<td>221</td>
</tr>
<tr>
<td>Suicide</td>
<td>Total deaths</td>
<td>Rate/100 000 pop.</td>
<td>Total deaths</td>
</tr>
<tr>
<td>- hanging</td>
<td>338</td>
<td>11.6</td>
<td>322</td>
</tr>
<tr>
<td>Transport</td>
<td>Total deaths</td>
<td>Rate/100 000 pop.</td>
<td>Total deaths</td>
</tr>
<tr>
<td>- road traffic</td>
<td>2 046</td>
<td>68.4</td>
<td>1665</td>
</tr>
<tr>
<td>- passenger</td>
<td>2 036</td>
<td>68.1</td>
<td>1642</td>
</tr>
<tr>
<td>- pedestrian</td>
<td>623</td>
<td>20.9</td>
<td>434</td>
</tr>
<tr>
<td>- driver</td>
<td>549</td>
<td>19.4</td>
<td>432</td>
</tr>
<tr>
<td>Unintentional</td>
<td>Total deaths</td>
<td>Rate/100 000 pop.</td>
<td>Total deaths</td>
</tr>
<tr>
<td>- drowning</td>
<td>108</td>
<td>3.0</td>
<td>137</td>
</tr>
<tr>
<td>- burns</td>
<td>69</td>
<td>2.6</td>
<td>96</td>
</tr>
<tr>
<td>ALL INJURIES</td>
<td>4 520</td>
<td>147.9</td>
<td>3 508</td>
</tr>
</tbody>
</table>

Table 2 shows a decrease in the overall rate of fatal injuries between 2009 and 2011, which was apparent for all leading external causes, with exception for passenger injury, drowning and burning, which increased between 2009 and 2010 before decreasing in 2011. Blunt force injury was not amongst the top two external causes of violence in 2009 and 2010, however, in 2011 it was the leading cause of violent death, with a rate of 6.7 per 100 000 population. The apparent manner with the highest mortality rate was transport for 2009, 2010 and 2011, accounting for 68.4, 57.2 and 40.5 deaths per 100 000 population, respectively.

\(^4\) The ASSA is a governing body for the profession of actuarial scientists in South Africa that aims to serve as a source of advice and leadership to communities in terms of understanding, modelling and managing financial and other measurable risk.
According to South African Police statistics, the murder rate for Mpumalanga for 2010/11 and 2011/2012 was 20 and 19.9 per 100 000 population, respectively. The rate for Mpumalanga, based on data from the forensic pathology services, show to be similar to these estimates at 25.9 and 21.7 per 100 000 population, for 2010 and 2011 respectively. In 2010, sharp force injury was the leading cause of violent death, followed by firearm-related injury. However, in 2011, blunt force injury became the leading cause of violent death. With regard to non-traffic unintentional injuries, drowning was the leading cause of death in 2010, followed by burns. In 2011 burns were the leading cause of fatal unintentional injury, followed by drowning.
CHAPTER 5: CONCLUSION

For the year 2011, this report has shown that road traffic deaths (mostly due to motor vehicle passenger injury) followed by homicide (mostly due to blunt objects) to be the leading contributors to injury mortality in the province of Mpumalanga. The male to female ratio for fatalities in the Mpumalanga Province was 4:1. Transport-related injury was the leading manner of death for both males and females as well as in all age groups. Passenger injury in particular, was the leading cause of death in this category, followed by pedestrian and driver injury.

Violence accounted for almost one-quarter of all injury deaths and was most prominent in the 25–34 year old age group. Blunt object injury was the leading external cause of violence-related deaths, followed by sharp object and firearm injuries. Hanging was the most common external cause of death for suicides for both sexes and across all age groups. The male to female ratio for 2011 was 4:1, which was lower than the ratio of 6:1 found in 2010. Burn injury was the major cause of unintentional injury deaths, with most injuries occurring among the 25-34 year age group.

Some notable changes were apparent with the external causes of violence and transport-related injury. In 2010, sharp force injury was the leading cause of violent death in 15-24 year-old and 25-34 year-olds, and in 2011 the leading cause of violent deaths in these age groups was blunt force injury. In 2010, passenger injury was the leading cause of transport-related death among 35-44 year-olds and 55-64 year-olds, and in 2011 driver injury became the leading cause of transport-related death.

This report has highlighted important risks related to victim groups, hazardous locations, peak times of injury, and mechanisms of injury, which are important considerations to inform policy and intervention initiatives. However, we also hope that these findings will stimulate further research on the underlying causes and risk factors that drive the patterns of fatal injuries among the different vulnerable groups identified in this report.

The Safety and Peace Promotion Research Unit (SAPPRU), 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, including the forensic pathology services; the National Crime Prevention Strategy; and violence and injury prevention agencies at local, provincial and national level.
Appendix I: NIMSS Data Collection Form

<table>
<thead>
<tr>
<th>Section 1 (for completion by Officer Collecting Body)</th>
<th>Police MASCAS no.</th>
<th>Closest Police Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Province of injury (may differ to province of death)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Gauteng</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Western Cape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Kwazulu Natal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Eastern Cape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Northern Cape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Free State</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suburb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Town</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPS coordinates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data &amp; Time of injury</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date &amp; Time of Death</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 2 (for completion by Forensic Officer)</th>
<th>Was body identified by name prior to PM?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortuary Name</td>
<td></td>
</tr>
<tr>
<td>ER No</td>
<td></td>
</tr>
<tr>
<td>PM Date</td>
<td></td>
</tr>
</tbody>
</table>

| Section 3 (for completion by Forensic Pathologist/ District Surgeon/ Forensic Officer) |
| Was an autopsy carried out?                         |                                          |
| If no, was the body                                 |                                          |
| Examined                                            |                                          |
| Name of victim                                      |                                          |
| Age                                                 |                                          |
| Race                                                 |                                          |
| Medical treatment of injury prior to death?         |                                          |
| None                                                |                                          |
| Emergency care at scene                             |                                          |
| Hospital care                                       |                                          |
| Death                                               |                                          |
| Hospital (final)                                    |                                          |
| Cause of Death                                      |                                          |
| Natural                                             |                                          |
| Non-natural                                         |                                          |
| Undetermined                                        |                                          |
| Apparent Manner of Death (i.e. “intentionality” if death is non-natural) | |
| Homicide                                            |                                          |
| Suicide                                             |                                          |
| Unintentional                                       |                                          |
| Undetermined                                        |                                          |
| Circumstances of injury                             |                                          |
| Firearm discharge                                   |                                          |
| Sharp object                                        |                                          |
| Blunt object                                        |                                          |
| Asphyxia (hanging, strangulation, suffocation, choking, aspiration) | |
| Poisoning, ingestion                                |                                          |
| Poisoning, gassing                                  |                                          |
| Fire burn/other burn                                 |                                          |
| Special categories                                  |                                          |
| Special investigations                              |                                          |
| Samples for alcohol                                 |                                          |
| Samples for toxicology                              |                                          |
| Special investigations                              |                                          |

<table>
<thead>
<tr>
<th>Section 4 (for completion by surveillance staff)</th>
<th>Blood Alcohol Level</th>
<th>Eye Fluid Alcohol</th>
</tr>
</thead>
</table>

| Special investigations                              | 1 Samples for alcohol | 2 Samples for toxicology | 3 Samples for histology and organ retention | 4 Samples for suspected rape | 5 Samples to identify victims | 6 Photography | 7 Projectiles |

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          http://www.unisa.ac.za/dept/ishs/index.html