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PREFACE

Crime, Violence and Injury Prevention in South Africa is a biennial publication similar in format to other reviews in the social and health sector and is intended as a resource for policymakers, funders and service providers. The Review seeks to provide a comprehensive, regular analysis of the crime, violence and injury sector that includes an analysis of the key developments and advancements, as well as the major emerging priorities in the sector.

Injuries, alongside infectious diseases and chronic health conditions, are significant contributors to Africa’s triple burden of disease, with injury death rates currently 60% higher than global averages. Rates of road traffic mortality and homicide due to interpersonal and collective violence are 57% and approximately four times higher than global averages, respectively1, and as increased motorisation exposes more Africans to the risk of collisions and conflicts continue unabated, the WHO estimates that injuries will increase to rank as the second major contributor to African mortality by 20202.

This second Review, produced by our MRC-UNISA Crime, Violence and Injury Lead Programme, is intended to inform the social and scientific responses to the containment and prevention of injuries. Collectively, the Review represents a call for greater co-ordination and thoughtful approaches to planning, implementation and evaluation. The Review speaks to challenges related to the lack of reliable quality data on the exact magnitude of the problem, limited financial resources, and the disproportionate focus on criminal justice measures.

The Review is an indication of a growing recognition of injury as a public health concern and as such is intended as a resource for local government, non-governmental organisations, community-based organisations, researchers, practitioners and other stakeholders dedicated to strategically translating empirically produced data into concrete injury prevention policies and practices, and strengthening existing safety promotion responses.

Dr Muhammad Ali Dhansay
VICE-PRESIDENT: RESEARCH, SOUTH AFRICAN MEDICAL RESEARCH COUNCIL


PREFACE

Violence and injury are broad social issues that can only be effectively addressed through partnerships and coalitions at all levels of government, as well as parastatals, NGOs, community groups, researchers and the public. Through a reading of this Review, developed by University of South Africa’s Institute for Social and Health Sciences and its partner in the Crime, Violence and Injury Lead Programme at the Medical Research Council, we gain insight into the challenges inherent to developing co-ordinated safety promotion strategies. Such strategies not only incorporate good public health injury prevention practices such as educational campaigns, regulation and enforcement, but also address the underlying macro-economic and social fabric of our societies.

In South Africa and other such contexts, governments, non-governmental agencies and community based organisations (CBOs) are challenged in dealing with under-served communities’ material, food and safety needs. Consequently, the tendency is to place a high premium on security, basic shelter, curative health care, and disaster management.

The Review accordingly challenges preventionists to capitalise on local political will and nascent research-driven efforts to identify, facilitate and develop good practices with limited financial and skilled human resources. The Review highlights the need for strengthening existing national programmatic plans, intersectoral and multidisciplinary collaboration, technical co-operation and governmental-civil society partnerships – all of which remain key for the long-term development of the injury and violence prevention sector in Africa and the continent.

**Professor Tinyiko Maluleke**

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DATA TO ACTION: AN OVERVIEW OF CRIME, VIOLENCE AND INJURY PREVENTION IN SOUTH AFRICA

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Injury is a major public health issue. An estimated five million people died from injuries in 2000, accounting for 9% of all deaths worldwide (Peden, McGee & Sharma 2002). Additionally, for every person killed by injury, around 30 times as many are hospitalised and 300 times as many are treated for less serious injuries and discharged (Holder et al. 2001). Depending on the cause, severity and circumstances of the injury, many of these result in varying degrees of physical, psychological, educational, social and economic disadvantage for the affected individuals and their families (Barss, Smith, Baker & Mohan 1998).

In South Africa, the injury burden is massive and accounted for 12% of deaths from all causes in 2000 (Bradshaw et al. 2003). The injury mortality burden in South Africa was estimated at between 60 000 and 70 000 fatalities per annum, with a further 3.5 million seeking health care as a result of trauma (Peden & Butchart 1999). The South African National Injury Mortality Surveillance System (NIMSS) showed that for 2005 unintentional injury deaths accounted for 44% of all injury-related deaths when the manner of death was known (MRC-UNISA CVILP 2005). Of all unintentional injury deaths, the NIMSS showed that three-quarters were attributable to transport-related injuries and the remaining were the result of ‘other unintentional injuries’. The South African annual road traffic fatality burden was estimated to be in the region of 18 000 with a road traffic death
rate of 43.0 per 100 000 (Bradshaw et al. 2003). In comparison, this rate is about twice the world average of 21.6 per 100 000 population (Murray, Lopez, Mathers & Stein 2001). The ‘other unintentional injury’ fatality burden was estimated at 27 per 100 000 population in 2000 (Matzopoulos, Norman & Bradshaw 2004). Among transport-related deaths, the leading external cause was pedestrian injury (42%) while burn injury was the leading cause among ‘other unintentional injury’ death (43%) (MRC-UNISA CVILP 2005). Further, unintentional injuries in South Africa have been found to pose a disproportionately high fatality burden among children aged 14 years and younger. For example, analysis of the NIMSS 2004 data showed that while the proportional representation of children among all injury-related death is only 7%, twice as many of all burn and pedestrian injuries are located among children (15% each). The above is consistent with worldwide trends (Peden, McGee & Sharma 2002).

The high rates of violence cannot only be attributed to wars, as across the continent there is a general lack of safety characterised by widespread interpersonal violence, crime and injuries often associated with socio-economic inequities, poverty and social fragmentation. Although recent studies point to a decrease in intentional injury mortality (Stats SA 2005; Bah 2004), South Africa, which has witnessed a dramatic reduction in political violence following its democratic elections in 1994, has reported a rate of fatal violence more than 5 times the global average (Matzopoulos Norman, Bradshaw 2004).

However, the social and scientific responses to the containment and prevention of injuries remain inadequate, despite extensive literature on the interpretation of injury data (Laflamme, Svanström & Schelp 1999; Mohan & Tiwari 2000; Welander, Svanström & Ekman 2000; WHO 1999). The injury and violence prevention sector remains unevenly developed and poorly co-ordinated across Africa, and the absence of widespread, well-informed, co-ordinated and considered planning, implementation and evaluation frameworks may result in inappropriate utilisation of scarce resources (Seedat 1999). The inadequacy is attributed, among other factors, to the absence of quality data indicative of the precise extent of the problem, inadequate resources, and the unbalanced attention to criminal justice responses.

Health sector research is critical for the effective design, coordination and implementation of health interventions, policy formulation, and service delivery. In this second edition of *Crime, Violence and Injury Prevention in South Africa*, we build on the formative work of the last decade and, drawing
inspiration from the 8th World Conference on Injury Prevention and Safety Promotion, which was hosted for the first time on the African continent in Durban in April 2006, we have embraced the theme of Data to Action. The aim is to build on existing knowledge to assist the sector in further developing strategies in three major areas: childhood injury; crime and violence; and traffic injuries. We expect that a coordinated effort could substantially reduce morbidity and mortality over a three to five year period.

The first four chapters of the edition focus on unintentional injury and its prevention, traffic injury specifically, and the latter four chapters on intentional injury and the prevention thereof.

In the first chapter, Assessing the prevention response to child road traffic injuries, Matzopoulos, Du Toit, Dawad and Van As assess the South African response to the challenge of childhood traffic injuries. This chapter emphasises the persisting vulnerability of children as road users, with 17% of all pedestrian and passenger fatalities occurring among children and young adults aged younger than 20 years. Child pedestrians are particularly at risk and account for 77% of child road fatalities, compared to motor vehicle passenger and cycling deaths, accounting for 20% and 3%, respectively. Matzopolous and colleagues indicate that the need to address child road safety will become even more urgent, since road traffic injuries are predicted to increase by as much as 80% between 2000 and 2020 in sub-Saharan Africa (Kopits & Cropper 2003). The chapter includes a preliminary review of the injury prevention measures currently managed by the child pedestrian safety sector, including interventions by the Department of Transport, Soul City, the Centre for Education in Traffic Safety and the Child Accident Prevention Foundation of South Africa. The chapter calls for the prioritisation of statutory road safety campaigns, engineering measures for calming traffic flow, and safe traffic environments, such as the designation of safe play areas for children and demarcated safe routes to and from schools.

In South Africa, a significant proportion of the population walks or cycles on a daily basis to places of work and to other destinations. Accordingly, the two chapters that follow focus on pedestrian injury and implied safety interventions. The first of these, titled Pedestrian injury in South Africa: Focusing intervention efforts on priority pedestrian groups and hazardous places, reviews pedestrian safety programmes in Africa against the backdrop of local and global data identifying pedestrians as particularly vulnerable road users. The surveyed programmes are considered within the context of international benchmarks linked to pedestrian safety interventions, as emerging from systematic reviews conducted within the field. MacKenzie,
Seedat, Swart and Mabunda offer an insightful discussion that illuminates the pedestrian safety strategies implied for South Africa and other African countries, and underlines the requisite to locate these within the context of crime, poverty and urbanisation.

The second pedestrian safety related chapter, *The impact of an inadequate road environment on the safety of non-motorised road users*, is dedicated to passive environmental measures to address the needs of these vulnerable road users. In this chapter, Ribbens, Everitt and Noah identify several challenges within the South African road environment that contribute to casualties, including the lack of a holistic approach to network planning, the inadequate and inconsistent provision of non-motorised transport infrastructure, poor integration of transportation and land-use planning, as well as the inadequacy of public transport planning to reduce risk and exposure. The sectoral response, including the strategies, policies, work plans and practices of government departments such as the Departments of Transport and Provincial and local government, are reviewed and found to be largely inadequate. Recommendations are made to address these shortcomings with a larger focus on the previously disadvantaged areas and other areas that need urgent attention.

In the South African context, between 80% and 90% of all collisions are related to driver behaviour. In the final chapter of this section, *Adverse driving behaviours: The case of aggression, excessive speed and alcohol impairment*, Sukhai and Seedat examine the behavioural issues among motorists that have been shown to be the leading contributors to road traffic crashes and injury, that is, aggression, excessive speed and substance impairment. Epidemiological data for these adverse driving behaviours are presented for the South African setting and are discussed in the context of the country’s sectoral responses and international good practices. With psychosocial perspectives being relatively neglected in research, policy and practice, this chapter affords greater attention to the active psychosocial approaches that are deemed imperative in modifying behavioural risks. In this regard, the chapter also contributes to stimulating the development of traffic psychology in South Africa.

The section on intentional injury commences with the fifth chapter, *Current trends and responses to crime in South Africa*. Holtman and Domingo-Swarts examine the various sources of South African crime data and analyse what these crime statistics convey about patterns of crime within South African society. The authors reiterate the need for a critical stance in the interpretation of crime statistics in order to capture an accurate a
representation as possible of crime trends. It is argued that an engagement with the complexity of the phenomenon is crucial to the processes of data analysis, as well as the development of a responsive approach to crime prevention and safety. In considering existing responses to crime and violence in South Africa, the chapter calls for a more robust social justice approach to the promotion of safety. The chapter further proposes a crime prevention model that is sensitive to the convergence of offender, victim and environment factors, thereby obliging the transformation of these interacting spheres through an integrated and multi-disciplinary crime prevention strategy.

*Murder and robbery in South Africa: A tale of two trends* unravels the relationship between murder and robbery rates. Altbeker approaches this analysis through the scrutiny of South African data on murder and robbery, which is accompanied by an enquiry into the risk differentials that exist in the murder rates of members of different communities. The chapter corroborates previous research findings exposing the high rates of male interpersonal violence in South Africa, and further reveals the somewhat tenuous conclusions sometimes drawn from existing research data about such factors as ‘race’ and murder, and geography and murder. The author’s in-depth examination of the specific link between murder and robbery highlights that this relationship is complex, thus requiring meticulous analyses and ultimately a comprehensive strategy to reduce lethal violence in South Africa.

