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2020

*in collaboration with Mpumalanga
Department of Health Forensic
Pathology Services*

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A Profile of Fatal Injuries in Mpumalanga 2020

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DEPARTMENT OF HEALTH

FORENSIC PATHOLOGY SERVICE
DEATH REGISTER: 01 up to 200

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GLOSSARY



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

Apparent manner¹

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 four different categories: unintentional injury death, homicide, suicide, and undetermined death. In this report, unintentional deaths are further stratified according to transport-related and other non-transport unintentional deaths.

External cause

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.

Homicide

The NIMSS definition of homicide refers to intentional injuries inflicted by another person (perpetrator) in order to cause serious injury or death. This definition excludes deaths due to culpable homicide (“the unlawful negligent/ unintentional killing of a human being”).

Injury

An injury can be defined medically as damage to a person’s tissue or organs which are inflicted either by external forces which may be intentional or accidental or be inflicted by the individual themselves. Injury comprises the adverse consequences of various events including medical error, motor vehicle accidents, drowning, falls, burns, poisoning and adverse reactions to the effects of drugs.²

¹ The apparent manner of death, as determined by the forensic pathologists who undertake the autopsies, is correct at the time of data capturing. The final manner of death may be adjusted after court proceedings. This process can take 2 to 5 years to complete.

² Li, G., & Baker, S. P. (2012). *Injury research*. Springer.

Non-natural

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 South Africa's Inquests Act 1959 (Act No. 58 of 1959) are subject to medico-legal investigation. These deaths are grouped by external cause of death and apparent manner of death. 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.

Non-viable foetus³

A non-viable foetus is a foetus that may be expelled or delivered and is not capable of surviving to the point of independently sustaining life.

Sex

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.

³ Cohen, M.C., Scheimberg, I. (2018). Forensic aspects of perinatal deaths. Academic Forensic Pathology, 8(3), 452-491.

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.

Surveillance

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. For the NIMSS, these health events are descriptive of unnatural deaths as recorded by South Africa's Forensic Pathology Services.

Transport injury deaths

Transport deaths are normally unintentional injury deaths but may include deaths due to culpable homicide. Again, since the NIMSS data are geared towards prevention initiatives the data has been disaggregated as per their intention, and all transport deaths have been grouped together accordingly so to facilitate international comparison, and the development and evaluation of prevention programmes.

Undetermined deaths

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

Unintentional injury deaths

In the NIMSS, unintentional injury deaths are classified to include all unintentional injuries other than those attributed to transport injuries, such as those due to burns, falls, poisoning and drowning.

EXECUTIVE SUMMARY



This 2020 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 2020 to 31 December 2020. The analysis focused on the 3 879 non-natural deaths registered at the 21 Forensic Pathology Service (FPS) facilities in Mpumalanga. Cases due to natural causes were excluded. In 233 cases the age of the victim was unknown, and in 59 cases the sex was unknown, thus percentages reflect those cases for which this information was available.

During this period the World Health Organisation declared the coronavirus (Covid-19) a pandemic on 11 March 2020. Thereafter, the South African government declared a State of Disaster on 15 March 2020 which brought a national disruption within the school, work, and home spaces. As the rate of Covid-19 increased and later decreased, the South African government introduced varying national levels of lockdown to control the spread of the virus. Level 5 lockdown was implemented from 26 March to 30 April; level 4 from 1 May to 31 May; level 3 from 1 June to 17 August; level 2 from 18 August to 20 September; and level 1 from 21 September to 28 December. Regulations during the initial Covid-19 lockdown (level 5) period placed restrictions on movement which prohibited individuals from leaving their homes unless it was for essential activities (i.e. to purchase essential services and goods, seeking medical care, collecting of a social grant), there was a total ban on alcohol sales, indoor and outdoor establishments were closed to the public, border closures were implemented and curfew hours were introduced. Under level 4, international and interprovincial travel was restricted, the public was able to use public transport provided that passengers wore a face mask and there was a ban on social gatherings. Level 3 saw the easing of restrictions which allowed indoor and outdoor business establishments to operate, interprovincial travel

was permitted, and social gatherings were restricted to 100 or fewer people (outdoor) or 50 or fewer people (indoor), given that the social distancing standards were met (i.e. of physical separations between people of 1.5 to 2 metres, avoiding hugs, handshakes and other forms of physical contact, and the mandatory wearing of face masks). Level 2 restrictions allowed indoor and outdoor establishments to have longer operating hours, curfew hours were extended and the partial reopening of borders. Under level 1 the public was encouraged by government to regularly clean their hands with either soap and water or sanitizer and social gatherings permitted 100 or fewer people (indoor) or 250 or fewer people (outdoor). The combination of restricted movements, limited sales of alcohol and engagement in protective health behaviours consequently impacted social life including injury mortality patterns in Mpumalanga and potentially South Africa as a whole, with changing injury trends observed.

Manner of death

Unintentional injury deaths were the leading manner of death, accounting for 43.3% (n=1 679) of the non-natural deaths recorded in Mpumalanga, followed by homicide (27.4%, n=1 061) and suicide (13.9%, n= 538). The remaining 601 (15.5%) death cases were undetermined.

Unintentional injury deaths

In this report, transport-related and other non-transport unintentional deaths have been presented separately so that more depth and description to the magnitude of these occurrences are shown.

Transport-related injury deaths

Motor vehicle passenger injuries (28%, n=461) and motor vehicle pedestrian injuries (24.1%, n=351) were the leading causes of the unintentional injury deaths where external cause was known. Where age was known (n=1 641), the most common age group was the 30-34 year-old (17.4%, n=214). The male to female ratio for transport-related injury deaths was 4.1:1

Other non-transport unintentional injury deaths

Drowning (6.7%, n=113), burns (5%, n=84), fall/push/jump from height (2.9%, n=49), electrocution (2.7%, n=46), and medical procedure (2%, n=34) were the leading causes of other non-transport unintentional injury deaths where the external cause was known. The external cause was unknown in 59 cases. The male to female ratio for other non-transport unintentional injury deaths was 3.6:1.

Homicide

Of the 1 061 homicide-related deaths where external cause was known, about one third were caused by firearm discharge (31.4%, n=333), followed by sharp objects (29.9%, n=317) and blunt objects (28.7%, n=304). Of those cases where age was known (n=1 036), 18.1% (n=187) were in the 25-29 year-old age group. Among all homicide-related cases, there were about 6.3 male deaths for each female death.

Suicide

The external cause was known in 536 cases (2 were unknown), where the majority were due to hanging (66.9%, n=356), followed by ingestion of poison (21.2%, n=113) and firearm discharge (7.3%, n=39). In those cases where age was known (n=532), the most common age group for suicide victims was 30-34 years (15.6%, n=83), followed by 20-24 years (15.2%, n=81). There were about 4.2 male suicides for every female suicide. The leading method of suicide was hanging among males (72.2%) and ingestion of poison among females (49%).

Undetermined deaths

For 601 cases, the manner of injury-related death was undetermined. The external cause was unknown in 48% (n=289) of the undetermined deaths. Non-viable foetus deaths accounted for 13.8% of those cases where the external cause of death was known, and poisoning (ingestion) accounted for 8.8% of cases.

External causes of death

Of the 3 879 non-natural deaths recorded, the external cause of death was unknown in 298 cases. Motor vehicle accidents were the leading external cause of death where motor vehicle passenger injuries predominate (12.1%, n=471), followed by firearm discharge (10%, n=386), motor vehicle pedestrian injuries (9.5%, n=367), hanging (9.4%, n=366) and motor vehicle driver injuries (8.9%, n=344). Another leading external cause included sharp force injury (8.8%, n=340).

Transport-related deaths

Specific to the 1 274 transport-related deaths, motor vehicle passenger injuries accounted for 37% (n=471), motor vehicle pedestrian injuries for 28.8% (n=367), motor vehicle driver injuries for 27% (n=344), motor vehicle unspecified injuries for 3.3% (n=42), motorcycle injuries for 1.9% (n=24), bicycle injuries for 1.3% (n=17), railway unspecified injuries for 0.4% (n=5) and railway pedestrian injuries for 0.3% (n=4). Motor vehicle pedestrian deaths were the leading external cause of death among the 35-44 year age group (80%); motor vehicle passenger deaths were the leading external cause of death amongst the 25-34 year age group (33.7%); and motor vehicle driver deaths were the leading external cause of death amongst the 25-34 year age group (41.5%). The male to female ratio for transport-related deaths is 4.1:1.





CHAPTER 1: INTRODUCTION

Injury is a major cause of mortality in South Africa, accounting for 51 164 of 445 202 deaths registered at the Department of Home Affairs in South Africa according to a Statistics South Africa (Stats SA) 2020 report.¹ Injury surveillance is vital for monitoring demographic, causal, 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 national 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 non-transport unintentional injury deaths are also not systematically tracked nationally 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 males, females 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 (2020), data from 21 FPS facilities from Mpumalanga was included for full provincial coverage. The Masculinities and Health Research Unit (MaHRU), a SAMRC Extra Mural Unit (EMU) located at Unisa is the custodian and manager of the NIMSS with offices in Cape Town and Johannesburg. MaHRU provides a public information service on injury mortality for the use by researchers, interventionists and policy makers interested in injury prevention.

¹ Statistics South Africa. (2018). Mortality and causes of death in South Africa: Findings from death notification

Goals of the NIMSS

The ultimate goal of the NIMSS is to provide a permanent system that will register all non-natural deaths including injury 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, the report provides 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 FPS; advocates and partners of the Integrated Crime and Violence Prevention Strategy; and violence and injury prevention agencies at local, provincial and national level.

For the FPS, the 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 Integrated Crime and Violence Prevention Strategy and other research agencies, the 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 homicide-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.

Injury surveillance is vital for monitoring demographic, seasonal and socio-economically related trends in the major causes of death and disability.



NIMSS Methodology

NIMSS uses existing medico-forensic investigative procedures. It collates onto a single data form and into a single computer database with 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 SAMRC-Unisa Masculinities and Health 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