The chapter that follows, *Caught between policy and practice: Health and justice responses to gender-based violence*, presents an analytical overview of the developments and challenges in gender-based violence research, policy and practice since 2004. Smythe and her colleagues tease out the intersecting links between criminal justice and health sector responses in relation to such issues as sexual offences, domestic violence and femicide. The arguments tendered illuminate the distinct disjuncture between law, public policy and service provision to victims/survivors of gender-based violence, and the realities of violence against women in the South African context. The chapter also explores the challenges related to access to information and the impact thereof on public health and legal research and its desired outcomes. In arguing for an integrated medical and legal response to gender-based violence in South Africa, the authors echo the need for inter-disciplinary measures to address violence against women.

The final chapter of this edition, *Priorities and prevention possibilities for reducing suicidal behaviour*, submits a preliminary framework for a South
African suicide prevention programme. The suggested framework draws from national research data, as well as knowledge and experience acquired from other national programmes. Burrows and Schlebusch examine available data on suicidal behaviour in the South African context as a prelude to the review of existing strategies for the prevention of suicidal behaviour, and the identification of gaps in current knowledge and prevention priorities. The chapter links this discussion to the overarching vision, goals, guiding principles and strategies of the proposed programme. This section of the chapter emphasises the focus on high-risk groups and the inclusion of multi-level strategies as an essential characteristic of the programme.

CONCLUSION

All of the contributions to this Review point to a growing recognition of injury as a public, health concern and the groundswell of public perception appears to have played an important role in raising awareness. For instance, in South Africa, annual reports and summary findings from the NIMSS are well-covered by the popular media. Similarly, the 8th World Conference on Injury Prevention and Safety Promotion and the 15th International Safe Communities Conference, hosted in 2006 in the South African cities of Durban and Cape Town respectively, were well attended by researchers and policy-makers from throughout Africa and considered to have contributed meaningfully to the facilitation of formal collaborative partnerships and appreciation for evidence-driven injury prevention programmes. Events such as these are observed to assist prevention practitioners to build on the existing formalised channels that facilitate science-society dialogue and communication within and between countries of the continent.

Preventionists are therefore well-placed to capitalise on the emergent responsive political climate and growing appreciation for the nascent research driven efforts to develop good practices with limited financial and skilled human resources. So, in conclusion we wish to reiterate three key messages.

Firstly, intentional and unintentional injury are critical social issues that necessitate a multi-sectoral response involving collaboration and partnership linkages with all levels of government, parastatals, NGOs, community groupings, researchers and the public. Importantly, the challenge is to develop coordinated strategies that focus on effective public health injury prevention practices, and address the underlying macroeconomic and social structures of our societies. Structural adjustment programmes, liberalisation and decreased social spending, which are among the standard International Monetary Fund remedies for marginal economies (Muyoya 2000), limit the
ability of governments to regulate industries that might impact negatively on health, including injuries (e.g. alcohol, firearms, guns), and encourage reprioritisation programmes that result in wide-ranging budget cuts in the public sector. This can undermine the public sector’s capacity to deliver social, safety and health services (May et al. 1998).

Secondly, the implementation of injury prevention is contingent on the creation of country and continental level focal points for injury and violence prevention. The World Health Organisation (WHO) Collaborating Centres at the University of South Africa’s (UNISA) Institute for Social and Health Sciences and its associated Crime, Violence and Injury Lead Programme and the Injury Control Centre - Uganda currently serve as stewards of injury and violence prevention, but funding and capacity is limited (UNISA Institute for Social and Health Sciences 2005; Injury Control Centre – Uganda 2005). The centres assist the WHO in implementing mandated programme priorities and activities for violence and injury prevention, including the development of institutional capacity in the region and marshalling of resources for information, research, training, service provision and advice. These centres may provide the base for the development of other focal points on the continent.

Thirdly, and perhaps most significantly, this Review presents an opportunity for local governments, non-governmental organisations (NGOs), community-based organisations (CBOs), researchers, practitioners and other stakeholders to consider innovative ways to strategically translate empirically produced data into the creation of concrete injury prevention policies and practices, in addition to strengthening existing safety promotion responses. Data to Action requires a significant appreciation of the complexities involved in facilitating the utilisation and public communication of empirical data on injury. So this Review, which represents the Presidential Crime, Violence and Injury Lead Programme’s attempt to inform social responses to safety promotion, must be read as part of a larger endeavour to communicate about the who, what, when and how of injury and violence prevention.

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ASSESSING THE PREVENTION RESPONSE TO CHILD ROAD TRAFFIC INJURIES

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ABSTRACT

In 2000, road traffic fatality rates among children in South Africa were estimated to be double the world rate. This was mainly as a result of the large number of pedestrian deaths, which accounted for 77% of child road traffic fatalities. In this chapter we assess our response to the challenge of road traffic injuries among children in South Africa. We also discuss some of the prevention strategies that could be adopted using the public health approach as a methodological framework. Current data have revealed that pedestrians accounted for the bulk of child road traffic injuries, followed by motor vehicle passengers and cyclists. Most fatalities occurred in the 5-9 year and 15-19 year age groups, and male children were more at risk than females across all age groups.

Key-words: child, traffic, injuries

INTRODUCTION

In South Africa, the National Injury Mortality Surveillance System (NIMSS) revealed that in 2003, 28.4% of all injury deaths were the result of road traffic injuries. Children were particularly vulnerable road users, with 17% of all pedestrian and passenger fatalities occurring among children and young adults below the age of 20 years (Harris, Sukhai & Matzopoulos 2004). Among children aged 1-14 years, motor vehicle pedestrian collisions were the largest single cause of injury-related death, whilst for children aged 10-19, passenger deaths were the second largest cause (Harris, Sukhai & Matzopoulos 2004). In 2000, more than 4 000 children younger than 20 years lost their lives on South Africa’s roads and road traffic fatality rates among children were estimated to be double the world rate (Matzopoulos, Norman & Bradshaw 2004). In 1998, approximately 11 000 children under the age of 18 were

To whom correspondence should be addressed.
injured (Road Accident Fund 2002). This was mainly as a result of the large number of pedestrian deaths, which accounted for 77% of child road traffic fatalities, compared to motor vehicle passenger and cycling deaths, which accounted for 20% and 3% respectively. The need to address child road traffic safety will become even more urgent, since road traffic injuries are set to increase by as much as 80% between 2000 and 2020 in sub-Saharan Africa (Kopits & Cropper 2003).

In this chapter we assess the South African response to the challenge of child road traffic injuries and discuss some of the prevention strategies that could be adopted. We use the public health approach as a methodological framework. This approach stipulates that injuries are predictable rather than random events. It should be noted that the treatment of injuries has traditionally been the preserve of emergency medicine and curative services, but this addresses only one of the major sources of fatal and severe injury crashes, namely reducing the consequence of injury post collision.

Other measures to mitigate the severity and consequences of injury can be achieved by reducing exposure to risk, preventing crashes from occurring and reducing the severity of an injury in the event of a crash (Peden et al. 2004). Interventions typically utilise a combination of three strategies, known as the three “E’s” of injury control: education (awareness campaigns and training), enforcement (legislation and policing) and engineering (including the road environment and vehicle design).

In the first section we review current South African child road traffic injury data from NIMSS and the Red Cross War Memorial Children’s Hospital (hereafter the hospital) in Cape Town in order to identify child road traffic injury priorities. The second section identifies several good practice strategies that are described in the international literature, many of which are cited in the World Report on Traffic Injury Prevention (Peden et al. 2004). In the final section we discuss some of the child safety initiatives currently underway in South Africa in order to identify strategic gaps and possible areas for improvement.

**CURRENT DATA ON CHILD ROAD TRAFFIC INJURIES IN SOUTH AFRICA**

The starting point for any effective prevention strategy is the collection of accurate and reliable information about specific injury events. Although the National Traffic Information System (eNaTIS) is the most detailed source of traffic collision data in South Africa and has played a major part in directing the Department of Transport’s (DoT) road safety strategy, it was not available...
to the public at the time of writing this chapter. Therefore, we have had to restrict our analysis to three other data sources:

- NIMSS data from selected state mortuaries
- database of the Child Accident Prevention Foundation of South Africa (CAPFSA) from patients presenting to the trauma unit of the hospital
- road accident statistics for 1999 published by the DoT (DoT n.d.).

**THE NATIONAL INJURY MORTALITY SURVEILLANCE SYSTEM (NIMMS)**

NIMSS produces and disseminates descriptive epidemiological information from medico-legal post-mortem investigations and collates information from three points in the investigative procedure, namely post-mortem reports, SAP 180 forms and chemical pathology laboratory results (Butchart et al. 2001). In 2003, NIMSS recorded 24 600 non-natural deaths mainly from urban mortuaries and maintained full coverage in six major cities: Cape Town, Durban, East London, Port Elizabeth, and Pretoria/Tshwane (Matzopoulos, Norman & Bradshaw 2004).

Child road traffic injuries among children aged 0-19 years accounted for approximately one fifth of all pedestrian and passenger deaths. Motor-vehicle pedestrian collisions accounted for more child deaths in the 1-4, 5-9 and 10-14 year age groups than any other cause (see Table 1).

**Table 1. Leading external causes of death from injuries among children < 19 years, 2003**

<table>
<thead>
<tr>
<th>Age groups (yrs)</th>
<th>Overall ranking*</th>
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<tr>
<td></td>
<td>&lt; 1</td>
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<tr>
<td>1 Burns Pedestrian</td>
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<tr>
<td>2 Abandon. baby Drowning Drowning</td>
<td></td>
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<tr>
<td>3 Suffocation Burns Burns</td>
<td></td>
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<tr>
<td>4 Blunt Passenger Passenger</td>
<td></td>
</tr>
<tr>
<td>5 Pedestrian Traffic unspecified Traffic unspecified</td>
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</tbody>
</table>

(Source: Harris, Sukhai & Matzopoulos 2004)

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1 The National Traffic Information System (eNaTIS) is available on: http://www.enatis.com.
Child road traffic deaths have a greater level of priority for Black and Coloured\(^1\) South Africans, as children younger than 20 years accounted for between 16% and 17% of road traffic deaths in these population groups, significantly higher \((p < 0.01)\) compared to approximately 12% among Asians and Whites. Overall, males accounted for 61.3% of all child road traffic deaths with a male to female ratio of 1.6:1 (see Figure 1). The largest male to female ratio was among the 15-19 year age group (2.2:1) and the smallest was among the 10-14 year age group (1.2:1).

![Figure 1: Age and Gender of Childhood Traffic Death, NIMSS 2003](image)

More than one third of child road traffic deaths (37%) occurred over weekends (see Figure 2).

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\(^1\) The concept of “population group” or “race” and its constituents, i.e. “Asian”, “Black”, “Coloured” and “White” are social constructs and are not meant to signify any inherent genetic or biological differences between these groups. Instead, they are used as demographic markers where such profiling allows for identifying vulnerable populations in order to plan and implement effective prevention and intervention programmes.
More child road traffic deaths occurred on Saturdays than any other day, but this was mainly due to the large number of deaths in the 15-19 year age group (67). The 5-9 and 10-14 year age groups recorded the highest number of deaths on Fridays (40 and 25 deaths respectively). In the 5-9 year age group there were noticeable peaks at the times when children were travelling to and, especially from, school (see Figure 3).
Road traffic fatalities among children younger than 20 years were not uniformly distributed across the four cities where NIMSS had full coverage (see Figure 4). In Tshwane and Johannesburg, road traffic fatalities peaked in March; whereas in Cape Town and Durban, the peaks were in January and June respectively.

![Figure 4: Injuries by month of death among children aged 0-19 years](image)

**CHILD ACCIDENT PREVENTION FOUNDATION OF SOUTH AFRICA (CAPFSA) DATABASE**

CAPFSA keeps a database of all injured patients presenting to the trauma unit of the hospital. This hospital serves the greater Cape Town area and treats all children younger than 13 years seeking medical attention in the state sector.

From 1992 to 2000, 8 273 children presented to the trauma unit as the result of road traffic injuries sustained as pedestrians (65%), 2 327 (18%) as passengers and 1 932 (15%) as cyclists. Between 1999 and 2000, pedestrian injuries accounted for approximately half of all children between the ages of 5-9 years who were treated at the hospital. Whereas cyclist and passenger injuries were distributed throughout the city, the bulk of the pedestrian injuries that presented were from the former townships of Langa, Nyanga, Khayelitsha, Atlantis and Gugulethu.

Figure 5 shows trends in the number of pedestrian injuries seen at the hospital annually. The numbers increased steadily until 1997 when there was a sharp drop in the incidence of pedestrian injuries, which can be attributed to the new Western Cape referral system that saw children with less severe injuries being treated at the primary level.
Figure 5: Pedestrian injuries treated at Red Cross War Memorial Children’s Hospital, 1992-2000

Although a similar percentage of pedestrian and passenger fatalities were fatal (0.4% versus 0.3% respectively), 28% of pedestrians recorded moderate to severe injuries, which was significantly higher ($p < 0.01$) than the 21% of passengers and cyclists who were moderately to severely injured.¹ No cyclist deaths were recorded. CAPFSA data also revealed that only 1 out of 5 child passengers who presented to the hospital were wearing suitable child restraints.

DEPARTMENT OF TRANSPORT ROAD ACCIDENT STATISTICS FOR 1999

The DoT runs two surveillance systems that record fatal crashes, namely eNaTIS, which is a comprehensive system that records details of all collisions whether or not they result in injuries, and Arrive Alive’s National Fatal Accident Information Centre, which compiles fatal crash statistics for rapid dissemination during the Easter and Christmas vacation periods although the data collection takes place all year round. Despite indications that these surveillance systems may under report traffic crashes by as much as 30% (DoT 2003), eNaTIS statistics include detailed information about the circumstances of crashes that are useful for informing prevention.

Unfortunately, the 1999 injury statistics did not include cyclist injuries, and the passenger statistics were limited to a description of severity. A total of 475 child passengers younger than 20 years were fatally injured in 1999, and there were 17 “slight” and 4 severe injuries for each fatality.

¹The CAPFSA database uses the Abbreviated Injury Score (AIS).
Surprisingly, only 417 pedestrian deaths were recorded in this age category, with 6.5 “slight” and 3.8 severe injuries for each fatality, indicating that the level of severity for pedestrian injuries was higher than for passengers. The total number of fatalities was fewer than the 437 recorded by NIMSS in 2003 from mortuaries representing less than half the national mortality caseload, and it seems that much of eNaTIS under reporting may be due to the poor capture rate for pedestrian injuries.

The eNaTIS data did describe some important contributing factors for pedestrian injuries that may inform prevention initiatives. More severe and fatal injuries were most common on Fridays, Saturdays and Sundays, but “slight” injuries were more evenly distributed during the week, which may correspond with higher intoxication levels among drivers on weekends. More pedestrians were injured while walking with their backs to the traffic than while walking facing traffic.

**INTERPRETATION OF FINDINGS**

The analysis indicates that among children, the reduction of motor vehicle pedestrian collisions should be our most important priority and children in the 5-9 year age group warrant special attention. Young children simply do not possess all of the skills and attributes necessary to survive in traffic. They are at a physical disadvantage because of their height and immature visual and hearing ability and also have many limitations on a cognitive level, including a poor attention span; an imprecise perception of speed, distance, movement and direction; impulsiveness and unpredictability and a limited understanding of abstract concepts such as “safe” and “dangerous”. The preponderance of pedestrian injuries may also have its roots in South Africa’s urban design. Historically, the country’s racially segregated cities saw infrastructure concentrated in the urban centre with millions of relatively poor city dwellers living in townships on the urban periphery often 10-20 km removed from their daily activities. The rapid expansion of this peri-urban population following the relaxation of apartheid “influx control” laws has contributed to an increase in the use of motorised transport, especially minibus taxis and privately owned cars. As these developments were not well planned, there are currently few safe transport corridors between townships and city centres to accommodate all road users, including pedestrians and cyclists. The risk of traffic collisions may have been exacerbated by the many immigrants from rural areas who are not familiar with the urban roads and high-density traffic.

The analysis also shows that child passengers account for a considerable number of preventable injuries, especially as child restraints are under
utilised, and cyclist deaths should not be ignored, especially in light of the recent DoT initiatives to promote cycling among learners and women (DoT 2005).

It is clear, however, that child traffic injuries follow different patterns in different cities and that prevention activities should be informed by reliable data collection at the city level. This will assist local authorities and prevention agencies in directing safety initiatives at the most needy neighbourhoods and at the most appropriate times.

**CHILD TRAFFIC INJURY PRIORITIES AND EXAMPLES OF EFFECTIVE INTERVENTION STRATEGIES**

Whereas for passenger and cyclist deaths there are several well established safety intervention practices, namely child seats (or seatbelts) and cycle helmets, the factors underlying pedestrian deaths are numerous and complex. Rivara (1990) has argued that no single intervention is completely effective and prevention should include pedestrian skills programmes, parent education, legislation, environmental modifications and vehicle changes at local, state and national levels.

Environmental modifications that take into account the different needs of pedestrians, cyclists and motorists, and speed reduction are important strategies for reducing a pedestrian's exposure to risk as well as reducing the severity of an injury in the event of a crash. Speed reduction can be achieved through traffic calming and lowering speed limits in areas with higher volumes of pedestrian and cyclist traffic. However, traffic calming through road design is preferable, as it is not reliant on enforcement by police and traffic officials or responsible driver behaviour. This is supported by several studies in the international academic literature. An Australian study which examined child pedestrian injury rates indicated that environmental changes may well affect traffic flow and reduce pedestrian risks, as child pedestrian injuries tend to occur in situations of high traffic flow where large numbers of vehicles exceed speed limits, particularly on residential roads (Dunn et al. 1994). Several studies (Dunn et al. 1994; Duperrex, Bunn & Roberts 2003), indicated limits to the effectiveness of child educational programmes. Traffic-calming devices such as speed humps, speed restrictions and road narrowing appear to be more effective ways of controlling injury rates. There is also evidence that countries placing a stronger emphasis on environmental change to control traffic flow have experienced greater reductions in child pedestrian injury and mortality rates (Kidsafe 1995).
Safer modes of transport are also an important means of reducing exposure to risk, as road usage puts people at greater risk per kilometre travelled than other modes of transport (Koornstra 2003; Miller et al. 1999). Among road users, drivers and passengers are 10 times more likely to be killed for each kilometre travelled than passengers in high occupancy vehicles (Koornstra 2003). Prioritising public transport means that not only are occupants exposed to less risk, but pedestrians and cyclists also benefit from the resulting decrease in traffic volumes. Other strategies to reduce the risk of exposure include better land use to reduce the distances that people travel (e.g. high density housing with easy access to schools and amenities) and safety impact assessments as part of land use planning (Peden et al. 2004).

For crash prevention, increased pedestrian and motor vehicle visibility are priorities. Again, speed reduction not only affords drivers more time to see pedestrians, but also allows them more time to take evasive action. Wider sidewalks, wider road shoulders and intersections with unencumbered visibility are examples of appropriate road design interventions to increase pedestrian visibility. Reflective clothing has also been advocated, but evidence remains inconclusive especially as it is difficult to ensure pedestrians’ adherence. Legislation for mandatory use of lights by cars improves their visibility for all road users and has been proven as an effective intervention for crash reduction in a number of settings (Farmer & Williams 2002; Hollo 1998; Koornstra, Bijleveld & Hagenzieker 1997). In order to reduce the severity of an injury in the event of a crash, creating safer car fronts is an important strategy for improving pedestrian safety (Bly 1990; Crandall, Bhalla & Madely 2002; EEVSC 1994; Pritz 1984). Research should also be conducted to accurately assess the relative impacts of high-fronted vehicles (e.g. trucks, buses and sports-utility vehicles) on child pedestrians, as well as vehicles fitted with bull-bars.

It should be emphasised that several studies have shown that educational programmes have had limited success when applied in isolation and the question arises as to whether road safety education is wasted on young children. Nevertheless, programmes for alerting children to traffic safety may have some long-term utility in raising and improving their safety awareness. The situation may well be similar to the education of parents and drivers in the creation of a safer environment: while it may not significantly influence the immediate safety of young children, it does at least lay down the foundation for future safe behaviour on the road.

**REVIEW OF CURRENT SOUTH AFRICAN INJURY PREVENTION INITIATIVES AIMED AT CHILDREN**

A preliminary review of the child pedestrian safety sector reveals several
measures to protect children in the traffic environment. Some of the stakeholder groups and initiatives relating to child road safety, include (but are not limited to):

- the DoT’s Arrive Alive campaign
- research agencies such as the University of Natal Interdisciplinary Accident Research Centre (UNIARC); the Council for Scientific and Industrial Research (CSIR); the MRC-UNISA Crime, Violence and Injury Lead Programme (CVILP) ; and the North-West University Faculty of Education Sciences
- non-profit organisations such as Drive Alive, Soul City, Centre for Education in Traffic Safety and CAPFSA, which are involved in public awareness campaigns and lobbying as well as community outreach projects
- international agencies and consortiums such as the Global Road Safety Partnership.

One of the overarching strategies is the Road to Safety Strategy 2001-2005 (DoT 2001), which has identified six interlocking and overlapping focal areas requiring intervention with the ultimate aim of reducing traffic collisions:

1. Road environment quality
2. Driver fitness
3. Vehicle fitness
4. Pedestrian safety and fitness (safe road usage by pedestrians)
5. Reform of regulatory and monitoring institutions
6. Targeted communication campaigns to challenge public attitudes and behaviour, supported by private sector sponsorship; practical road safety training in schools and tertiary institutions; community road safety forums and programmes.

The DoT also launched the Arrive Alive Road Safety Campaign as a short-term initiative in 1997, but its initial success ensured further expansion and continued funding. Despite early successes in raising awareness of traffic crashes, the strategies have more recently attracted negative publicity in light of South Africa’s continued high rates of road deaths (Automobile Association 2005).

It is worth noting that the two strategies employed by the DoT that relate to child pedestrian safety are both aimed at changing pedestrian behaviour (i.e. safe road usage and practical training in schools). As discussed above, education in isolation is not believed to be effective, and passive strategies should be favoured over strategies that require active participation from the target group. The first reason is that it is particularly difficult to effect behaviour
change and the second is that children under the age of eight years, who are not able to judge the speed of approaching vehicles accurately, require adult supervision in traffic. Parents should be made aware of their children's limitations in handling traffic situations safely and that as primary role models their participation is essential to ensure the success of educational programmes. Other agencies that have been involved in teaching road safety directly to children include, the Faculty of Education Sciences at North-West University, which conducted a schools-based programme, and Drive Alive, which advocates the wearing of reflective clothing by school-children. The Centre for Education in Traffic Safety has developed a curriculum for Traffic Safety Education for the training of teachers and education students and offers several certificate courses and degrees with specialisation in traffic safety education. There are also several cross-sectoral collaborative ventures that encourage business, civil society and government to work towards the sustainable reduction of road traffic collisions. One example is the Global Road Safety Partnership South Africa, which established the School Pedestrian Visibility Project in Eldorado Park with Drive Alive, the CSIR and 3M. Another example is the Umlazi Safe Communities Project, a collaboration between BP South Africa, the DoT, UNIARC and the Mangosuthu Technikon, which trains teachers to integrate road safety into the classroom and volunteers to promote road safety in the community. However, no evaluation reports were available for any of these programmes when this chapter was compiled.