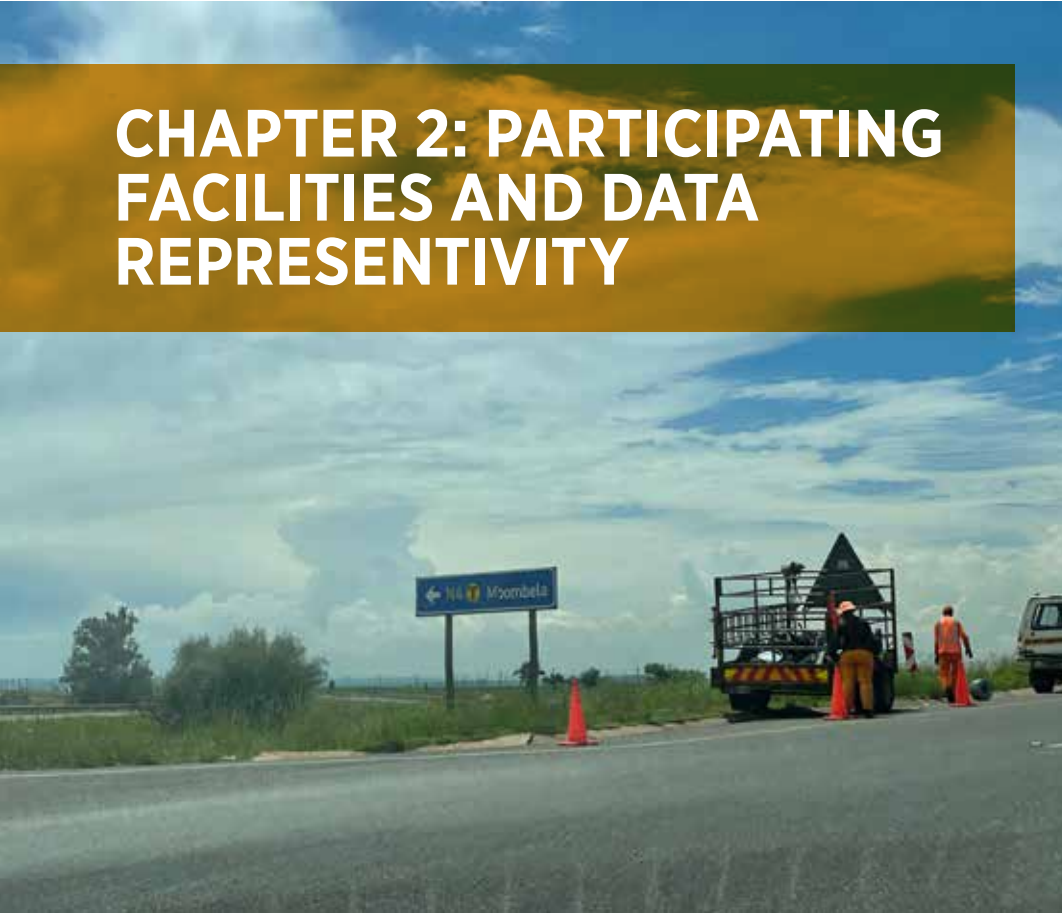


Figure 1: Map of Mpumalanga



Table 1: Participating FPS

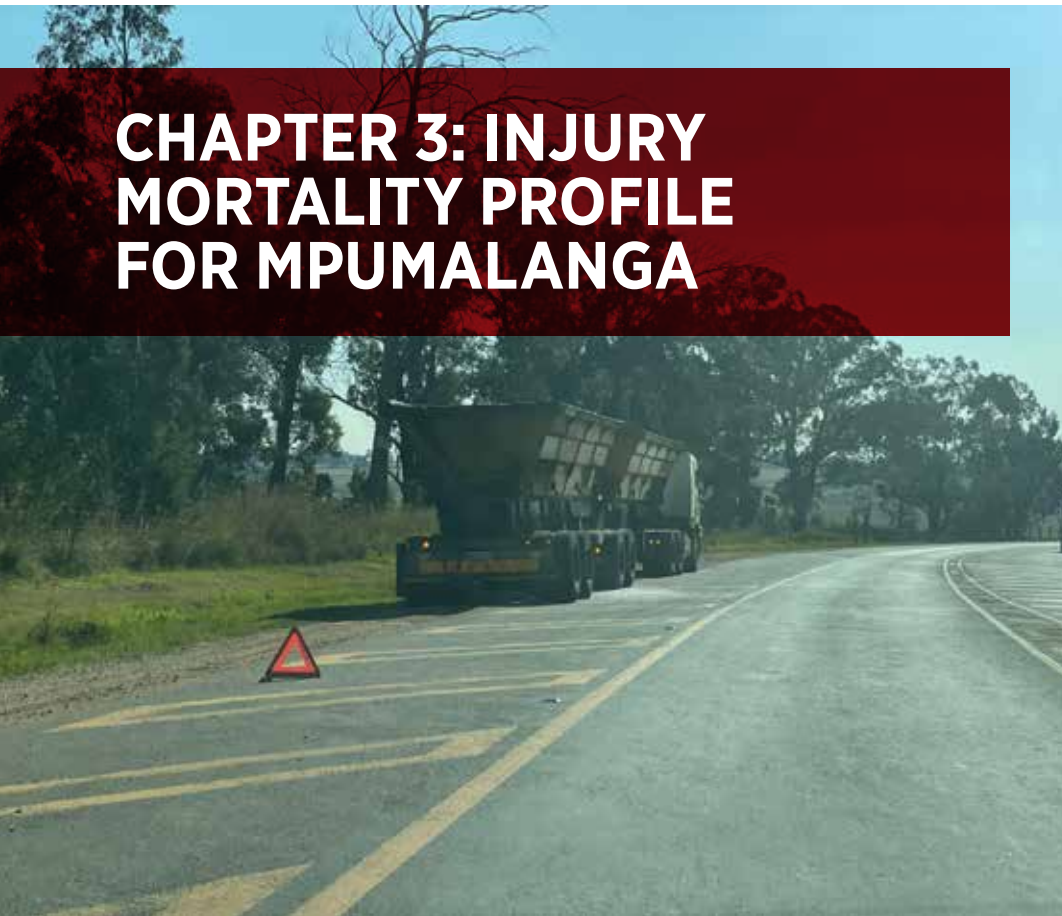
District	City/Town	FPS	Total
Ehlanzeni	Barberton	Barberton	133
	Lydenburg	Lydenburg	71
	Mapulaneng	Mapulaneng	298
	Acornhoek	Tintswalo	145
	Tonga	Tonga	234
	Themba	Themba	481
Gert Sibande	Balfour	Balfour	50
	Bethal	Bethal	135
	Carolina	Carolina	38
	Embhuleni	Embhuleni	138
	Ermelo	Ermelo	180
	Evander	Evander	286
	Piet Retief	Piet Retief	157
	Standerton	Standerton	99
	Volksrust	Volksrust	130
Nkangala	Belfast	Belfast	88
	Delmas	Delmas	107
	KwaMhlanga	KwaMhlanga	283
	Mmamethlake	Mmamethlake	46
	Middelburg	Middelburg	242
	Witbank	Witbank	538
TOTAL			3 879

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.

The ultimate goal of the NIMSS is to provide a permanent system that will register all non-natural deaths including injury deaths that occur annually in South Africa.

Table 1 shows the 21 participating FPS facilities in Mpumalanga, and the number of non-natural deaths recorded at each facility for 2020.

CHAPTER 3: INJURY MORTALITY PROFILE FOR MPUMALANGA

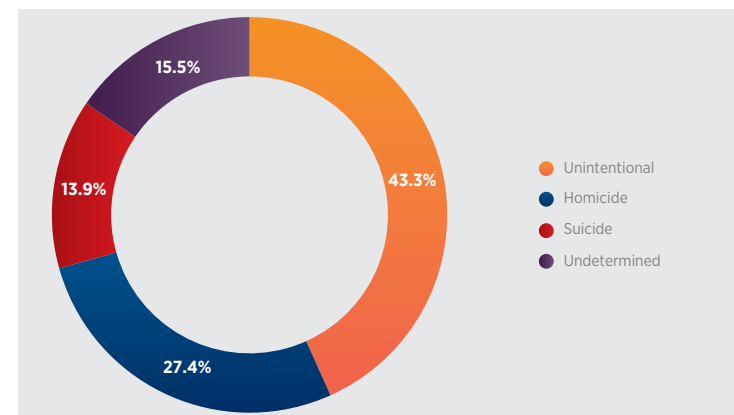


A total of 4 180 cases were recorded in the Mpumalanga catchment area during the January 2020 to December 2020 period including 301 (7.2%) cases which were due to natural causes (natural death). The rest of the analysis is restricted to the 3 879 non-natural deaths that were recorded at the participating FPS facilities.

3.1 Overall Manner of Death

Overall, unintentional injuries (transport-related and other non-transport unintentional) were the leading cause (43.3%, n=1 679) of non-natural deaths figure, followed by homicide (27.4%, n=1 061) and suicide (13.9%, n=538) (see Figure 3.1). The manner of death was undetermined for the remaining (15.5%, n=601) cases.

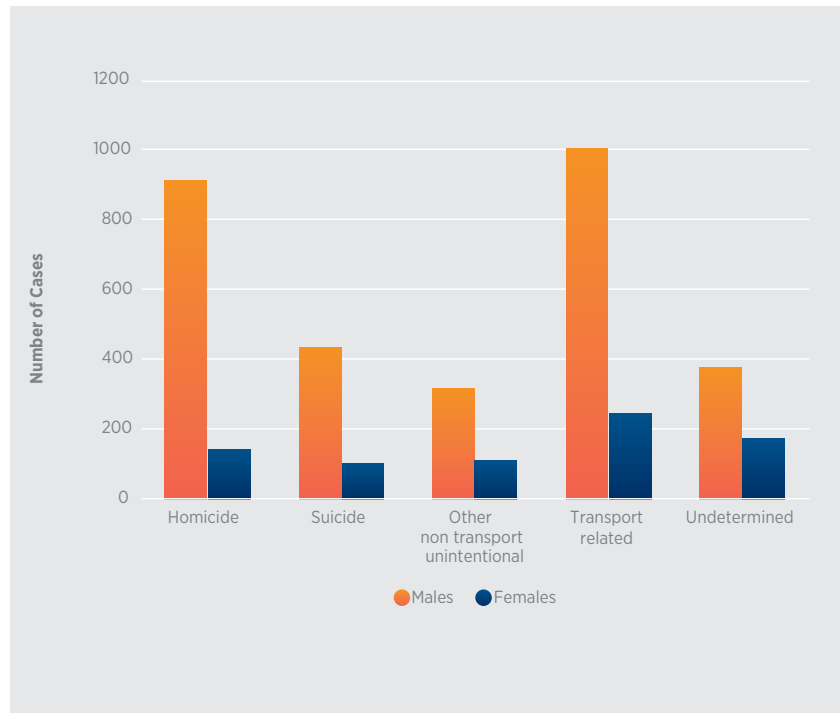
Figure 3.1. Overall manner of death (N=3 879)



3.1.1 Manner of death by sex of victim

Of the cases recorded in Mpumalanga, sex was known in only 3 820 cases, and it comprised 3 044 (78.5%) males and 776 (20%) females. The victim's sex was unknown in 59 cases. The leading manner of death amongst males (43.4%) and females (46.1%) was transport-related injuries (see Figure 3.1.1).

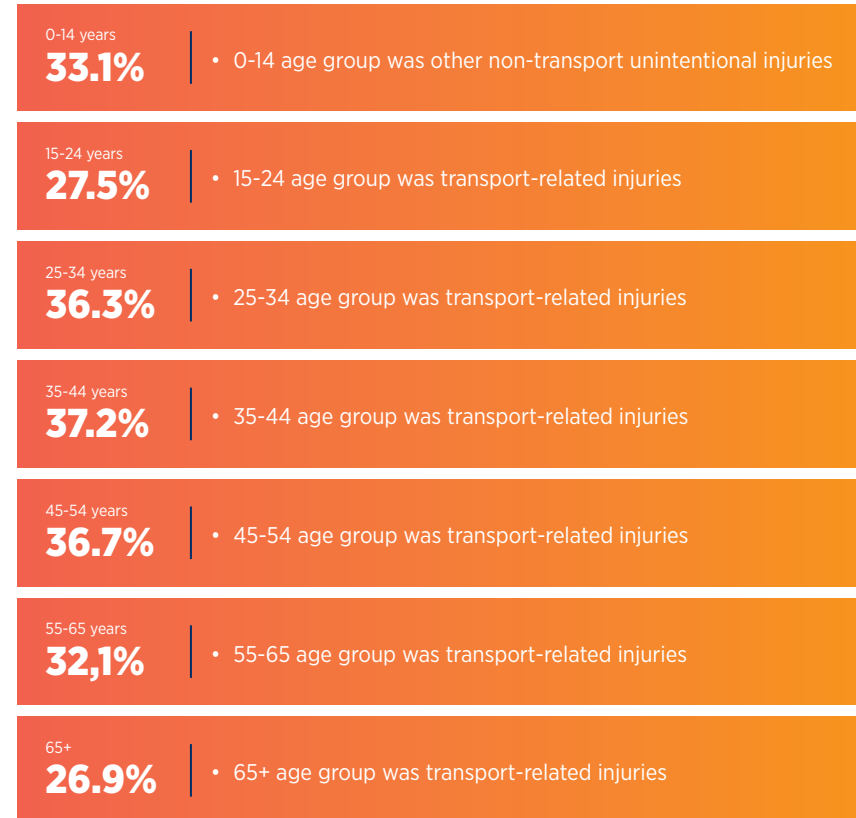
Figure 3.1.1 Manner of death by victim sex (n=3 820)



3.1.2 Manner of death by age of victim

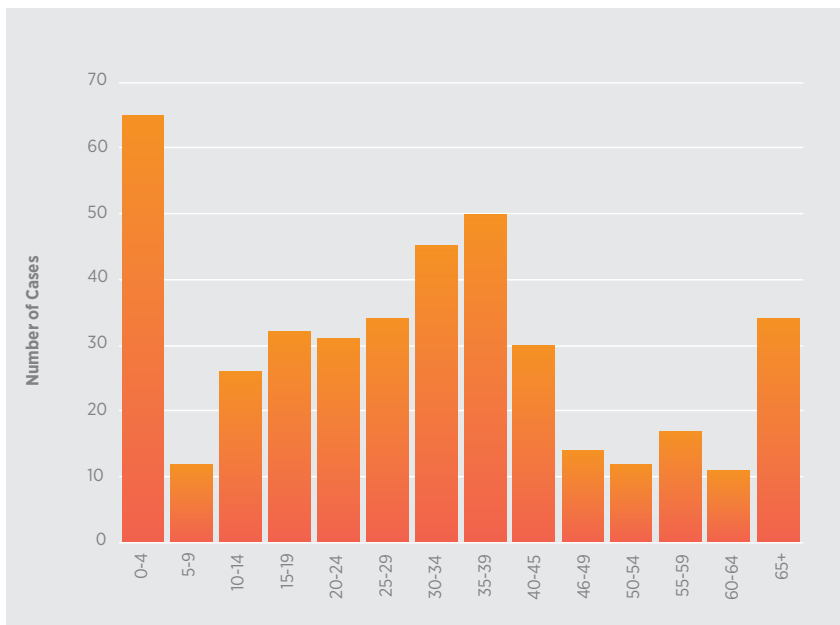
The average age of the victims was 34.17 (±16.1) years.