The only evaluation report that we were able to access which described a local traffic safety education campaign related to the Soul Buddyz programme, a multi media “edutainment” vehicle for children aged 8-12 years that incorporated television, radio and life skills booklets. The traffic safety messages promoted reflective material and encouraged children younger than nine years to be accompanied by an adult or older sibling in traffic. Advocacy campaigns included a reflector campaign to increase visibility of children to motorists and the promotion of scholar patrols in primary schools. The evaluation, which was not limited to traffic safety, but included the entire Soul Buddyz educational campaign, established the popularity of the traffic safety component, but found it difficult to attribute specific behaviour changes to Soul Buddyz. For example, whereas nearly two thirds of children were aware of reflectorisation, less than 5% of children owned reflectors and less than 2% used their reflectors regularly (Soul City 2001).

It is clear that we are unlikely to achieve a substantial reduction in the number of child pedestrian injuries unless statutory road safety campaigns acknowledge and address the specific hazards to which children are exposed. Schools are well placed to promote traffic safety, but strategies that reduce the risk of exposure, for example the Department of Education’s policy of
providing transport for children living more than 5 km from school, are likely to yield more positive results. Engineering measures for calming traffic flow and creating a safe traffic environment should also be prioritised, with designated safe play areas for children and demarcated safe routes to and from schools. Pedestrian routes should take into account their preferred destinations and provide direct access (reducing the temptation for pedestrians to take shortcuts through traffic), as well as their safety - the risk of robbery and assault is frequently cited as a reason for overhead bridges being under utilised.

**CONCLUSION**

Although measures to reduce children's exposure to risk in South Africa have fallen short, the recent introduction of legislation for the mandatory wearing of helmets by cyclists is an attempt to reduce the severity of an injury in the event of a crash. However, mandatory use of child restraints in cars has not been legislated and is urgently required, as child passenger deaths are a more important priority. The situation in South Africa is complicated by the different modes of transport used by children. Whereas cars are fitted with seatbelts for older children, and car seats can be fitted for younger children, many children travel by taxi, by bus and, especially in rural areas, on the back of a “bakkie”.

Nevertheless, legislation stipulating the mandatory use of child restraints should be introduced for private car owners - these could be made available at lower cost through subsidies and seat swap programmes - and research commissioned to develop a child passenger safety strategy that can accommodate the needs of all communities. The research should be conceptualised around the following four phases: 1) Problem definition; 2) Risk factor identification; 3) Development and testing of pilot prevention programmes; and 4) Implementation of interventions and ongoing measurement of effectiveness (Van Niekerk & Duncan 2004).

One reason offered for the reliance on active measures such as education, awareness campaigns and enforcement, in low- and middle-income countries, is the prohibitive costs of environmental modification. However, this does not take into account the relative effectiveness of the prevention strategies or the associated long-term costs. The application of sub-optimal prevention strategies means that injuries that might otherwise have been prevented impose a financial burden on the health system and the survivor/deceased and their next of kin. Active measures require ongoing budgetary allocations and long-term costs may be greater, especially if injury costs are taken into account.

Children's safety on the road is the responsibility of all adults, parents, caregivers, drivers and other road users. A new culture that accepts children

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1 Car with open back/pick-up truck.
as equals on the road needs to be instilled in order to afford children greater respect and priority from other road users as well as from the various agencies that are instrumental in enhancing traffic safety. Interagency partnerships should be fostered at all levels in order to pool expertise and develop a coordinated response to this challenge. It is comforting to know that some priority is given to this issue with the Road to Safety Strategy 2001-2005 (DoT 2001), which includes a National Pedestrian Action Plan that proposes a variety of pedestrian safety education and hazardous location upgrade programmes. It remains to be seen whether these interventions will materialise and if child pedestrians will receive due attention.

The traditional approaches of education, legislation (active measures) and environmental modification (passive measures) in pursuit of reducing both collisions and injury severity, deserve critical appraisal. Unless this is done, we are at risk of committing precious funding and scarce human resources to inappropriate strategies, as far as the target population or the physical environment is concerned. A systemic review of the sector should be undertaken along the lines of the World Report on Traffic Injury Prevention (Peden et al. 2004) that will document current strategies, compare these strategies with those that have been proven effective, highlight deficiencies and suggest alternatives and improvements. There is also an urgent need for a traffic injury focal point that can take on the responsibility for collating information, documenting prevention programmes (i.e. setting objectives and putting in place systems to monitor and evaluate outcomes) and also facilitating programmes across different departments and sectors; we all know that road safety is as dependent on other functions of government, such as urban planning and social welfare, as it is on transport, but not enough is being done for these to be included.
PEDESTRIAN INJURY IN SOUTH AFRICA: FOCUSING INTERVENTION EFFORTS ON PRIORITY PEDESTRIAN GROUPS AND HAZARDOUS PLACES

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ABSTRACT
In South Africa, as in other low- to middle-income countries, pedestrians account for the major proportion of road traffic injuries (RTIs). In order to inform our social responses to pedestrian injuries this chapter attempts to provide an overview of the human and environmental context within which pedestrian injuries occur and examines existing pedestrian safety efforts. More specifically, this chapter presents an analysis of pedestrian fatal injuries (2001-2004) and a review of current selected pedestrian safety efforts in South Africa. The interventions are reviewed against international benchmarks and analysed for local relevance and appropriateness. The analysis points to the need for re-defining target pedestrian groups for intervention and increased sensitivity for local specificities. Pedestrian safety measures must take cognisance of the local context of perceived and real crime, poverty and increased urbanisation and adopt a multidimensional approach. The inordinate focus on educational interventions must widen to include engineering measures that recognise pedestrians as significant road users. Likewise this analysis suggests that interventions ought to address the pedestrian fatalities-alcohol nexus, at risk behaviours and at-risk environments.

Key-words: pedestrian injuries; pedestrian safety; prevention; South Africa

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INTRODUCTION
The magnitude and severity of road traffic injuries (RTIs) is widely acknowledged. The World Health Organization (WHO) ranks road traffic injuries (RTIs) as the 11th leading cause of death, accounting for 2.1% of all global deaths (Peden, Scurfield, Sleet, Mohan, Hyder, Jarawan & Mathers 2004). In low- to middle-income countries in particular, pedestrians and cyclists account for the major proportion of RTIs (Peden et al. 2004). In high-income countries, such as the Netherlands, pedestrian deaths account for 10% of all road traffic fatalities. In the USA, this figure is 13%, in Norway 16%, in Australia 18%, and in Japan 27% (Mohan 2002). By contrast, in Mexico the percentage of deaths from traffic crashes involving pedestrians soars to 57% (Hijar, Kraus, Tovar & Carrillo, 2001), in India this figure is 42% and in Thailand 47% (Mohan 2002). In African countries, estimates of annual pedestrian fatalities as a result of RTIs range from 39% in Tanzania, to 64% in Kenya, and to 75% in Cote d’Ivoire (Odero, Garner & Zwi 1997; Peden et al. 2004). In South Africa, similarly high figures are recorded, where in 2003 the MRC-UNISA National Injury Mortality Surveillance System (NIMMS) revealed that pedestrians accounted for the largest percentage (39.5%) of traffic-related deaths (Matzopoulos 2004).

The magnitude of the risk faced by pedestrians in low- to middle-income countries, such as those in South-East Asia, South America and Africa, is further evidenced by the pedestrian mortality rate in the major cities of these countries, which averages around 2-3 per 100 000 persons in Mumbai and Mexico City, and 10 in Sao Paulo (Mohan 2002). In 2004, South African mortality rates ranged from 12.4 per 100 000 in Pretoria to 19.3 in Cape Town (Mabunda, Swart & Seedat 2007). On the other side of the spectrum, in high-income cities, such as Tokyo and London, pedestrian fatalities rates drop to around 1 per 100 000.

The effect of the high number of pedestrian injuries in low- to middle-income countries includes not only the physical consequences of disablement and death, but also carries a psychosocial burden of trauma for both the victims and their families (Sukhai, Noah & Prinsloo 2004). Moreover, the economic impact on a broader societal level clearly identifies pedestrian injury as a serious public health concern and intervention in this area as a major challenge. In South Africa, the impact on the economy of RTIs has been well documented (see Sukhai et al. 2004). In order to appreciate the full scope of the problem in South Africa and to refine ways of addressing this situation, a full understanding of the human and environmental context is needed, coupled with an assessment of existing intervention efforts.
To begin the discussion that follows, Mabunda et al.'s (2007) analysis of pedestrian injuries that occurred between 2001 and 2004 in South Africa is presented. They found that the huge majority (76%) of these fatalities were male pedestrians, consistent with the trends reported in both other low- and high-income countries (Harruff, Avery & Alter-Pandya 1998; LaScala, Gerber & Gruenewald 2000; Odero et al. 1997; Holubowycz 1995). In contrast to age distributions seen in high-income countries (Assailly 1997; Rivara 1990), and comparable reports in low- to middle-income countries (Nantulya & Reich 2002; Odero et al. 1997), almost half (47%, $n = 2886$) of the pedestrian fatalities were young adults between 20-39 years of age and another 26% ($n = 1591$) were older adults between 40-59 years. Further to this, Mabunda et al. (2007) identified three groupings of pedestrian fatalities based on age, gender, the use of alcohol, day and hour, namely: first, children, adolescents, and young adult pedestrians killed primarily during the week in the afternoons and evenings (38.3%); second, female and elderly pedestrians involved in traffic accidents primarily in the morning between 06h00 and midday (34.4%); and third, male pedestrians who had high levels of alcohol concentration (27.3%). Importantly, Mabunda et al.'s (2007) profile of South African pedestrian fatalities recognised the omission of specific environmental descriptors related to the scene and circumstance of the injuries in the recorded pedestrian injuries.

A review of intervention efforts in South Africa in light of international trends by MacKenzie, Seedat, Mabunda and Swart (2006) is then presented. Their review refers to international literature that shows while education programmes have tended to dominate pedestrian safety initiatives, the trend is now moving towards comprehensive strategies that incorporate engineering components as more appropriate for long-term success in pedestrian injury reduction. Although limited, multifaceted interventions are taking place in South Africa and other African countries. This approach is supported by South African researchers, such as Ribbens (1996), who has acknowledged the need for enhanced engineering strategies and the provision of pedestrian facilities in South Africa in a proactive manner that emphasises prevention over post-injury intervention in order to create a user-friendly pedestrian environment. The review of pedestrian interventions emphasises the broader context in which injury occurs, recommending that interventions should reach beyond the issue of road safety by taking into account the context of crime, urbanisation and poverty in which pedestrians in these countries find themselves.

This chapter aims to first present a summary of the key findings and conclusions from both contributions, followed by a discussion. The first
The aim of the discussion is to determine whether existing intervention efforts in South Africa are appropriate to the identified target groups in Mabunda et al.'s (2007) study, and the second is to ascertain what information and action is further required to combat the problem. This must be done in a way that takes into account those who are most at risk and the types of intervention that have been judged as most effective. The limitations of available data and the shortcomings of existing South African intervention strategies in this regard are discussed.

**TWO CONTRIBUTIONS TO THE AREA OF PEDESTRIAN SAFETY IN SOUTH AFRICA**

**CHARACTERISING FATALLY-INJURED PEDESTRIANS IN SOUTH AFRICA**

Research in high-income countries has identified children, followed by the elderly, and intoxicated people as the highest risk groups of pedestrians (Assailly 1997; Fontaine & Gourlet 1997; LaScala et al. 2000). For example, the greatest risk to schoolchildren from bus-related injuries was found to be as pedestrians after alighting from a bus in New South Wales, Australia (Cass, Ross & Lam 1997); injury to pedestrians was the most frequent cause of multiple trauma (54%) among children 0-16 years in a large Spanish urban area (Sala, Fernandez, Morant, Gasco & Barrios 2000); in California a motor vehicle versus pedestrian accident study reported that these accidents were common and the high mortality rate among the elderly indicated the need for more aggressive and effective prevention efforts (Peng & Bongard 1999); a study from Canada showed that children's greater exposure to traffic was associated with higher injury rates (MacPherson, Roberts & Pless 1998); and a study of older people's lives in the inner city in Sydney, Australia, showed that environmental hazards, such as pedestrian safety and traffic management, affect the whole population and require intervention at government level (Russell, Hill & Basser 1998).

Evidently, children and the elderly in high-income countries face greater risk of injury due to their exposure to the traffic, as they are the greater pedestrian groups in these countries. Accordingly, intervention efforts are directed towards these groups.

While children are also at risk in low- to middle-income countries, research has shown that the majority of pedestrian accidents involve young adults (see Khan, Jawaid, Chotani & Luby 1999). Lower motorisation is characteristic of these countries where a large proportion of the population are obliged to walk, and in turn, lower motorisation has been associated with higher pedestrian fatalities, where a greater number of people are exposed to the risk of pedestrian injuries (Mohan 2002). Young adults comprise the
major component of any country's workforce and have to travel on a regular, if not daily, basis for work in addition to other activities. Thus, as young adults are generally the most mobile group of any population, having to walk as a primary means of transport means that young adults in low- to middle-income countries are the most at risk of pedestrian injury.

An analysis of data obtained from the MRC-UNISA NIMMS between 2001 and 2004 by Mabunda et al. (2007) characterises the demographic, temporal and behavioural trends of 7 433 pedestrian injuries in the cities of Cape Town, Durban, Johannesburg and Pretoria, South Africa. The NIMMS uses a range of existing medico-forensic investigative sources, including post-mortem reports, SAPS 180 forms, chemical pathology laboratory results and criminal justice system reports. The analysis reports on the age, sex, month, day, time and blood alcohol concentration (BAC) levels recorded for these deaths. Notably, Mabunda et al. (2007) found that information relating to the scene of the injury is represented solely by one item delineating road/street/highway, but no other information relating to the scene and circumstances of injury is recorded.

Other research has found that in South Africa pedestrian fatalities peak in the 30-34 year age group (Harris, Sukhai & Matzopoulos 2004). Similarly, the analysis by Mabunda et al. (2007) reported the average age of pedestrian fatalities as 32.9 years (SD = 17.10), with nearly half of the total pedestrian fatalities comprising young adults aged between 20-39 years of age. The highest number of deaths occur in the 30-34 year age group. Among the children and adolescent deaths, a peak in the 5-9 year age group is apparent.

In terms of gender, the majority of pedestrian deaths in South Africa during the 2001-2004 period were male (76%), representing a ratio of 3.3 male deaths for every female pedestrian death. Notably, in the 20-39 year age group this ratio increased to 4.59 male deaths for every female death. Thus, a picture of a high number of pedestrian deaths occurring among young adult males in South Africa emerges.
The BAC levels were tested for just over half of the pedestrian fatalities occurring between 2001 and 2004 in South Africa. Out of these cases, 58% tested positive for alcohol in their blood stream. Again dominant gender and age characteristics were revealed in the results, where nearly two thirds of those tested positive for alcohol were males and more than one third of the pedestrian fatalities in the 25-54 year age group tested positive for alcohol.

Mabunda et al.’s (2007) research also reported on the temporal characteristics of the pedestrian accidents during this period in terms of month, day and time of death. Pedestrian fatalities were lowest at the beginning of the year in January, and then increased in February and again in March, ranging from 609 to 683 per month through to December. Nearly a quarter of pedestrian deaths occurred on a Saturday, representing the highest number for the days of the week, followed by Sunday. The peak for Saturday was more pronounced among the 20-39 year age group. Just over half of pedestrian deaths occurred early to late evening between 17h00 and 23h00. While the deaths among children and adolescents peaked in the early afternoon, the peak for those in the 20-39 year age group was later, where over one third were killed between 18h00 and 21h00.

As a means of identifying the relationship between the five variables of age, sex, BAC, day and time of death Mabunda et al. (2007) used multiple correspondence analysis, followed by a two-step cluster analysis to identify homogenous groups of pedestrians involved in fatal accidents based on these variables. Three distinct groups were delineated as follows:

1) **Children, adolescent and young adult pedestrians:** Comprising 38% of all the pedestrians included in the analysis, the majority of this cluster were male (76%). The highest proportion (44%) was under 19 years
of age, followed by those aged 20-39 years (33%). Over half of these deaths occurred during the week; 40% in the evening between 18h00 and midnight; and 36% in the afternoon between midafternoon and 17h00. BAC was not suspected and thus not tested in this group.

2) **Female and elderly pedestrians**: Just over one third (34%) of the fatally-injured pedestrians were clustered in a group that comprised mainly females (60%). All age groups were represented, where 47% were aged between 20-39 years; 23% in the 40-59 age group; and 9% in the 0-10 year age group. Of particular interest is that the remaining 21% were all the pedestrians in the elderly group aged 60 years and older. Most accidents occurred between 18h00 and 23h00, although compared to the total sample, accidents occurring in the morning between 06h00 and midday were over represented in this group. Of those tested for alcohol, the majority (81%) were negative.

3) **Male pedestrians with high BAC levels involved in a night accident**: This cluster comprised 27% of all the fatally-injured pedestrians. The cluster was almost exclusively male (98%) mostly aged between 20-39 years (65%), followed by those aged 40-59 years (32%). Three-quarters of the accidents in this group occurred over the weekend and tended to take place between 18h00 and 06h00 (81%). Almost all those tested for BAC (96%) were over the legal limit (in excess of 0.05 BAC).

![Figure 2: Multiple correspondence analysis: Factorial plan 1 – 2](source: Mabundzi)
In their report, Mabunda et al. (2007) drew similarities between the South African pedestrian fatality data and research from other low- to middle-income countries showing that the majority of fatalities were male pedestrians and that the predominant age group was 20-29 years. They argued that these results, in addition to the three groupings of pedestrian fatalities, have implications for pedestrian accident prevention in South Africa. In this way they emphasised that pedestrian safety programmes need to be designed specifically to target the different groups. Suggestions for two of the groups include safe places for children to play in the afternoons and retro reflective clothing for the evening (first group), and alcohol awareness campaigns (third group).

While the study provides a useful means of highlighting specific high-risk groups, the authors also pointed out that a major limitation of the data was that environmental factors associated with pedestrian fatalities were not recorded. They stressed that information pertaining to the specific environmental circumstances of pedestrian injuries is vital for the effective implementation of environmental interventions. In addition, they suggested that further research should be undertaken to uncover the social determinants of pedestrian accidents.

**Reviewing intervention efforts in South Africa and other African countries**

By way of understanding the typical classification of pedestrian interventions, it is useful to refer to the description by Stevenson and Sleet (1997) as comprising “various combinations of pedestrian skills training, parent education, legislation, environmental modifications and changes to vehicle design” (p. 212). Three main intervention categories are thus identified, namely: educational, engineering and enforcement.

Interventions based on the educational approach to improving pedestrian safety focus on teaching pedestrians road safety skills and can occur in a variety of contexts and employ different methods. Enforcement interventions focus on the road users’ adherence to traffic regulations and for the most part have been directed at regulating driver behaviour, although there have been some efforts to monitor pedestrian behaviour. Engineering interventions can be further differentiated as either engineering-environmental or engineering-design interventions. Environmentally-based interventions involve structural changes to the road environment, such as pedestrian bridges, pedestrian crossings, etc. Engineering-design approaches to pedestrian safety include the development of safety or injury-reducing products, such as retro-reflective clothing and other visibility aids.
Published in the Cochrane Database of Systematic Reviews (CDSR), the review of 15 randomised-controlled trials of pedestrian safety education interventions by Duperrex, Bunn and Roberts (2003) revealed a strong focus on international educational interventions that target school-going children. Duperrex et al. (2003) found that the effect of safety education on actual pedestrian behaviour varied considerably, and they concluded that there was no reliable evidence to show that pedestrian education prevents pedestrian injuries. Similar research has shown that while road safety training programmes increase children’s traffic knowledge, they do not necessarily improve children’s real-life road crossing behaviour (e.g. Zeedyk, Wallace, Carcary, Jones & Larter 2001). Research has thus concluded that educational programmes are useful for increasing traffic safety knowledge, but insufficient when used by themselves as an intervention (Mohan 2004).

Duperrex et al. (2003) recommended that greater enforcement of traffic laws, such as speed limits, should be promoted, in addition to an increased emphasis on interventions that incorporate engineering interventions. Similarly, the Cochrane review by Bunn et al. (2003) promoted traffic calming interventions, such as speed humps and roundabouts, as well as speed limits, substantiated by reports of injury rate reduction in targeted areas. Engineering interventions comprising a design aspect, such as visibility materials, were supported to a certain degree in a review of such interventions by Kwan and Mapstone (2003). Bunn et al. (2003) recommended that the effects of such engineering interventions should be studied in low- and middle-income countries, noting a significant gap in this area.

For reasons, such as a lack of resources (Downing, Baguley & Hills 1991), there has been comparatively little research and intervention in the area of pedestrian safety in low- to middle-income countries. This provided the rationale for a review of pedestrian safety interventions in South Africa and other African countries. Providing a context for this review, MacKenzie et al. (2006) drew on international findings, such as those discussed above, to derive five potential “success criteria” or international benchmarks that should be considered when planning a pedestrian safety intervention strategy:

1) to acknowledge the limitation of educational interventions and specify their primary function as increasing traffic safety knowledge
2) to make educational interventions part of a comprehensive multi-component programme that includes more than one intervention approach
3) to promote the development of engineering-environmental interventions, such as traffic calming measures, given the likelihood that they can reduce road traffic deaths and injuries for all road users
4) to include engineering-design interventions, such as visibility aids, as part of holistic pedestrian safety programmes
5) to evaluate programmes thoroughly by means of randomised controlled trials in order to increase knowledge and learning in this area.

Nine organisations hosting a total of 26 pedestrian safety programmes participated in the survey of pedestrian safety programmes by MacKenzie et al. (2006). Six of the organisations were South African, and the others were based in Uganda, Kenya and Mauritius. The organisations included government agencies, non-profit and non-governmental organisations, research organisations and private companies. The full range of intervention categories was reported by these organisations.

Most of the educational programmes surveyed targeted school-going children. Programmes were sometimes integrated into the school curriculum taking the form of workshops, with training often becoming the responsibility of educators. Educational materials, such as flip charts, manuals, videos and resource packs, supplemented these programmes. Others applied an “edutainment” approach, where performances by entertainers at road safety talks attracted participation from adults and children alike. Interactive pedestrian safety games at these events also encouraged active involvement. The use of traffic models at schools was also described, for example, traffic training centres comprising small-scale streets and traffic signs were constructed where children could gain practical experience with regard to correct behaviour, sharing the road and observation.

Taking a more inclusive approach, community-driven road safety training workshops involving other target groups, such as parents, volunteers, law enforcement officers and community leaders, were also reported. The aim of these workshops is to empower all community members with knowledge and skills to train young children to participate safely in the traffic environment. Themes, such as road crossing, visibility and the effects of alcohol and drugs, are included in the content of these programmes. In a Ugandan programme, a focus on injury prevention is included, in addition to a first aid component.

Adults are targeted in educational interventions to a lesser degree, where a handful of the surveyed pedestrian safety programmes imparted pedestrian safety training through community workshops. Important for the South African context, these programmes accommodate different language usage and literacy levels through varying forms of educational materials, for example, an adult pedestrian safety programme run by a South African government agency uses a pictorial format for flipcharts and manuals, in
addition to safety videos. At a broader national level, media campaigns are oftentimes employed by government organisations in both South Africa and other African countries, employing television and radio broadcasts, newspaper advertisements and the use of billboards.

Assessing the pedestrian safety programmes against the first and second international criteria pertaining to educational interventions, it was found that 18 of the 26 programmes adopted this approach, with half of these adopting educational activities as their exclusive focus. Thus, while the importance of increasing safety knowledge was realised (criterion one), only half of these programmes were integrated into multifaceted intervention approaches (criterion two). Fourteen of the educational intervention strategies specifically targeted children, comprising interventions that aim to teach children road safety skills through instruction involving written material, audiovisual aids and sometimes practical examples. Thus, for the most part the target group for intervention is children.