The leading manner of death amongst the:



0-4 years | 30-34 years | 35-39 years
15.7% | **10.9%** | **12.1%**

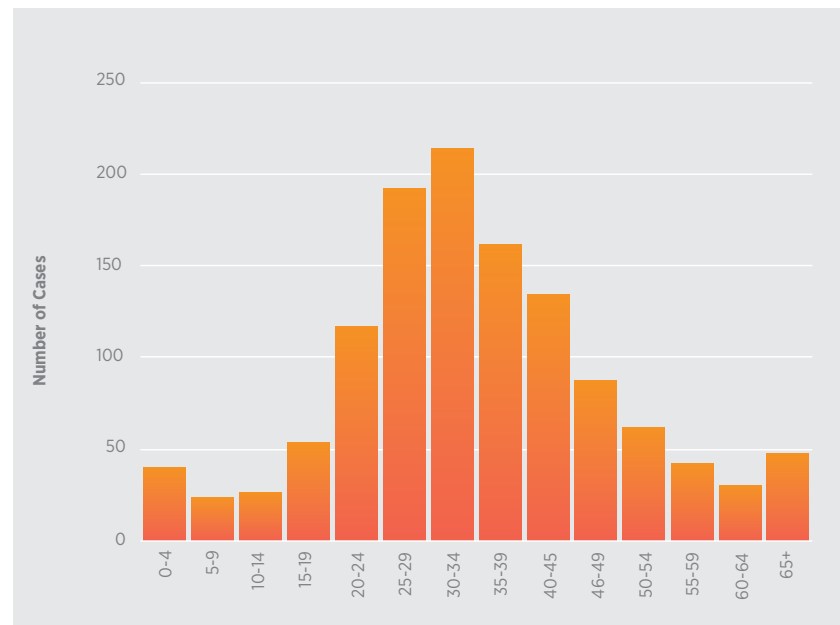
Figure 3.1.2.1 Other non-transport unintentional deaths by age (n=413)



Other non-transport unintentional deaths were most prevalent among the 0-4 year-old (15.7%, n=65), 35-39 year-old (12.1%, n=50) and 30-34 year-old (10.9%, n=45) age groups as can be seen in Figure 3.1.2.1.

25-29 years | 30-34 years | 35-39 years
15.6% | **17.4%** | **13.1%**

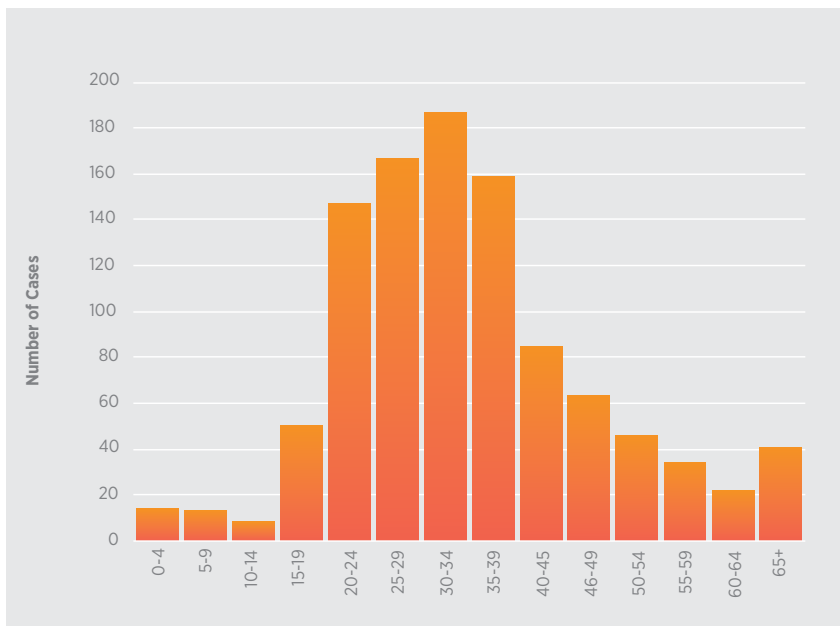
Figure 3.1.2.2 Transport-related death by age (n=1,231)



Transport-related deaths were most prevalent among the 30-34 year-old (17.4%, n=214), 25-29 year-old (15.6%, n=192) and 35-39 year-old (13.1%, n=161) age groups (see Figure 3.1.2.2).

25-29 years | 30-34 years | 35-39 years
16.1% | **18.1%** | **15.3%**

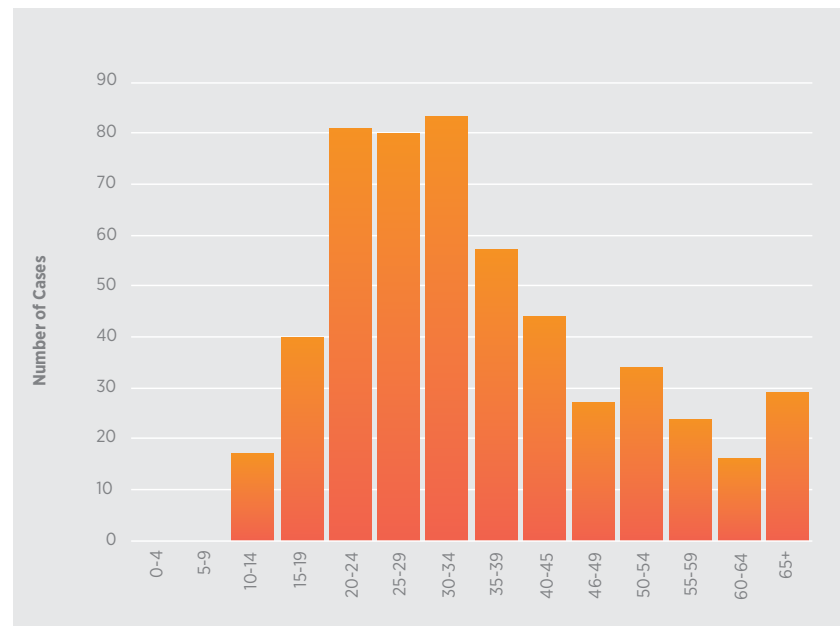
Figure 3.1.2.3 Homicidal deaths by age (n=1,036)



Homicidal deaths were most prevalent amongst the 30-34 year-old (18.1%; n=187), followed by 25-29 year-old (16.1%, n=167) and 35-39 year-old (15.3%, n=159) age groups (see Figure 3.1.2.3).

20-24 years | 25-29 years | 30-34 years
15.2% | **15%** | **15.6%**

Figure 3.1.2.4 Suicidal deaths by age (n=532)

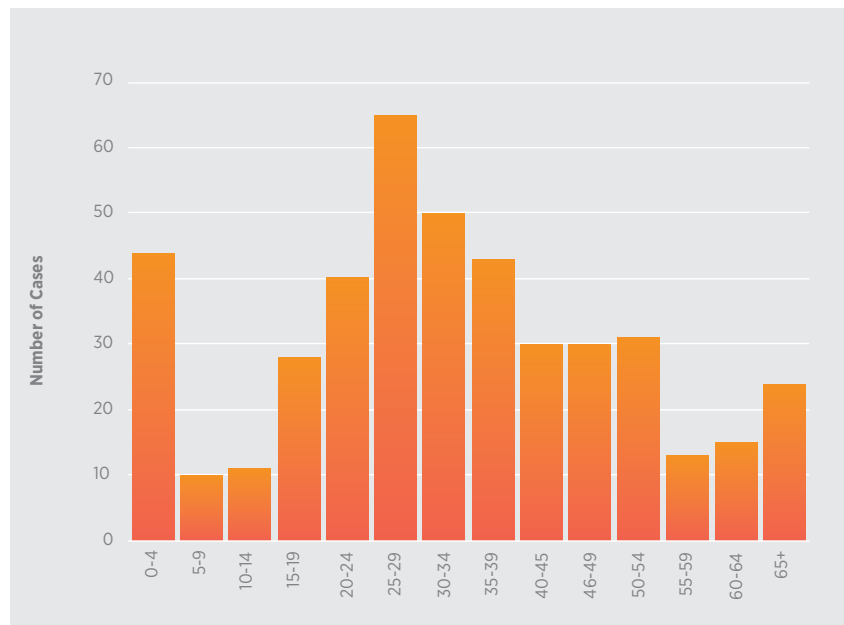


Suicidal deaths were most prevalent amongst the 30-34 year-old (15.6%, n=83), followed by 20-24 year-old (15.2%, n=81), and 25-29 year-old (15%, n=80) age groups (see Figure 3.1.2.4).

0-4 years | 25-29 years | 30-34 years
9.9% | **15%** | **11.5%**

Known Cases | Road/Street/Highway | House/Apartment/Shack
91.4% | **40.5%** | **32.7%**

Figure 3.1.2.5 Undetermined deaths by age (n=434)

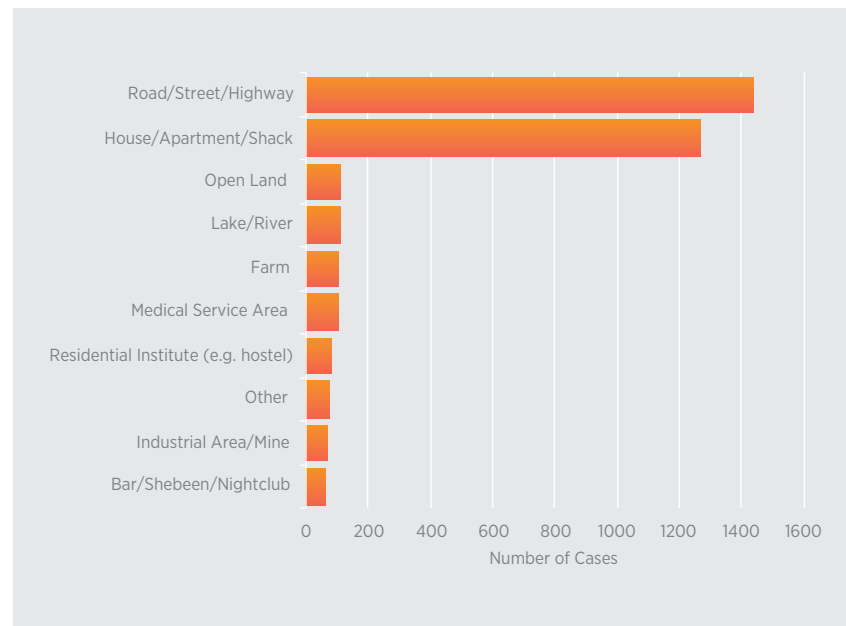


Undetermined deaths were most prevalent amongst the 25-29 year-old (15%, n=65), followed by 30-34 year-old (11.5%, n=50) and 0-4 year-old (9.9%, n=43) age groups (see Figure 3.1.2.5).

3.2. Scene of Injury

The scene of injury was known in 3 546 (91.4%) cases. The majority of deaths occurred on roads, streets and/or highways (40.5%), as well as the house, apartments and/or shacks (32.7%).