Support of both the third and fourth criterion was evident in a recent summation by Sukhai and colleagues (2004) which noted that passive interventions of the engineering category (both environmental and design) were generally more successful than active measures (education and enforcement interventions) in the South African context.

Specific to the third international criterion, the pedestrian safety programme review reported that there were a few programmes that focus on engineering-environmental pedestrian safety interventions. Contextualising these findings, the review drew on Ribbens’ report (1996) which described two main strategies in the South African context: integration and segregation approaches. The former involves integrating pedestrians with the road traffic and managing their movement through “temporal separation”, such as pedestrian crossings and traffic lights or through “soft separation”, such as traffic calming measures (Ribbens 1996). Traffic calming measures, such as road narrowing, roundabouts, rumble strips and speed bumps, aim to prevent motorised traffic from travelling at the high speeds considered to endanger pedestrians (Peden et al. 2004). Ribbens (1996) noted a stronger emphasis on temporal separation in South Africa and that traffic calming is less developed. Segregation approaches separate pedestrians from the road traffic either horizontally, for example, via pedestrian malls, sidewalks, and separate walkway systems, or vertically, for example, foot bridges and subways (Ribbens 1996). Ribbens (1996) pointed out that factors, such as cost restraints, have meant that these approaches are less evident in South Africa when compared to developed countries.
Examples of both integration and segregation strategies were evident in the review, for example, an engineering consulting practice in South African is involved in a range of national engineering-environmental interventions, such as constructing pedestrian crossings, pedestrian walkways, pedestrian bridges, traffic calming and pedestrian road signs. Another programme has developed manuals that supplement engineering-environmental interventions by providing road authorities and engineers with suggestions for appropriate facilities for pedestrians and cyclists, such as pedestrian crossings, traffic circles, etc.

Engineering-design interventions were also detailed in the survey of pedestrian safety programmes. Importantly, their objective aligns with the fourth international criterion of being part of holistic intervention approach, where it is reported that, in combination with educational activities, some programmes distribute visibility materials, such as armbands, sashes and t-shirts, to learners and parents in areas regarded as hazardous for pedestrians. Similarly, multi-component programmes, such as scholar patrol programmes, involve the training and supervision of volunteer learners by teachers in close collaboration with law enforcement officers, as well as the provision of visibility materials. In South Africa, reflective materials are also given out during sports events. Sukhai et al. (2004) also reported an initiative undertaken by the CVLIP together with the CSIR, 3M and Drive Alive to pilot and evaluate the use of reflectorisation among child pedestrians.

Other holistic South African programmes identify hazardous locations and develop pedestrian safety management plans in South Africa involving engineering-environmental modifications, in conjunction with education and communication strategies with communities and law enforcement agencies. Some of these programmes are part of broader initiatives, such as poverty alleviation and community development.

Across the nine participant organisations only one specifically enforcement-focused programme was reported, involving the regulation by on-site traffic police officers of pedestrians crossing the road. Police officials are designated to pedestrian-heavy street corners where they select those pedestrians transgressing the rules of the road, providing them with correct pedestrian protocols and instructions. In line with a multi-component intervention approach, the survey also found that law enforcement officers are sometimes included in educational programme workshops and have also been included in scholar patrol programmes, where they are encouraged to collaborate with the teachers supervising these programmes. A Ugandan school road safety
programme included first aid training for traffic police who are oftentimes first on the scene of traffic accidents.

Intervention efforts were formally evaluated and findings documented in many instances, in keeping with the fifth international success criterion. Formative research was often conducted to assess the needs of particular settings and to decide on appropriate intervention approaches. Programmes were monitored throughout their inception and development processes and in some instances their outcomes and impact were measured. Participatory research methods were employed to gauge the reaction of targeted communities to programmes. The survey reported, however, that few reports were easily accessible to the public and most reports took the form of internal publications. The full scope of published research on pedestrian safety in Africa is thus difficult to ascertain.

MacKenzie et al.’s review of pedestrian safety efforts in South African and other African countries made several recommendations for further action. One of these was that educational intervention efforts need to consider that research has found the highest number of South African pedestrian deaths to be among young adults. They also acknowledged the importance of inclusive intervention approaches and noted that while cost may be a limitation in developing interventions, it is important to ensure that available budget is appropriately allocated.

The review also pointed out that the broader South African context must be considered, drawing on socioeconomic factors that affect the traffic environment. For example, they referred to research that describes the development of informal settlements alongside main roads (Sukhai et al. 2004). Also, they noted that high levels of crime and violence in South African challenge pedestrians and affect their safety in other ways, calling for collaboration between all organisations in private and public sectors that have a vested interested in broader safety issues.

**DISCUSSION**

Broadly speaking, the conclusions drawn from the analysis of pedestrian fatality data (Mabunda et al. 2007) and the review of pedestrian safety programmes (MacKenzie et al. 2006) point to two main areas requiring attention: 1) defining target groups for intervention, and 2) adapting intervention for the South African environment. Both areas are underpinned by the imperative to expand into multi-component intervention efforts in terms of whom they should target and where they should focus. It now
becomes important to determine the synthesis between the findings of these two contributions, with regard to whether existing pedestrian safety programmes are appropriately targeted to those most at risk, and to determine what more needs to be done in future prevention efforts.

PEDESTRIAN SAFETY INITIATIVES IN SOUTH AFRICA AND CHARACTERISTICS OF FATALLY INJURED PEDESTRIANS: WHOM SHOULD THEY TARGET?

It is apparent that, as is the case overseas, educational programmes predominate in South Africa. There is little doubt that introducing some form of road safety education is important for all road users. However, picking up on the limitations of translating training into actual behavioural changes, international research has recommended passive protection methods, particularly for children who are more limited in terms of their physical and cognitive abilities (Dupperex et al. 2003). Acknowledging international research that shows the shortcomings of relying on interventions based solely on teaching pedestrians road safety skills, both Mabunda et al. (2007) and MacKenzie et al. (2006) have realised that this approach should be reassessed and shifted from being the sole focus of pedestrian safety initiatives.

This said, both reports showed an understanding that it is also the target groups of pedestrian safety interventions that need to be examined. It emerged that children are the primary target groups for educational programmes, also imitating international trends. However, the profile of fatally injured pedestrians by Mabunda et al. (2007) revealed that South African pedestrian deaths are highest among young adults, aged between 20-39 years, a finding similar to other research in low- to middle-income countries. Both Mabunda et al. (2007) and MacKenzie et al. (2006) agreed that intervention efforts should target young adults, particularly males, for reasons pertaining not only to the psychological trauma to the families resulting from such loss, but also because of the detrimental impact on the broader social context and economy. It has to be considered that these young men are in many cases the breadwinners of families and the mainstay of the labour force.

The typology of fatally injured pedestrians delineated three main categories, namely: 1) Children, adolescents and young adult pedestrians; 2) Female and elderly pedestrians; and 3) Male pedestrians with high BAC levels involved in a night accident. In view of these categories, it is evident that pedestrian safety interventions should essentially target all members of the community. Some of the surveyed pedestrian safety programmes targeted
adults through community workshops, although these were in the minority. More of these types of interventions are clearly needed, provided their current methods are proved effective through thorough evaluation.

Another important aspect is the content of pedestrian safety education programmes. From the review the focus of these programmes is on teaching pedestrians road crossing and other traffic safety skills, adopting various formats, such as lectures, manuals, traffic models, simulations or real-life training exercises. In view of the third category of fatally injured pedestrians, however, there is little evidence that the risks of alcohol consumption and pedestrian behaviour are communicated in these programmes. This type of information would be a valuable component of education programmes. Taking on a more inclusive approach it would also be important to incorporate pedestrians in awareness campaigns which currently focus primarily on drivers. Similarly, whereas laws are directed at controlling driver alcohol impairment, international research has suggested that the enforcement of legal alcohol limits for pedestrians should be introduced (Oestroem & Eriksson 2001). Picking up on Mabunda et al.’s (2007) suggestion that more research needs to identify the social determinants of pedestrian fatalities, such investigations may be able to explore behaviours, such as problem drinking and the socioeconomic factors that may relate to such behaviour, for example, unemployment and poverty. In turn, this research could help to identify specific communities and areas where intervention efforts should be targeted. Again, intervention efforts can be broad, reaching beyond pedestrian safety into campaigns that encompass community upliftment.

The category of educational interventions ranges from focused training sessions to broad public awareness campaigns. General awareness campaigns play a vital role in stimulating the broader consciousness of road users. It is important that these campaigns are underpinned by informed strategies. The website for the South African Department of Transport’s initiative, Arrive Alive (www.arrivealive.co.za) reports that they draw on fatality data to determine the major contributory factors for road crashes. For example, a report during the Easter 2005 period described two major contributory factors to crashes, namely: road user factors and vehicle factors. Road user factors listed included pedestrian jay-walking, speeding, drivers and pedestrians under the influence of alcohol, unsafe overtaking, and turning in front of oncoming traffic (Arrive Alive, date of article). Evidently these factors help to inform Arrive Alive’s awareness campaigns and other interventions. When we return to the analysis of pedestrian fatality data by Mabunda et al. (2007) it is encouraging to see some indication that
these awareness campaigns are playing role in preventing accidents. This is evident in the early months of the year following Arrive Alive's well-known December holiday campaign, where the lowest number of pedestrian fatalities is recorded. Thus to some degree, Arrive Alive's target groups of drivers and pedestrians alike are heeding the warnings promulgated by the campaign's message.

SPECIFIC ENVIRONMENTAL FACTORS: WHERE SHOULD PEDESTRIAN SAFETY INTERVENTIONS FOCUS?

International research recommends that, rather than relying on pedestrians to make the safest decisions, the traffic environment should be modified through passive protection methods, such as engineering interventions (Dupperex et al. 2003). Both environmental and design interventions are included here. Mabunda et al.'s (2007) analysis of pedestrian fatality data emphasised the importance of taking spatiotemporal factors into account in interventions. The fact that fatalities occur mainly in the evenings and during the winter months, indicates that decreased visibility may be a significant factor in fatal road traffic crashes (Sukhai et al. 2004). The distribution of visibility aids reported in MacKenzie et al.'s (2006) survey of pedestrian safety programmes clearly showed the uptake of this information into intervention action.

In terms of environmental interventions, the case for both segregation and integration approaches was made in MacKenzie et al.'s (2006) review. South African research reiterates the importance of separating pedestrians from the traffic through physical barriers, overpasses and underpasses, in view of the rapid urbanisation occurring in this context, where informal developments are often set up close to major roads (Sukhai et al. 2004). Although segregation approaches are limited by factors, such as cost, it is recommended that resources currently invested in educational interventions are reallocated to more inclusive approaches. The review by MacKenzie et al. (2006) identified the growth needed in integration approaches, such as traffic calming measures (encapsulated by the third international success criterion). This view is reiterated in the emphasis placed on the need by Bunn et al. (2003), the relative underdevelopment of this approach as identified by Ribbens (1996), as well as the findings of the survey of pedestrian safety programmes. Moreover, when introducing any type of environmental intervention, the broader socioeconomic context needs to be considered. For instance, the residents of the informal settlements may be unfamiliar with the modern traffic environment and thus may need to be educated with pedestrian skills for this context (Sukhai et al. 2004). Inclusive intervention efforts can thus contribute to the upliftment of these communities.
Pedestrian Injury

through the provision of both better infrastructure and education.