Figure 3.2. Top 10 scenes of injury (n=3 429)



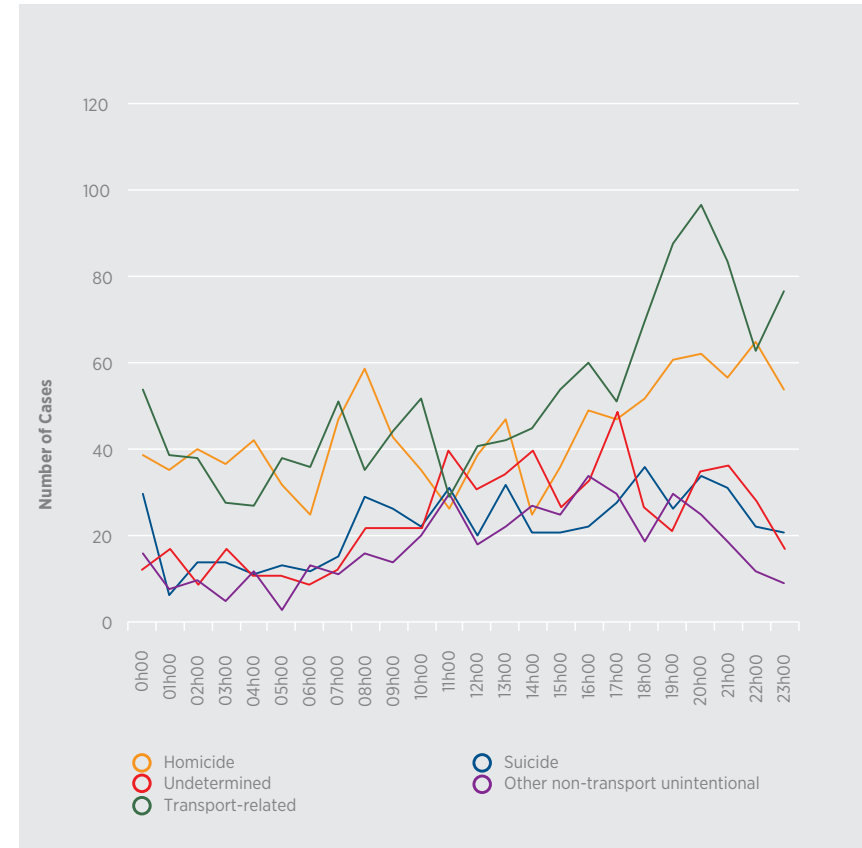
3.3 Time of Death

The peak periods of death for:

- Transport-related deaths were 20h00 (7.8%), 19h00 (7%), and 21h00 (6.7%);
- Other non-transport unintentional deaths were 16h00 (7.9%), 17h00 and 19h00 (7%), and 14h00 (6.3%);
- Homicides were 22h00 (6.1%), 20h00 (5.8%), and 19h00 (5.7%);
- Suicides were 18h00 (6.7%), 20h00(6.3%), and 13h00 (5.9%); and
- Undetermined deaths were 16h00 (8.2%), 10h00 and 13h00 (6.7%), and 20h00 (6%).



Figure 3.3.1 Time of death (n=3,844)



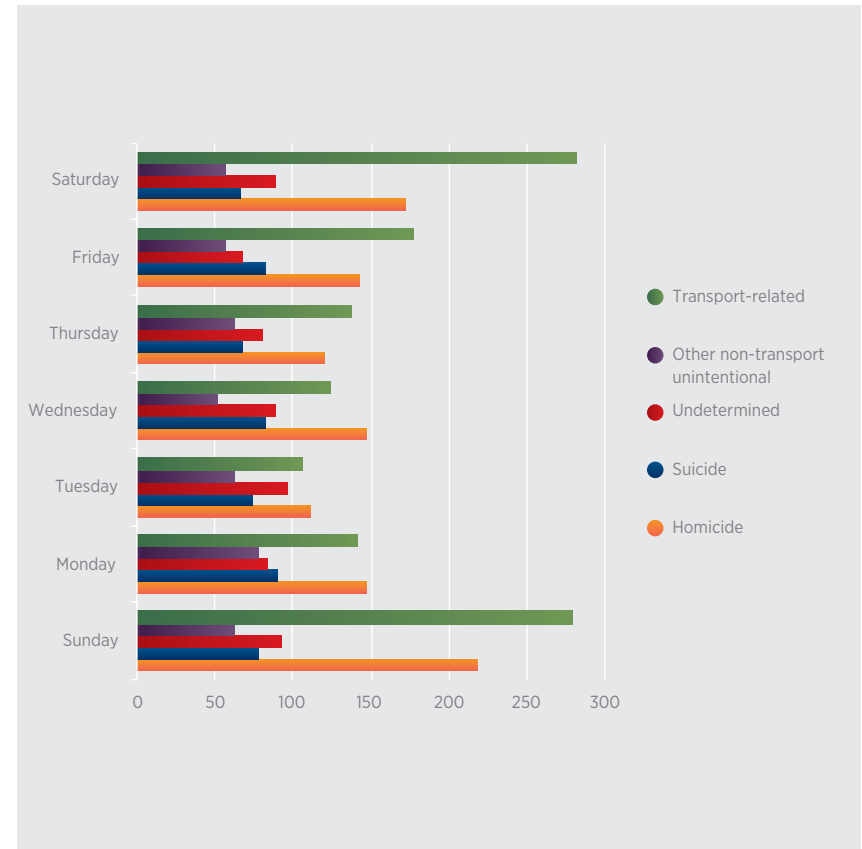
3.4 Day of Death

The peak days of death for:

- Transport-related injuries were Saturday (22.6%), Sunday (22.4%), and Friday (14.3%);
- Other non-transport unintentional injuries were Monday (18.1%), Sunday and Thursday (14.7%), and Tuesday (14.4%);
- Homicides were Sunday (20.6%), Saturday (16.2%), and Monday and Wednesday (13.9%);
- Suicides were Monday (16.7%), Wednesday and Friday (15.2%), and Sunday (14.5%); and
- Undetermined deaths were Tuesday (16%), Sunday (15.5%), and Wednesday and Saturday (14.8%).



Figure 3.4.1 Day of death (n=3,877)



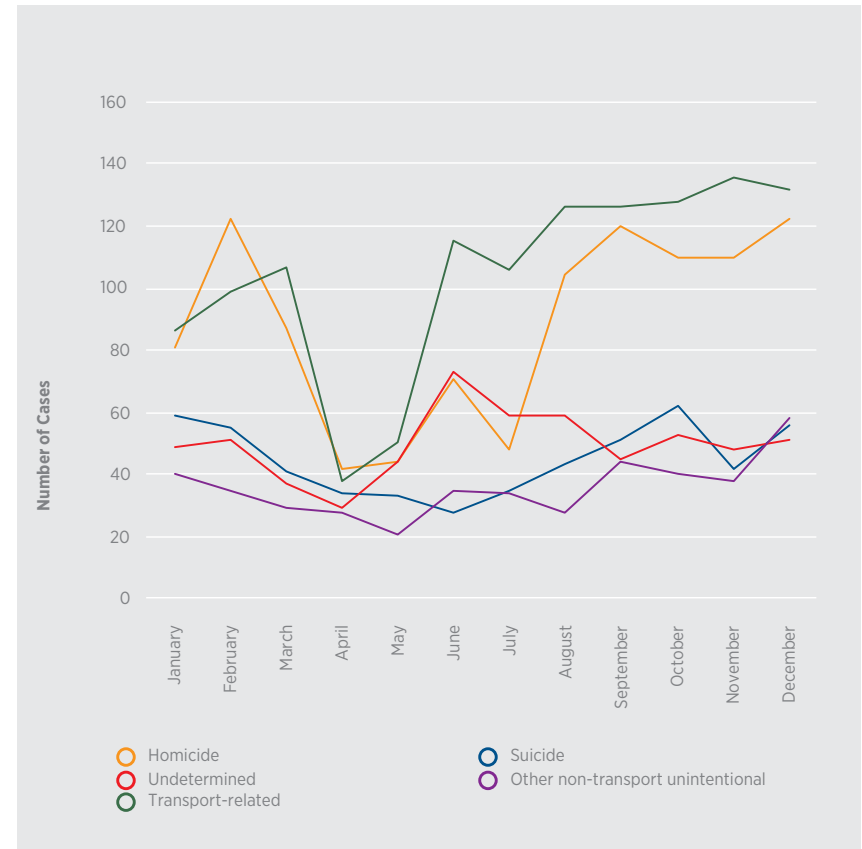
3.5 Monthly Variation

The peak months for:

- Transport-related deaths were November (10.9%), December (10.6%), and October (10.2%);
- Other non-transport unintentional deaths were December (13.5%), September (10.2%), and January and October (9.3%);
- Homicides were February and December (11.5%), September (11.3%), and October and November (10.4%);
- Suicides were October (11.5%), January (10.9%), December (10.4%), and February (10.2%); and
- Undetermined deaths were June (12.2%), July and August (9.8%), and October (8.8%).



Figure 3.5.1 Monthly variation (n=3,877)



3.6. External Cause of Death

Out of 3 879 cases the external cause was unknown in 298 cases. The leading external cause of death classification was motor vehicle passenger injury (12.1%, n=471), followed by firearm discharge (10%, n=386), motor vehicle pedestrian injury (9.5%, n=367), hanging (9.4%, n=366), motor vehicle driver injury (8.9%, n=344) and sharp force injury (8.8%, n=340). The top ten leading external causes of death accounted for 3 097 cases (see Figure 3.6 below).

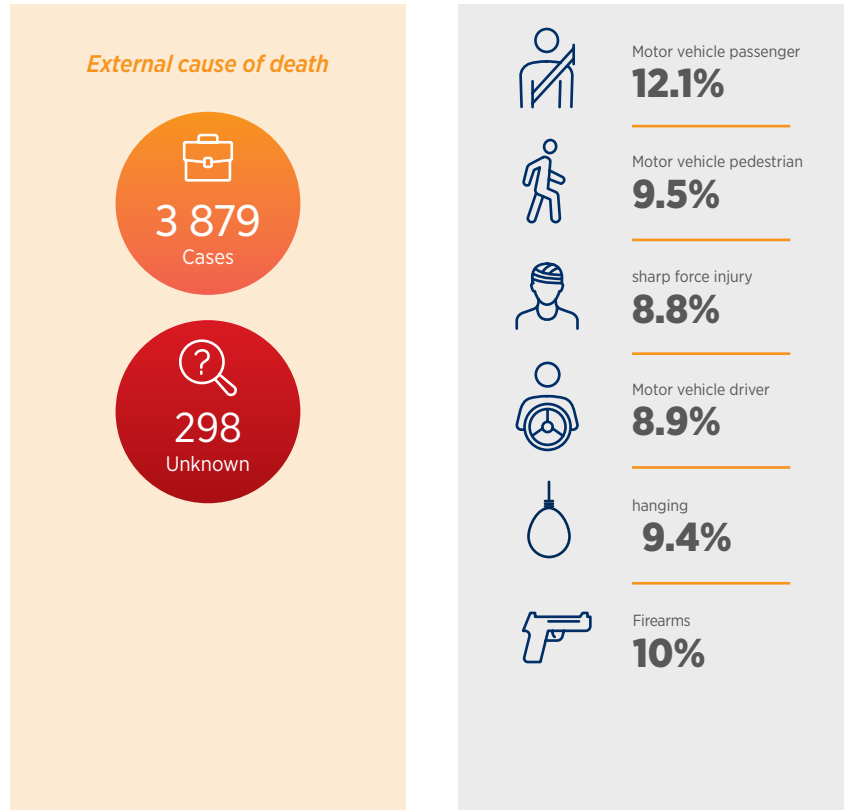
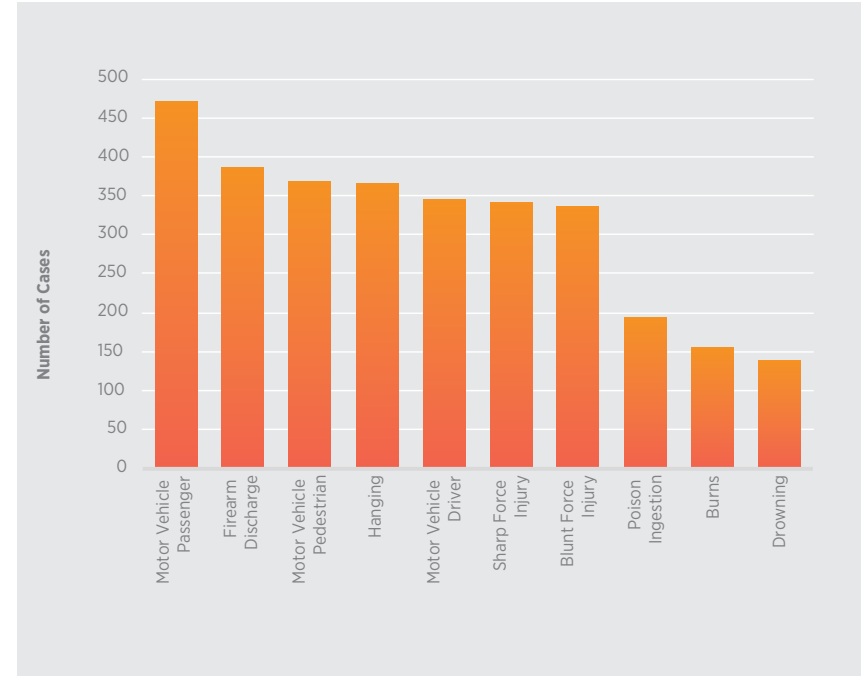


Figure 3.6. Top 10 external causes of death (n=3,097)



3.6.1 External cause of unintentional death by sex

The leading external cause of unintentional deaths among females was motor vehicle passenger-related injuries (44.1%, n=158), followed by motor vehicle pedestrian-related injuries (19.3%, n=69). The leading external cause for males was motor vehicle driver-related injuries (24.8%, n=327) followed by motor vehicle passenger-related injuries (23.3%, n=308). The male to female ratio for unintentional injury deaths is 3.9:1.

3.6.2 External cause of unintentional injury death by age

Motor vehicle passenger-related deaths (28%, n=461) and motor vehicle pedestrian-related deaths (24.1%, n=351) were the leading causes of unintentional injury deaths. For those cases where the age was known (n=1 642), most cases occurred in the 25-34 year age group (29.5%, n=485).

Age was unknown in 35 of the cases. Of the remaining cases, the average age of the victims was 33.65 (±16.88) years. The leading cause for unintentional injury deaths in the:

- 0-14 age group was motor vehicle pedestrian-related injuries (26.3%);
- 15-24 age group was motor vehicle passenger-related injuries (38.5%);
- 25-34 age group was motor vehicle passenger-related injuries (38.1%);
- 35-44 age group was motor vehicle passenger-related injuries (26.7%);
- 45-54 age group was motor vehicle driver-related injuries (29.1%);
- 55-64 age group was motor vehicle passenger-related (26%); and
- 65+ age group was motor vehicle pedestrian-related injuries (33.3%).

External cause of unintentional death by sex



Motor vehicle passenger
- Females

44.1%



Motor vehicle pedestrian
- Females

19.3%



Motor vehicle
passenger - Males

23.3%



Motor vehicle driver
- Males

24.8%

External cause of unintentional death by age



1 642
Cases



35
Unknown



Motor vehicle passenger

28%



Motor vehicle pedestrian

24.1%

3.6.3 External cause of homicide by sex

The leading external cause of homicide among females were firearm discharge (29.2%, n=42) followed by sharp force injury (27.8%, n=40) and blunt force injury (21.5%, n=31). The leading external cause of homicide among males were firearm discharge (31.9%, n=291), sharp force injury (30.4%, n=277) and blunt force injury (30%, n=273). The male to female to ratio for homicidal deaths was 6.3:1

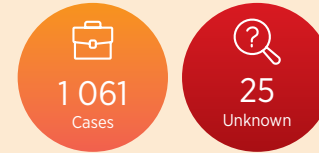
3.6.4 External cause of homicide by age

Of the 1 061 homicide deaths, the external cause by age was unknown for 25 cases. The leading external cause of deaths was firearm discharge (31.9%, n=330), followed by sharp force injury (30.3%, n=314) and blunt force injury (28.9%, n=299). For those cases where the age was known (n=1 036), most cases occurred among in the 25-34 year age group (34.2%, n=354).

The leading external cause of death for homicide by age is as follows:

- 0-14 age group was blunt force injury (28.6%);
- 15-24 age group was sharp force injury (39.1%);
- 25-34 age group was sharp force injury (32.2%);
- 35-44 age group was firearm discharge (38.9%);
- 45-54 age group was firearm discharge (38.5%);
- 55-64 age group was firearm discharge (42.9%); and
- 65+ age group was blunt force injury (29.3%).

External cause of homicide by age



External cause of homicide by sex



3.6.5. External cause of suicide by sex

The leading external cause of suicide among females was ingestion of poisoning (48.5%, n=50), followed by hanging (44.2%, n=46). For males, the leading external cause was hanging (72.2%, n=314), followed by the ingestion of poison (14.5%, n=63). The male to female ratio for suicidal deaths was 4.2:1

3.6.6 External cause of suicide by age

Hanging accounted for nearly two-thirds (66.9%, n=356) of the suicides recorded where the external cause was known, followed by the ingestion of poison (21.2%, n=113) and firearm discharge (7.3%, n=39). The 25-34 year-old age group accounted for 30.6% (n=163) of suicide cases.

Age was unknown in 6 of the 538 cases. For the remaining cases, the average age of the victims was 35.6 (± 15.54) years. The leading external cause of death for suicide in the:

- 0-14 age group was hanging (83.2%);
- 15-24 age group was hanging (66.9%);
- 25-34 age group was hanging (65.6%);
- 35-44 age group was hanging (63.4%);
- 45-54 age group was hanging (59%);
- 55-64 age group was hanging (70%); and
- 65+ age group was hanging (86.2%).



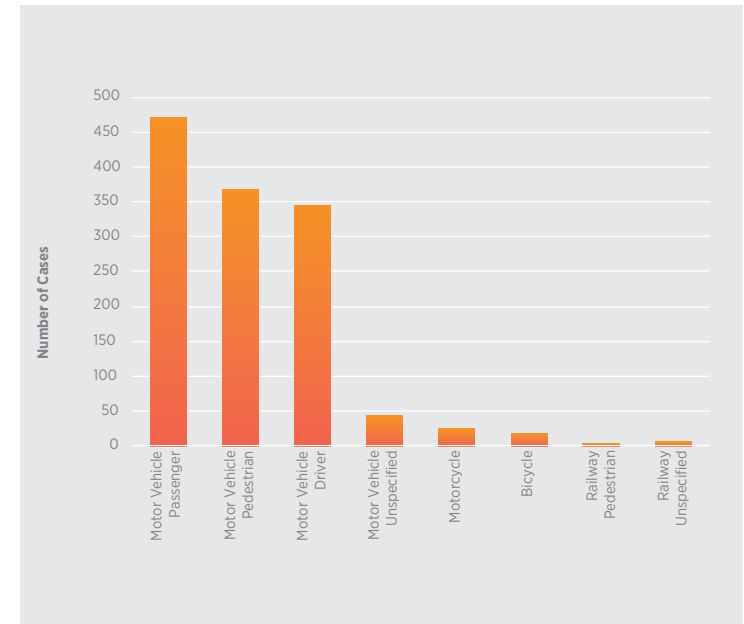
CHAPTER 4: TRANSPORT-RELATED DEATHS



4.1 Overall External Cause of Death

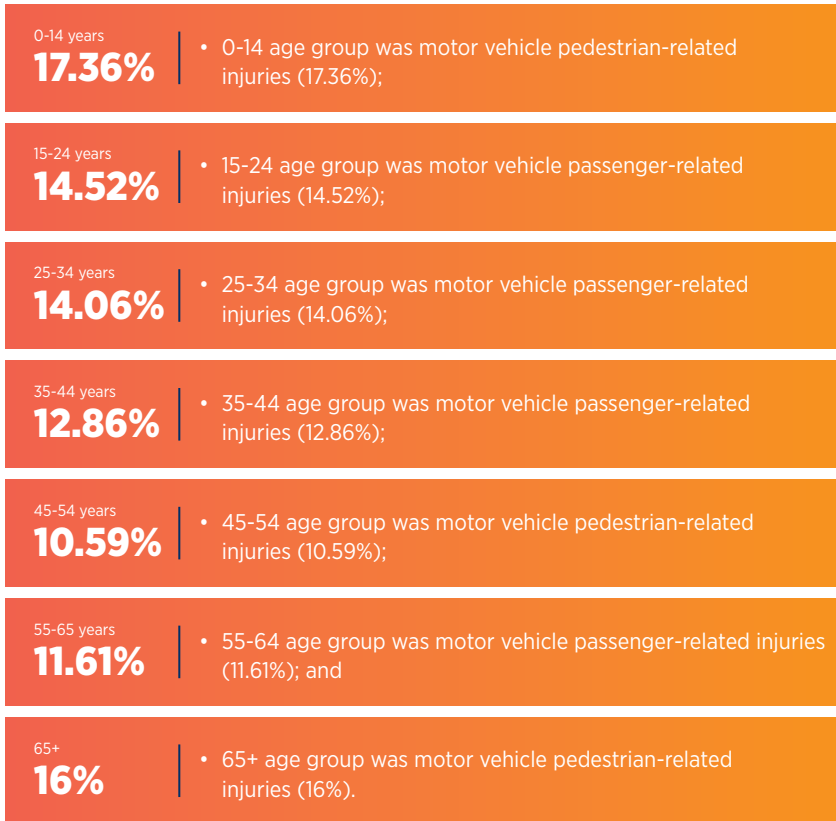
For transport-related deaths, motor vehicle passenger-related injuries were the leading external cause (37.44%, n=471), followed by motor vehicle pedestrian-related injuries (29.17%, n=367), and motor vehicle driver-related injuries (27.34%, n=344) (see Figure 4.1).

Figure 4.1 Overall external cause of death (n=1,274)



4.1.1 Transport-related deaths by age

The leading external cause of death amongst the:



15-24 years

19.31%

25-34 years

33.7%

35-44 years

21.89%

Figure 4.1.1 Motor vehicle passenger-related deaths by age (n=466)

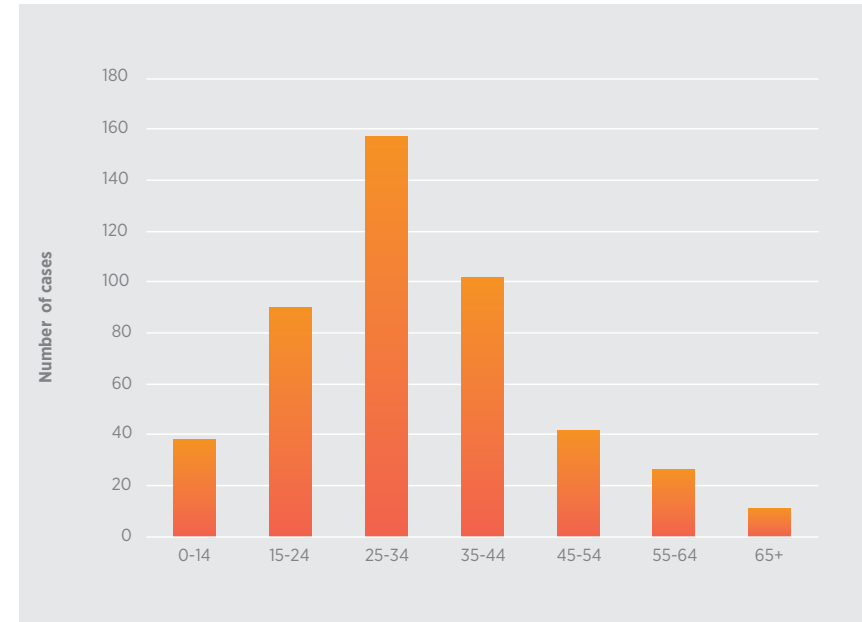


Figure 4.1.1 displays motor vehicle passenger-related deaths as most prevalent amongst the 25-34 year-old (33.7%, n=157), followed by 35-44 year-old (21.89%, n=102) and 15-24 year-old (19.31%, n=90) age groups.

15-24 years | 25-34 years | 35-44 years
15.13% | **21.29%** | **22.4%**

Figure 4.1.2 Motor vehicle pedestrian-related deaths by age (n=357)

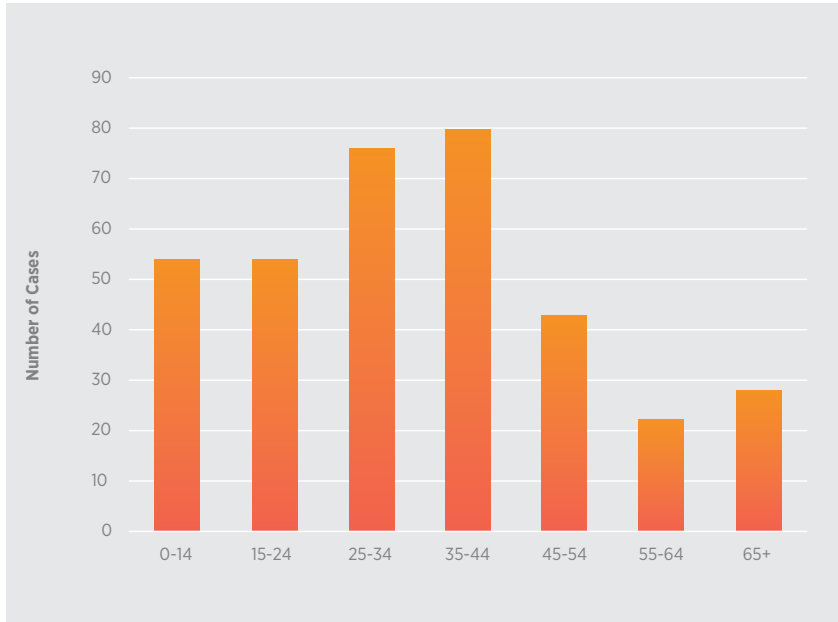
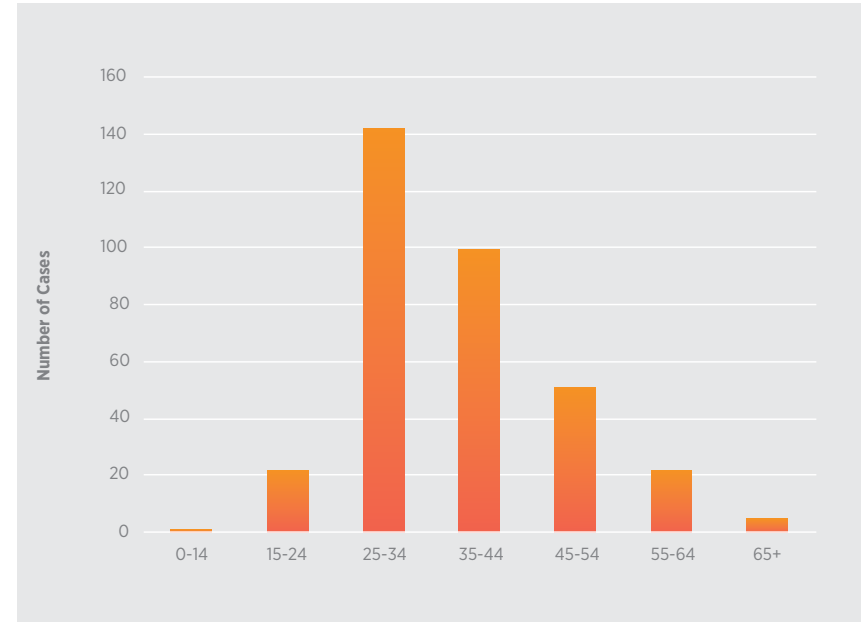


Figure 4.1.2 displays motor vehicle pedestrian-related deaths as most prevalent amongst the 35-44 year-old (22.4%, n=80), followed by 25-34 year-old (21.29%, n=76), 0-14 and 15-24 year-old (15.13%, n=54) age groups.