What is not clear, however, is whether existing environmental interventions are supported by a complete analysis of the environment and hazards faced by vulnerable pedestrians in South Africa. Mohan (2002) described the relationship between motorisation and pedestrian fatalities, where the proportion of pedestrians killed in traffic crashes is much higher in less motorised countries. Like other low motorised, low- to middle income countries pedestrians are thus at high risk in South Africa. With little public transport and infrastructure for pedestrians, it can be surmised that the primary contributing factor to pedestrian injury is increased exposure to traffic. International research has examined the extent to which pedestrians have to navigate the road environment. For example, the Canadian study by MacPherson et al. (1998) studied children’s road crossing behaviour and found a positive correlation between the number of streets crossed by children and the likelihood of injury. But, it is also the precise nature of the pedestrians’ interaction with the traffic environment that will determine their risk. Some international research has detailed the locations of where traffic injuries occur. For example, a study from Seattle showed that 66% of the fatal injuries occurred on city or residential streets, and 29% occurred on major thoroughfares, while a single urban highway accounted for 12% of pedestrian fatalities and represented a particularly hazardous traffic environment (Harruff et al. 1998).

MacKenzie et al.’s (2006) review of pedestrian safety programmes reported that much of the work in engineering-environmental interventions is preceded by research. This research identifies hazardous locations where pedestrians are most at risk and determines the most appropriate engineering intervention to improve existing infrastructure. And yet, Mabunda et al.’s (2007) research noted an absence of the localities of accidents in pedestrian fatality data. It was found that one item delineates whether the accident took place on a road, street or highway, but no other information relating to the scene and circumstances of injury is recorded. Arrive Alive (www.arrivealive.co.za) has reported that its intervention strategy is based on information from accident statistics. These statistics report on the number of fatal crashes across road user groups (drivers, passengers and pedestrians) in South Africa by province (see, e.g. Arrive Alive 2005; 2006). Similar to the NIMMS report, the statistics include temporal demographics, such as day of the week and time of day. But this is where it seems to stop, indicating a gap in terms of information pertaining to the specific environmental circumstances of pedestrian injuries. In this light, it seems
that analyses involving accident data, such as the 21 items of the NIMMS and those of the Arrive Alive reports, should endeavour to expand their items. This data should include examinations of police reports that identify particular environmental descriptors, such as whether accidents occurred at intersections and what type of intersection (traffic light, stop street). Other observational methods of the traffic and road user behaviour at these sites could help determine the appropriate intervention method, for example, whether an intersection needs a pedestrian crossing or bridge. Therefore, it is recommended that these research efforts need to be refined in order to determine conclusively the precise nature of hazardous environments and circumstances for pedestrians.

It would also be interesting to know more about other features pertaining to the exact locations of accidents, such as whether there was a pedestrian safety facility (e.g. a pedestrian crossing or bridge) in the vicinity or whether it was near a residential area (e.g. an informal settlement). If, for example, it were shown that a pedestrian safety facility was nearby, this would suggest that there might be reasons as to why that facility was not being used. International research in low- to middle-income countries such as Pakistan and Brazil has shown that pedestrian safety interventions are under-utilised (Khan et al. 1999). In Karachi, for example, pedestrians do not always use the available zebra crossings and motorists often ignore them (Khan et al. 1999). In a study in Rio de Janeiro, footbridges were not used because pedestrians preferred to take the quicker albeit hazardous option of directly crossing the busy street (Khan et al. 1999). Increasing public awareness through publicity campaigns and pedestrian education in addition to regulation enforcement by the relevant authorities has been recommended as ways of addressing these types of problems (Khan et al. 1999).

Similarly, in South Africa, pedestrians are sometimes reluctant to use footbridges if they are not well situated and take more time to cross the road than at grade level. The reasons for such under utilisation may lie, however, beyond mere pedestrian apathy or lack of safety education. In a context of high levels of violence and crime, pedestrians are vulnerable to victimisation. Any environment that is perceived to be dangerous impedes pedestrian movement, hence fear of victimisation may affect where pedestrians choose to walk (Robertson 1994). An article in a local South African newspaper highlighted the problem of crime on pedestrian footbridges where armed robbers sealed off both ends of the bridge in order to trap and rob those using the bridge (Handfield-Jones 2004). Pedestrian safety interventions need to take these risks into consideration, and this again reiterates the need for the involvement of other organisations interested in the safety and security of South Africans.
THE IMPACT OF AN INADEQUATE ROAD ENVIRONMENT ON THE SAFETY OF NON-MOTORISED ROAD USERS

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ABSTRACT
In South Africa, as is the case in most other developing countries, a significant proportion of the population walk or cycle on a daily basis to their places of work and to other destinations. Road accident casualties (fatalities and injuries) among these vulnerable road users (VRUs) have always been high and in 2004, they constituted about 41%, i.e. 5309 of the 12727 road fatalities on South African roads. Non-motorised road users (NMRUs) comprise a variety of road users, mostly pedestrians or cyclists. The objective of this chapter is to highlight the research findings and those strategies and guidelines (which have been developed regarding the road environment) that should be addressed in order to improve the challenges that NMRUs have to face on a daily basis. The chapter also lists the human requirements that would ensure that people used safe facilities. Issues within the road environment that contribute to casualties among NMRUs are highlighted. These include the lack of a holistic approach to network planning; the inadequate and inconsistent provision of non-motorised transport infrastructure; poor integration of transportation and land-use planning; as well as the inadequacy of public transport planning aimed at reducing risk and exposure. Furthermore, strategies/countermeasures are discussed to promote the safety of VRUs. These include the strategies, policies, work plans and practices of government departments such as the Department of Transport (DoT) and the Department of Provincial and Local Government (DoPLG). The chapter concludes with the major shortfalls still being experienced in improving the road environment for NMRUs and also lists the areas that need to be researched. The development of proper guidelines for the provision of safe facilities for rural pedestrians and cyclists is one of the major areas that need to be researched.

Key-words: vulnerable road users; pedestrians, road environment

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INTRODUCTION

In South Africa, a significant proportion of the population walk or cycle to their places of work and to other destinations on a daily basis. In 2003, the DoT conducted a National Travel Survey (DoT 2003). This survey showed that 2 259 million or 23.0% of the workforce indicated that they walk to their working place. This figure can be differentiated by area: metropolitan - 8.7%, urban - 24% and rural - 51.8%.

Road accident casualties (fatalities and injuries) among VRUs have always been high and are a matter of grave concern for road authorities. In the early eighties, pedestrians comprised about 48% of all road fatalities, and although the figure has gradually declined over the years, by the year 2004 pedestrians still comprised about 41% of all road fatalities, i.e. 5 309 of the 12 727 road fatalities on South African roads. Table 1 shows statistics by user group fatalities released by the Road Traffic Management Corporation (RTMC 2005).

Table 1: User group fatalities in South Africa: 2003-2004

<table>
<thead>
<tr>
<th>Year</th>
<th>Driver</th>
<th>Passenger</th>
<th>Pedestrian</th>
<th>Cyclist</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>2003</td>
<td>3 349</td>
<td>27.1</td>
<td>3 691</td>
<td>29.9</td>
<td>5 313</td>
</tr>
<tr>
<td>2004</td>
<td>3 351</td>
<td>26.3</td>
<td>4 066</td>
<td>31.9</td>
<td>5 309</td>
</tr>
</tbody>
</table>

(Source: RTMC, 2005, p.11)

However, the pedestrian statistics in the metropolitan areas are even more cause for concern as shown in Table 2 reflecting data from the eThekwini Transport Authority (2004). Unfortunately cyclist data were not available from this source.

Table 2: User group fatalities in eThekwini: 2003

<table>
<thead>
<tr>
<th>Year</th>
<th>Driver</th>
<th>Passenger</th>
<th>Pedestrian</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>2003</td>
<td>134</td>
<td>18.1</td>
<td>157</td>
<td>21.2</td>
</tr>
</tbody>
</table>

(Source: eThekwini Transport Authority 2004)

Since the mid-nineties, there has also been a growing awareness in South African government circles that the needs of the VRU group, especially the NMRU group, i.e. pedestrians and cyclists, should be catered for. This has started to filter through the policies and strategies initiated by government departments both on the national and provincial levels. Concepts such as “safer pedestrians”, Shova Kalula (“Ride Easy”) and “non-motorised..."
transport” (NMT) have emerged. This drive implied that the needs of NMRUs would be addressed more holistically. A multitude of interventions evolved from this process, including the increased restriction of vehicle speed and alcohol abuse; the attempted improvement of road user behaviour; and the improvement of the physical environment for NMRUs alongside roads or when crossing roads.

NMRUs comprise a variety of users, ranging from child and adult pedestrians and cyclists; disabled and elderly pedestrians; people pushing wheelbarrows or pulling hand-drawn carts, both in urban and rural areas, to transport sick people or to collect firewood, water, and other commodities such as scrap metal, glass, cardboard, and building material. Animal-drawn vehicles also fall within this category, but are not specifically dealt with in this chapter. The wide spectrum of NMRUs implies that a comprehensive plan needs to be devised and implemented to accommodate each user type.

OBJECTIVE AND RATIONALE
The objective of this chapter is to highlight the research findings and those strategies and guidelines (which have been developed regarding the road environment) that should be addressed in order to improve the challenges that NMRUs have to face on a daily basis. The current shortcomings are discussed, focussing specifically on previously disadvantaged areas and other areas that need urgent attention. Remedial measures that must be implemented to correct these shortcomings are discussed. The data used in this article have been retrieved from empirical research studies conducted by the authors and other researchers in South Africa as well as from a literature review of government policies and strategies. The rationale of this chapter is to draw attention to the major disadvantages that NMT in South Africa still experiences when compared to motorised transport.

THE ROAD ENVIRONMENT CONTEXT
The road environment in South Africa, apart from a few pockets of excellence, generally does not provide a safe environment for VRUs. This is a common problem throughout Africa. In 2000, the Expert Group on Low-Cost Mobility in African Cities (IHE/World Bank 2000) concluded that in general it is impossible to cycle in big cities in Africa without taking a severe accident risk. They recommended that in order to make cycling safe in these cities, firstly, large-scale traffic calming programmes were required, and secondly, there would need to be large-scale improvement of access roads and tracks to meet NMT standards. Although some South African cities would comply with the first requirement, very few would meet the second one.
In South Africa, those townships developed prior to the mid-nineties adjacent to cities and towns, were considered as dormitory areas and in most areas only limited paved road infrastructure was provided. Despite recent upgrading in many municipal areas, many of these townships still lack proper road and pedestrian infrastructure; street lighting is poor; road storm-water drainage systems are lacking or substandard; there are inadequate open spaces, etc. During the rainy season, the poor drainage and lack of paved footways pose major problems to pedestrians. The lack of proper street lighting also presents major road safety and security problems for commuters who leave home early in the morning or arrive home late at night.

The influx of many rural residents to the bigger towns and cities has led to the establishment of various formal and informal settlements, especially next to or close to the road network in order to gain easy access to transport. In many of these areas no amenities exist for NMT. In a study along a 22 km stretch of the Golden Highway P73/1, De Beer (2002) found that the densely populated residential areas on either side of the Golden Highway generated large volumes of pedestrians throughout the day, both crossing and walking alongside the road. There were also a lot of pedestrians going to and from the schools located opposite the informal settlements, and also within the formal townships, at certain times of the day.

Pedestrians crossed the Golden Highway along the entire length of the section due to the lack of channelisation. Twenty-seven access roads have been provided over this 22 km section of the Golden Highway and three of these are stop sign controlled intersections. However, no provision has been made for pedestrian facilities at any of these intersections. Furthermore, because no paved sidewalks leading to the taxi bays have been provided, taxis stop anywhere alongside the road. Street lighting was also absent. Recently, the road authorities in Gauteng have embarked upon a community-based project to provide sidewalks along the Golden Highway.

In a similar study of Edendale Road in Msunduzi Metro in KwaZulu-Natal, commissioned by the KwaZulu-Natal Department of Transport, the University of Natal Interdisciplinary Accident Research Centre (UNIARC) found many problems (Riyad & Myeza 2002). In respect of pedestrian safety the following issues were pertinent:

- poor maintenance of the road as characterised by traffic signs, poor visibility and road markings and lack of fencing along Edendale Road to prevent stray animals from wandering on the road, both of which put pedestrians at risk from drivers taking evasive action
- structural problems associated with the Edendale Hospital pedestrian bridge
Road Environment on the safety of non-motorised road users

- lack of pedestrian sidewalks
- lack of visible traffic law enforcement in the area leading to perceived reckless driving, e.g. excessive speeding (especially by taxis), drinking and driving and ignoring traffic lights
- erratic use of pedestrian access ways such as the Edendale Hospital bridge, pedestrian crossings and traffic lights
- need for more road safety campaigns emphasising road-crossing skills for children and adults.