25-34 years | 35-44 years | 45-54 years
41.52% | **28.95%** | **14.91%**

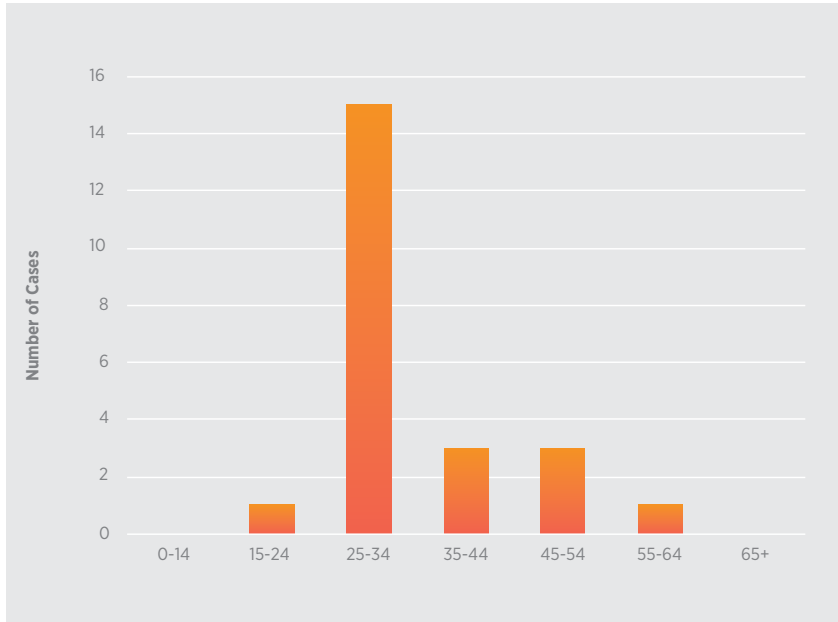
Figure 4.1.3 Motor vehicle driver-related deaths by age (n=342)



Motor vehicle driver-related deaths were most prevalent amongst 25-34 year-old (41.52%, n=142), 35-44 year-old (28.95%, n=99) and 45-54 year-old (14.91%, n=51) age groups (see Figure 4.1.3).

25-34 years | 35-44 and 45-54 years
65.23% | **13.04%**

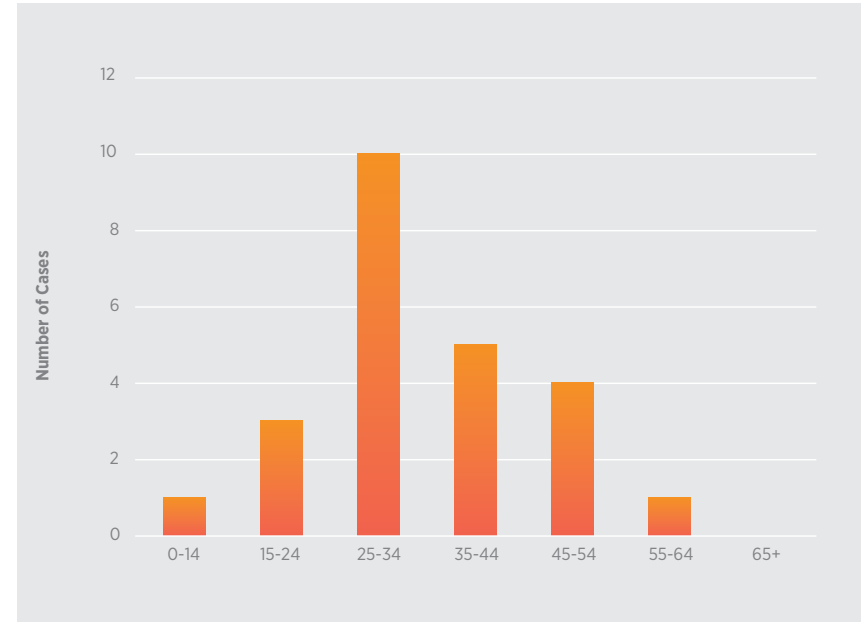
Figure 4.1.4 Motor vehicle unspecified deaths by age (n=23)



Unspecified motor vehicle related deaths were most prevalent amongst 25-34 year-old (65.23%, n=15), and 35-44 and 45-54 year-old (13.04%, n=3) age groups (see Figure 4.1.4).

25-34 years | 35-44 years | 45-54 years
41.67% | **20.3%** | **16.67%**

Figure 4.1.5 Motorcycle-related deaths by age (n=24)

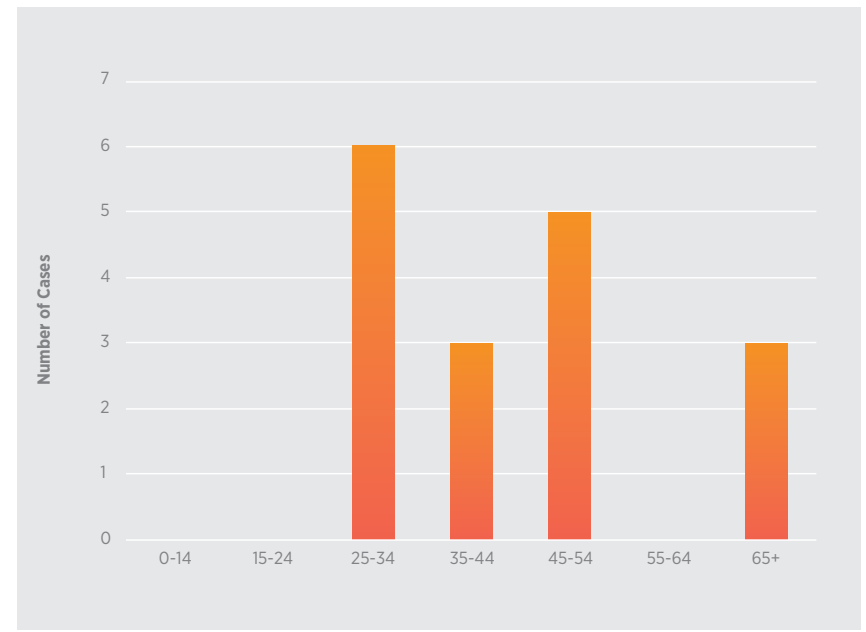


Motorcycle-related deaths were most prevalent amongst the 25-34 year-old (41.67%, n=10), 35-44 year-old (20.3%, n=5) and 45-54 year-old (16.67%, n=4) age groups (see Figure 4.1.5).



25-34 years | 45-54 years
35.29% | **29.41%**

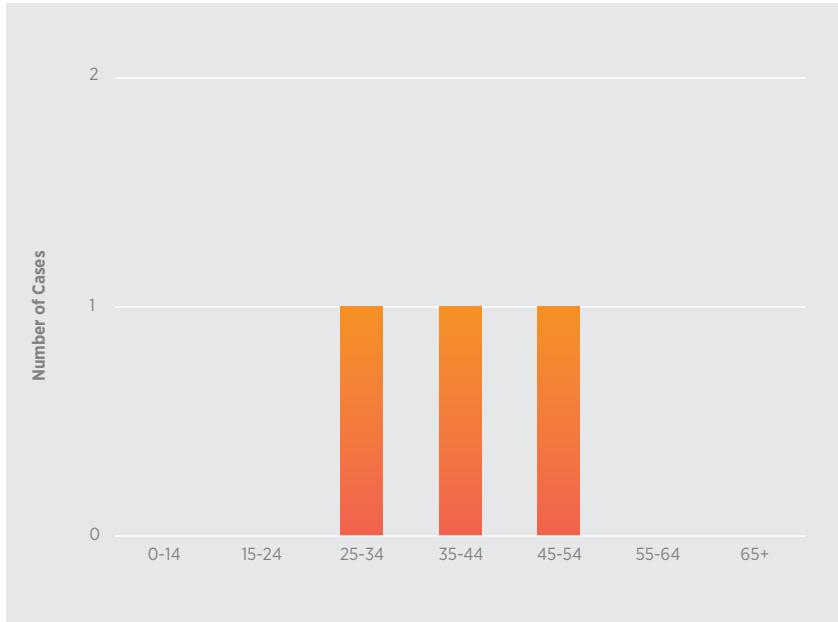
Figure 4.1.6 Bicycle-related deaths by age (n=17)



Bicycle-related deaths were most prevalent amongst the 25-34 year-old (35.29%, n=6), 45-54 year-old (29.41%, n=5), 35-44 and 65+ year-old (17.65%, n=3) age groups (see Figure 4.1.6).

25-34 years | 35-44 years
33.33% | **33.33%**

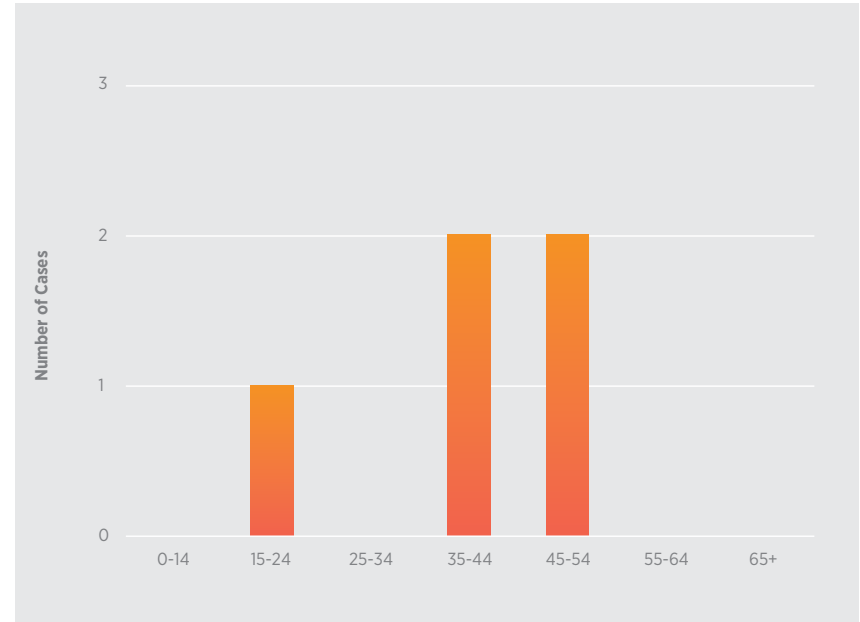
Figure 4.1.7 Railway pedestrian-related deaths by age (n=3)



Railway pedestrian-related deaths only occurred amongst the 25-34 year-old (33.33%, n=1), 35-44 year-old (33.33%, n=1) and 45-54 year-old (33.33%, n=1) age groups (see Figure 4.1.8).

15-24 years | 45-54 years
20% | **40%**

Figure 4.1.7 Railway Unspecified-related injuries by age (n=5)



Unspecified railway-related deaths only occurred amongst the 35-44 year-old and 45-54 year-old (40%, n=2), and 15-24 year-old (20%, n=1) age groups (see Figure 4.1.7).

Male deaths
1 258

Female deaths
248

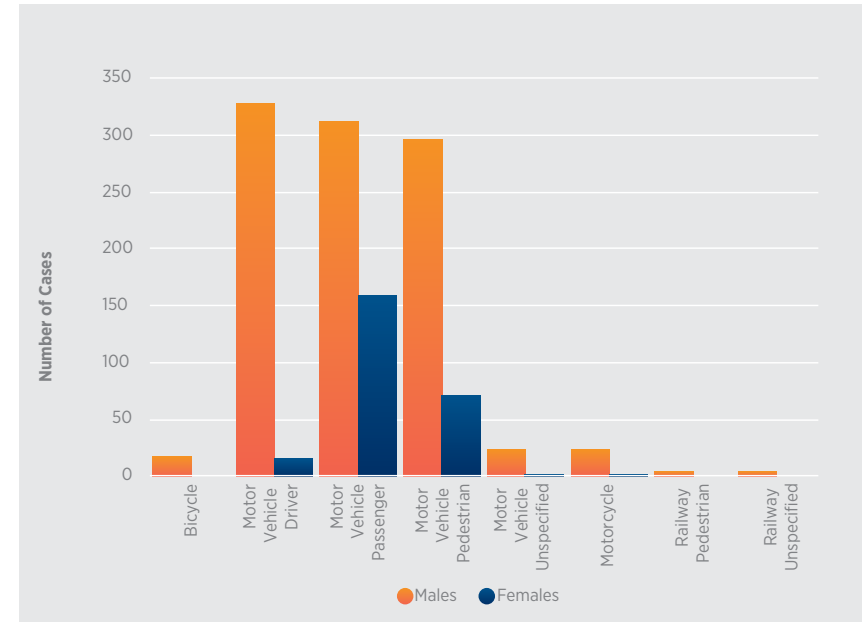
4.2 Transport-related Deaths by Sex

Of the recorded cases in the Mpumalanga catchment area, transport-related deaths accounted for 1 258 injury deaths. More specifically, males accounted for 1 008 (80.25%) and females accounted for 248 (19.75%) cases. The leading causes of transport-related deaths amongst males were due to motor vehicle driver deaths (32.48%, n=328), motor vehicle passenger deaths (30.89%, n=312), and motor vehicle pedestrian deaths (29.31%, n=296). For females, the leading causes of transport-related deaths were due to motor vehicle passenger deaths (64.11%, n=159), motor vehicle pedestrian deaths (28.63%, n=71), and motor vehicle driver deaths (6.45%, n=16). See Figure 4.2 below.

4.3 Scene of Injury for Transport-related Deaths

Scene of injury data was only available for 1 258 of the transport-related injuries. Transport-related deaths mainly occurred on roads, streets and/or highways (96.5%, n=1 214), followed by a railway/track/station (0.7%, n=9) and park and/or sports area (0.6%, n=7).

Figure 4.2 External cause of transport-related death by victim sex (n=1,256)

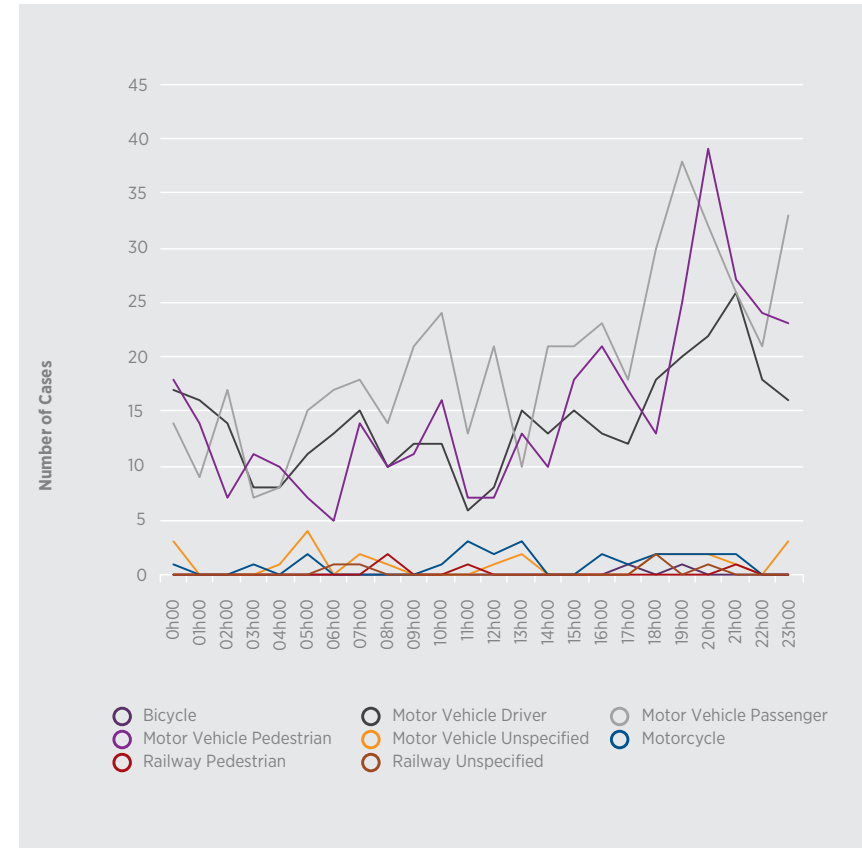


4.4 Time of Death for Transport-related Deaths

Only 1 235 cases reported the time of death. The peak times for the various transport-related accidents are as follow:

- Bicycle-related deaths were at 12h00 (17.6%, n=3), 18h00 (17.6%, n=3), and 17h00 (11.8%, n=2);
- Motorcycle-related deaths were at 11h00 (12.5%, n=3), and 13h00 (12.5%, n=3);
- Motor vehicle passenger-related deaths were at 19h00 (8.1%, n=38), 23h00 (7%, n=33), and 20h00 (6.8%, n=32);
- Motor vehicle pedestrian-related deaths were at 20h00 (10.6%, n=39), 21h00 (7.4%, n=27) and 19h00 (6.8%, n=25);
- Motor vehicle driver-related deaths were at 21h00 (7.6%, n=26), and 20h00 (6.4%, n=22);
- Motor vehicle unspecified-related deaths were at 05h00 (16.7%, n=4), 00h00 (12.5%, n=3), and 23h00 (12.5%, n=3);
- Railway pedestrian-related deaths occurred at the same rate during March, August, October and November (25%, n=1);
- Railway unspecified-related deaths were at 18h00 (40%, n=2).

Figure 4.4 Time of death for transport-related deaths (n = 1,235)

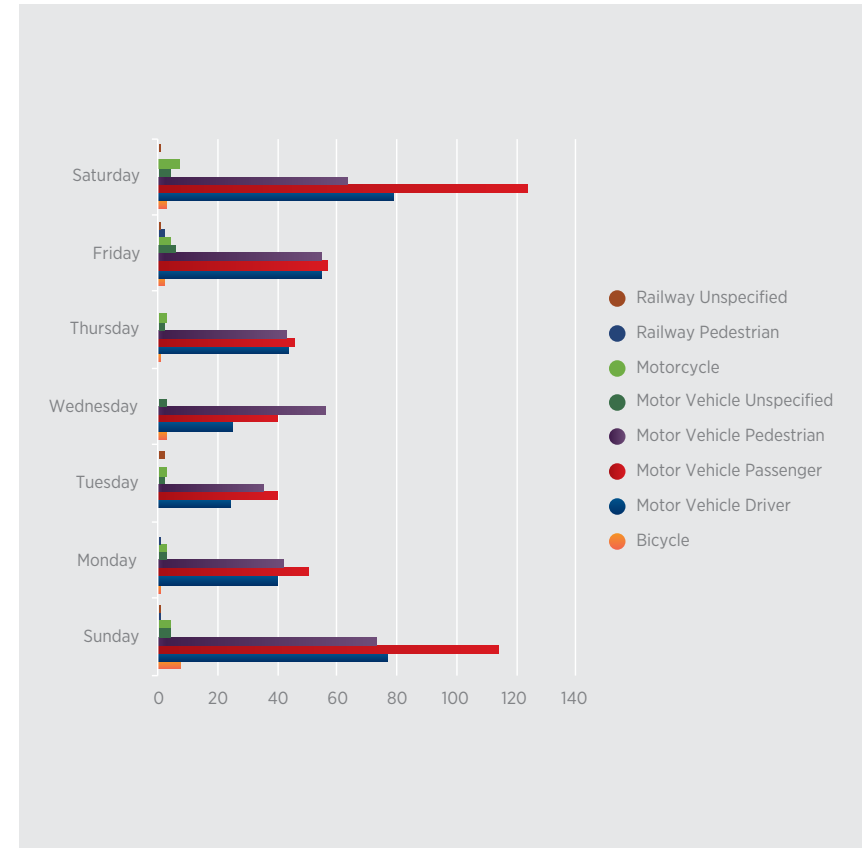


4.5 Day of Death for Transport-related Deaths

Only 1 256 cases reported the day of death. The peak times for the various transport-related accidents are as follow:

- Bicycle-related deaths were on Sunday (41.2%, n=7), Wednesday (17.6%, n=3) and Saturday (17.6%, n=3);
- Motorcycle-related deaths were on Saturday (29.2%, n=7), Sunday (16.7%, n=4) and Friday (16.7%, n=4);
- Motor vehicle passenger-related deaths were on Sunday (19.9%, n=73), Saturday (17.2%, n=63) and Friday (15%, n=55);
- Motor vehicle pedestrian-related deaths were on Sunday (19.9%, n=73), Saturday (17.2%, n=63) and Friday (15%, n=55);
- Motor vehicle driver-related deaths were on Saturday (26.3%, n=124), Sunday (24.2%, n=114), and Friday (12.1%, n=57);
- Motor vehicle unspecified deaths were on Friday (25%, n=6), Sunday (16.7%, n=4) and Saturday (16.7%, n=4);
- Railway pedestrian-related deaths occurred on Friday (50%, n=2), Sunday (25%, n=1) and Monday (25%, n=1); and
- Railway unspecified deaths occurred on Tuesday (40%, n=2).

Figure 4.5 Day of death for transport-related deaths (n=1,256)

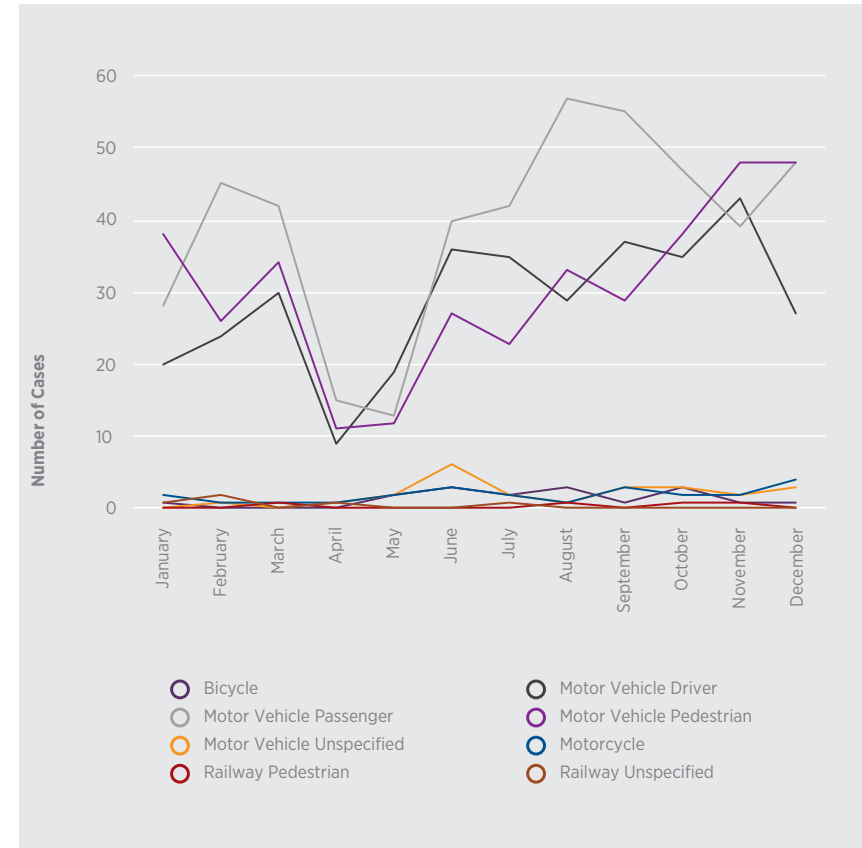


4.6 Monthly Variation for Transport-related Deaths

Only 1 256 cases reported the day of death. The peak times for the various transport-related accidents are as follow:

- Bicycle-related deaths occurred at the same rate during June, August and October (17.6%, n=3);
- Motor vehicle driver-related deaths were in November (12.5%, n=43), September (10.8%, n=37), and June (10.5%, n=36);
- Motor vehicle passenger-related deaths were in August (12.1%, n=57), September (11.7%, n=57), and December (10.1%, n=58);
- Motor vehicle pedestrian-related deaths were in December (13.1%, n=48), November (13.1%, n=48), January and October (10.4%, n=38);
- Motorcycle-related deaths were in December (16.7%, n=4), June (12.5%, n=3) and September (12.5%, n=3);
- Motor vehicle unspecified-related deaths were in June (25%, n=6);
- Railway pedestrian-related deaths were in March (25%, n=1), August (25%, n=1), October (25%, n=1) and November (25%, n=1);
- Railway unspecified-related deaths were in February (40%, n=2).

Figure 4.6 Monthly variation for transport-related deaths (n =1,256)





CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

In 2020, road traffic deaths was the leading contributor to injury mortality in the province of Mpumalanga. Motor vehicle passenger injury was the leading cause, followed by motor vehicle pedestrian injury. The male to female ratio for fatalities in Mpumalanga was 3.9:1.

Transport-related injury was the leading manner of death for both males and females. However, where age is concerned, transport-related injury predominated across all age groups, except for the 0-14 age group where other non-transport unintentional injuries preceded transport-related injuries.

Violence was most prominent in the 30-34 year-old age group. Firearm discharge was the leading external cause of violence-related deaths, followed by sharp force injury and blunt force injury.

The male to female homicide ratio was 6.3:1. Hanging was the most common external cause of death for suicides amongst males whereas for females it was the ingestion of poison. The male to female suicide ratio was 4.2:1. Across age groups, hanging predominated. Drowning and burn injury was the major causes of other non-transport unintentional injury deaths, with most injuries occurring among the 0-4 year age group.

In comparison to 2019, 2020 saw a decrease across all manners of death except for undetermined deaths which increased (433 vs 601, respectively in 2019 and 2020). However, it is worth noting that there was an increase in the male to female death ratio for suicide (3.8:1 vs 4.2:1, respectively in 2019 and 2020) and transport related (3.6:1 vs 4.1:1, respectively in 2019 and 2020) deaths. A

decrease in unintentional deaths, suicide and homicide could partially be attributed to measures by government which restricted movement and the purchasing of alcohol. There has been a shift in peak ages for suicide, homicide and undetermined injuries. For suicide, there was a shift from the 25-29 age group (2019) to the 30-34 age group (2020). For homicide, there was a shift from the 25-29 age group in 2019 to the 30-34 age group in 2020. Lastly, for undetermined deaths, there was a shift from the 0-4 age group in 2019 to the 25-29 age group in 2020. On the other hand, for other non-transport unintentional and transport related deaths there was no change in the peak age groups (0-4 and 30-34 year old age group, respectively) between 2019 and 2020.

This report has underscored prominent

injury risks and occurrences, and mechanisms of injury, which are important for policy and intervention initiatives. It further encourages detailed epidemiological analysis to explain: traffic, homicide, and suicide mortality rates; specific research into male involvement; the high vulnerability of young adults (25-34 year-olds); and the emerging external causes specific to the different injury outcomes.

The Masculinity and Health Research Unit (MaHRU), which is co-directed by the SAMRC and Unisa, is committed to facilitating the use of NIMSS data by a wide range of stakeholder groups, including the forensic pathology services; supporters of the Integrated Crime and Violence Prevention Strategy; and violence and injury prevention agencies at local, provincial, and national level.

APPENDICES

Appendix 1: NIMSS Data Collection Form

NIMSS Data Collection Form											
FPS where PM was performed				PM No.							
Police No.				Closest Police Station							
Officer collecting body				PM Date							
Was a full PM performed?		Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	If no, state reason					
Forensic Medical Practitioner											
Date & Time of Injury		Date	dd	mm	yyyy	Date & Time of Death		Date	dd	mm	yyyy
		Time	hh	mm				Time	hh	mm	
Date Body Found		Date	dd	mm	yyyy	GPS Coordinates (optional)					
		Time	hh	mm							

Medical treatment of injury prior to death?					
None	<input type="checkbox"/>	Emergency care at scene	<input type="checkbox"/>	Hospital care	<input type="checkbox"/>
Both	<input type="checkbox"/>	Hospital (final)?		<input type="checkbox"/>	
Race		A	<input type="checkbox"/>	B	<input type="checkbox"/>
		C	<input type="checkbox"/>	W	<input type="checkbox"/>
		U	<input type="checkbox"/>		
Sex		M	<input type="checkbox"/>	F	<input type="checkbox"/>
		U	<input type="checkbox"/>		
Age Years					
Months (if < 1 year)					
Province of Injury					
Gauteng	<input type="checkbox"/>	Western Cape	<input type="checkbox"/>	Kwazulu-Natal	<input type="checkbox"/>
		Eastern Cape	<input type="checkbox"/>		
Northern Cape	<input type="checkbox"/>	Free State	<input type="checkbox"/>	Mpumalanga	<input type="checkbox"/>
		Limpopo	<input type="checkbox"/>		
North-West	<input type="checkbox"/>	Unknown	<input type="checkbox"/>	Other	Specify
Province of death					
Gauteng	<input type="checkbox"/>	Western Cape	<input type="checkbox"/>	Kwazulu-Natal	<input type="checkbox"/>
		Eastern Cape	<input type="checkbox"/>		
Northern Cape	<input type="checkbox"/>	Free State	<input type="checkbox"/>	Mpumalanga	<input type="checkbox"/>
		Limpopo	<input type="checkbox"/>		
North-West	<input type="checkbox"/>	Unknown	<input type="checkbox"/>	Other	Specify

Scene were injury occurred (may differ to scene of death)			
House/Apartment/Shack	<input type="checkbox"/>	Residential institute (e.g. hostel)	<input type="checkbox"/>
Bar/Shebeen/Nightclub	<input type="checkbox"/>	Park/Sports area	<input type="checkbox"/>
House/Apartment/Shack	<input type="checkbox"/>	Residential institute (e.g. hostel)	<input type="checkbox"/>
Bar/Shebeen/Nightclub	<input type="checkbox"/>	Park/Sports area	<input type="checkbox"/>
Road/Street/Highway	<input type="checkbox"/>	Railway track/Station	<input type="checkbox"/>
Shop/Retail area	<input type="checkbox"/>	School/Education facility	<input type="checkbox"/>
Medical service area	<input type="checkbox"/>	Industrial area/Mine	<input type="checkbox"/>
Farm	<input type="checkbox"/>	Open sea	<input type="checkbox"/>
		Beach	<input type="checkbox"/>
		Countryside	<input type="checkbox"/>
Prison/Custody	<input type="checkbox"/>	Place unknown	<input type="checkbox"/>
Other	<input type="checkbox"/>	Specify	
		Lake/River	<input type="checkbox"/>
		Open land	<input type="checkbox"/>
Did injury occur in informal settlement?		Yes	<input type="checkbox"/>
		No	<input type="checkbox"/>
Vehicle type			
N/A	<input type="checkbox"/>	Bakkie	<input type="checkbox"/>
		Bus	<input type="checkbox"/>
		Car	<input type="checkbox"/>
Minibus/Taxi	<input type="checkbox"/>	Truck	<input type="checkbox"/>
		Unknown	<input type="checkbox"/>

External cause of injury			
Firearm <input type="checkbox"/>	Sharp object <input type="checkbox"/>	Blunt object <input type="checkbox"/>	Hanging <input type="checkbox"/>
Asphyxia/Strangulation / Suffocation <input type="checkbox"/>		Poisoning, ingestion <input type="checkbox"/>	Poisoning, gassing <input type="checkbox"/>
Burn <input type="checkbox"/>	Crushing <input type="checkbox"/>	Aspiration/Chocking <input type="checkbox"/>	
Fall/Push/Jump from height <input type="checkbox"/>		Fall/Push/Jump – other <input type="checkbox"/>	
Drowning <input type="checkbox"/>	Lightning <input type="checkbox"/>	Motor vehicle pedestrian <input type="checkbox"/>	
Motor vehicle passenger <input type="checkbox"/>		Motor vehicle driver <input type="checkbox"/>	
Motor vehicle unspecified <input type="checkbox"/>		Railway unspecified <input type="checkbox"/>	
Medical procedure <input type="checkbox"/>		Sudden infant death (SIDS) <input type="checkbox"/>	
Non-viable foetus <input type="checkbox"/>		Abandoned baby <input type="checkbox"/>	
Electrocution <input type="checkbox"/>		Explosive blast <input type="checkbox"/>	
Natural causes <input type="checkbox"/>		Aviation casualty <input type="checkbox"/>	
Motorcycle <input type="checkbox"/>		Bicycle <input type="checkbox"/>	
Railway pedestrian <input type="checkbox"/>		Railway passenger <input type="checkbox"/>	
Maternal death due to abortion <input type="checkbox"/>		Unknown <input type="checkbox"/>	
Other <input type="checkbox"/>	Specify		

Did injury occur in informal settlement?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Apparent manner of death	Homicide <input type="checkbox"/>	
Suicide <input type="checkbox"/>	Unintentional <input type="checkbox"/>	Natural <input type="checkbox"/>
Undetermined <input type="checkbox"/>		
Special categories		
Sexual assault <input type="checkbox"/>	Susp. child abuse <input type="checkbox"/>	Susp. elder abuse <input type="checkbox"/>
Domestic violence <input type="checkbox"/>		
Death in SAPS custody <input type="checkbox"/>	Killed by SAPS <input type="checkbox"/>	Police officer killed <input type="checkbox"/>
Maternal death <input type="checkbox"/>		
Mining injury <input type="checkbox"/>	Mass fatality <input type="checkbox"/>	Occupational injury <input type="checkbox"/>
Natural disaster <input type="checkbox"/>	Family murder <input type="checkbox"/>	Recreational/Sports injury <input type="checkbox"/>
Xenophobia <input type="checkbox"/>	Scuba or other diving-related <input type="checkbox"/>	
Mob justice <input type="checkbox"/>	Skeletonised human remains <input type="checkbox"/>	
Other <input type="checkbox"/>	Specify	
Special Investigations		
Photography <input type="checkbox"/>	Projectiles <input type="checkbox"/>	Samples for alcohol <input type="checkbox"/>
Sample for histology incl. organ retention <input type="checkbox"/>		Samples for suspected rape <input type="checkbox"/>
Samples for toxicology <input type="checkbox"/>		Samples to identify victim <input type="checkbox"/>

Appendix 2: NIMSS Data Request Form

NIMSS Data Request Form			
Title		Provide relevant information that will assist in processing your request (use separate page if necessary)	
First Name(s)			
Surname			
Organisation			
Email			
Telephone (day)		Describe your use/purpose for this request (use separate page if necessary)	
Cell			
Fax			
Specify your request e.g. report (customised, published), etc.		Is your request related to (please tick)	
		Individual research	Contract research
		Institutional research	Masters project
		PhD project	Other Specify

Name of research project and affiliation (if applicable) – submit copy of research proposal		
Has ethical approval been obtained for this study?		
Yes	<input type="checkbox"/>	No <input type="checkbox"/> If yes, please provide details (reference, place, etc.)
What are the anticipated outputs/outcomes of your project?		
How and to what extent does this request relate to the scope and objectives of VIPRU?		
If relevant, see www.mrc.ac.za/crime/crime.htm or www.unisa.ac.za/ishs		

Additional comments	
Please note the following conditions:	
<ul style="list-style-type: none"> • Requests will be processed within a minimum of two weeks, depending on the extent of the information required. • The SAMRC-Unisa Violence, Injury and Peace Research Unit (VIPRU) should be acknowledged in all instances. • A copy of the final research output should be submitted to the VIPRU. • All customised reports will remain the intellectual property of the VIPRU. • The VIPRU will as far as possible assist the applicant, however, requests may be declined or certain costs may be payable. • Requests for raw data should be accompanied by a full proposal and endorsement by a recognised ethics committee that is • registered with the NHREC. Failing this, requests for raw data should be referred to the Cluster Manager, Non-Communicable • Diseases, Department of Health, Private Bag X828, Pretoria, 0001. 	
Signature	Date

For office use	
Received	
Date	
Signature	
Authorised	
Date	
Signature	
Researcher signed	
Comments	







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*[www.samrc.ac.za/extramural-research-units/
MaHRU-national-injury-mortality-surveillance-
system-nimss](http://www.samrc.ac.za/extramural-research-units/MaHRU-national-injury-mortality-surveillance-system-nimss)*