Recent studies conducted by the Council for Scientific and Industrial Research (CSIR) for the Limpopo Department of Roads and Transport (Ribbens & Makhafola 2004), showed that similar road safety problems were experienced in rural areas. This was especially so where major routes run through villages, dividing them into two. People, including school children, have to cross these roads to go to work, shops, schools, recreational facilities and the like. Although speed limits of 60 or 80 km/h are normally introduced, drivers do not adhere to these limits. A typical problem found in many urban areas and rural villages throughout South Africa is that the necessary signage and facilities for NMRUs have either not been provided, or are not properly maintained in accordance with the guidelines contained in the SA and SADC Road Traffic Sign Manual (RTSM) (SADC 1997) and the Pedestrian and Bicycle Facility Guidelines Manual (PBFGM) (DoT 2003b).

Although this chapter focuses on the deficiencies in the road environment, it would be appropriate to look briefly at road users and their requirements for a safe road environment. Jaywalking, alcohol abuse by drivers and pedestrians, speeding by motorists, not giving way to pedestrians, and lack of visibility are but a few of the human factors contributing to casualties among NMRTUs. These psycho-sociological issues were dealt with in the UNIARC study published in 2004 (Van Schalkwyk & Naidoo 2004). This study concluded that VRUs are unlikely to, (and cannot really be expected to), comply with road safety rules until the road system takes their basic needs for walking or cycling into account. The more important needs of pedestrians and cyclists that are acknowledged in the PBFGM (DoT 2003b) are:
- secure facilities free from criminal elements and safety hazards such as slippery surfaces
- protection from traffic, accessibility of facilities to all users
- convenience in the sense of a fast direct route
- comfortable gradients, and an attractive environment.
ENVIRONMENTAL AND ENGINEERING CONTRIBUTORS TO VRU RISK

Many factors within the road environment contribute to increased risk and exposure of NMT. Factors within the planning and design frameworks which contribute to the problem include the lack of a holistic approach to network planning; the inadequate and inconsistent provision of non-motorised infrastructure; poor integration of transportation and land-use planning; and the inadequacy of public transport planning to reduce risk and exposure. These issues are discussed in more detail below.

LACK OF A HOLISTIC APPROACH TO NETWORK PLANNING (AND POOR CONNECTIVITY BETWEEN DESTINATIONS)

The PBFGM (DoT 2003b) states that, ideally, a pedestrian and bicycle network should be (re)developed in cities and towns to provide a high level of connectivity between origins and destinations, and to overcome barriers to walking and cycling. The ideal is to provide a complete system of interconnected pedestrian and bicycle ways between all locations in the network visited by pedestrian and cyclists. Furthermore, separating pedestrians, cyclists and traffic can reduce exposure, the ideal being to provide separate pathways for each.

“Open” and “closed” networks

The process of connectivity can be achieved by applying a number of planning principles of which the concepts of “open” and “closed” networks, horizontal and vertical separation, and the integration of non-motorised and motorised traffic are the most important. Connectivity for pedestrians and cyclists can be achieved when an open network is provided in contrast to the closed network (DoT 2003b). Examples are shown in Figure 1. The main difference between the open and closed networks is that the open network allows traffic movement in as many directions as possible, while such movements are restricted in the closed network. The open network allows traffic to disperse to a number of local streets, in contrast to the closed network which focuses traffic onto a restricted number of high order roads and discourages traffic from using low order streets.


Figure 1: Open and closed networks
Both open and closed networks have advantages and disadvantages.

The open network encourages community access and provides greater accessibility for pedestrians and cyclists, while the closed network has the advantage of discouraging extraneous through traffic from using the local street system. This is particularly important in residential areas where it is necessary to preserve the residential quality of the areas, and to protect the safety of residents by reducing conflicts between pedestrians and vehicles. This concept, however, places limitations on the movement patterns of pedestrians and cyclists.

An example of a system which combines the advantages of both the open and closed networks is shown in Figure 2. In this system, linkages are provided for the exclusive use of pedestrians and cyclists. Community access is encouraged, while restricting vehicular access ensures the residential quality of the area.

![Figure 2: “Compromise” network with pedestrian/bicycle linkages](image)

In most cities and towns with the more traditional grid open layouts, there are no proper pedestrian and bicycle networks in existence. Some do have a few network segments, but this seldom provides complete connectivity. Consequently, the pedestrian or cyclist is exposed to traffic in many ways when crossing roads and moving alongside roads.

More recently, the emerging security village phenomenon where public open spaces are closed by means of palisade fencing due to increased criminal activity, has threatened the principle of connectivity. Many of these potential linkages for NMRUs have been closed off by means of fences and security gates. Park strips that normally would have provided short convenient routes...
to destinations are no longer available. Pedestrians and cyclists have had to revert to the road network where safe facilities in the form of sidewalks or bicycle ways do not always exist. It should be noted that the general aim of these closures is to reduce the degree of connectivity favouring criminal activity and escape routes. However, the degree of usage is also an important factor here as pedestrians and cyclists are likely to avoid under-utilised facilities and parks for fear of falling victim to criminals. Although the traffic calming measures adopted for Durban’s beachfront area some years ago initially severely curtailed connectivity for motorised vehicles, these connections were to a large extent reinstated, to enhance the security of the non-motorised sectors.

“Horizontal” and “vertical” separation
The concept of “horizontal” and “vertical” separation of pedestrians and cyclists from road traffic can be achieved either by separating these modes within the road reserve or by providing walkways and bicycle paths away from the road reserve through open spaces and parks as practised in some Asian countries (Krishna 2002). Figure 3 illustrates the different options that could be applied in South Africa.

Within the road reserve, separate sidewalks for pedestrians should be provided. Class 2 bicycle lanes on the roadway may be provided to separate the cyclists by means of a physical barrier from road traffic, whereas Class 3 bicycle lanes are located on the roadway with no barriers between road traffic and cyclists. Alternatively, a pedestrian walkway or a Class 1 bicycle road could be provided through open spaces or park strips.
The idea of the horizontal and vertical separation of non-motorised and motorised traffic has been established through the “new towns” concept developed in the United Kingdom. Ideally, these townships provided a completely separate network of pedestrian and bicycle facilities away from the road network with horizontal separation, e.g. footbridges and subways, where these facilities intersected the road network. Only a few of these holistically planned non-motorised networks exist in South Africa, e.g. Sasolburg, Secunda, Richards Bay, Atlantis, and the initial suburbs of Phoenix north of Durban (the concept was to a large extent abandoned in Phoenix due to security problems as long ago as the 1980s). It appears that adaptations to the principles used internationally are required for local conditions. Other cities and towns, e.g. Cape Town, have developed master plans to cater for the needs of cyclists.

Pedestrian malls are another form of horizontal separation between traffic and pedestrians normally associated with commercial and business centres. There are different types of pedestrian malls, e.g. modified streets, transit malls, interrupted or continuous malls, off-street sidewalk grids, multi-level malls, etc. Many of these have been used successfully in South African cities and towns.

**Non-motorised and motorised traffic integration**

The concept of integrating non-motorised and motorised traffic was initially developed in The Netherlands through the “woonerf” concept and later “Verkehrsberühigen” in Germany. The idea was to create a residential precinct allowing vehicles to share the road with pedestrians and cyclists under certain conditions. Apart from a general speed limit of 30 km/h, various design measures, generally referred to as traffic calming measures, were introduced to restrict the speed of vehicles in these precincts. The measures include speed humps, raised crosswalks, mini circles, chicanes, chokers and different forms of road closures at intersections (diagonal, partial, one or more legs of the intersection), and mid-block road closures.

In South Africa, as in countries such as Australia, the United States, and Canada, cities have developed more horizontally than in Europe with resultant urban sprawl. Traffic calming has proved to be effective in these countries, but applied in a different context compared to Europe. Traffic calming measures are often aimed at making an area (such as a residential area) safer for pedestrians and cyclists, and particularly for children. However, these measures do not have to be restricted to residential areas only, but can also be applied in any location where there is a high Road Environment on the safety of non-motorised road users.
concentration of pedestrians and cyclists, such as schools, commercial and industrial areas, sports grounds, and public transport terminals. In this respect eThekwini Metro has recently adopted a policy of providing speed humps at all school entrances.

The *PBFGM* (DoT 2003b) indicates that traffic calming is aimed at addressing two specific types of problems experienced on roads and streets, namely traffic intrusion and speeding. The *PBFGM* also recommends different types of treatment to address these problems, and it is important that the problem should be identified correctly before the appropriate treatment is selected. For cost effectiveness and holistic safety very careful planning and consideration of calming measures for each specific individual location is required. “Templates” of a “one size fits all” design should be avoided.

Traffic intrusion is being experienced on many urban streets and roads in ever-increasing volumes due to the growth of urban areas. This problem is often caused by an inadequate major road network that is incapable of handling traffic. The result is that traffic takes “short cuts” through residential areas, resulting in so-called “traffic intrusion”. This results in high volumes of traffic on roads and is often associated with a poor quality of life. In a study of the impact of traffic on liveability, Appleyard (1981) found that people living on streets with high volumes of traffic had fewer friends and acquaintances, and a low level of pride, sense of ownership and sense of place. Increased traffic causes people to retreat into buildings and their homes, thus abandoning the public space. This often results in a deteriorating environment in which vandalism and criminal activity increase and people who were neighbours now merely live in adjoining houses and buildings.

Speeding is another problem that is often experienced on residential streets. Many of the older residential areas were designed on a grid pattern, resulting in long straight streets that are an open invitation for drivers to speed. Traffic calming can be very effective in addressing speeding problems, although most measures are only effective at a point along the road or street, and must be repeated to be effective over a long stretch of road. Drivers often become irritated when they perceive that there are an excessive number of calming measures and care is required to ensure that the problem is not exacerbated by drivers detouring to take even less suitable routes.
Lack of pedestrian/bicycle infrastructure and the proper maintenance thereof

Although there has been an improvement in the provision of pedestrian facilities in South Africa over the last few decades, there are still many places where the pedestrian and bicycle infrastructure could be considered as insufficient. This includes the previously disadvantaged areas in urban and rural areas as well as the more recently established formal and informal settlements.

Although road safety problems occur in informal settlements as well as formalised townships, greater safety problems are experienced in informal settlements due to the lack of infrastructure and particularly pedestrian facilities. Such settlements often develop adjacent to major roads in order to gain access to transport, and in some cases, informal housing encroaches onto road reserves.

Although transportation facilities have been provided in some townships, many of these facilities have not been properly maintained or have been neglected due to limited budgets. This applies especially to pedestrian facilities such as sidewalks and pedestrian crossings. In many townships pedestrian facilities are completely lacking. In a study of Maunde Street, one of the main arterials in Atteridgeville, commissioned by the City of Tshwane to improve pedestrian safety along this route, De Beer (2000) reported that a number of pedestrian facilities were required, including:

- additional raised pedestrian crossings
- pedestrian walkways
- improved road markings and street lighting
- vertical kerbs at intersections to prevent minibus taxis from cutting corners
- paving for pedestrians at intersections
- taxi bays as well as additional taxi bays where required.

Similarly, a study of Edendale Road in Msunduzi Metro (Riyad & Myeza 2002) recommended that:

- vehicle speeds be reduced by introducing calming measures at schools and busy intersections
- law enforcement be improved with increased visibility of enforcement during peak hours
- road safety campaigns be targeted to provide a co-ordinated multi-disciplinary approach to road safety
- vegetation be maintained and cleared, especially on sidewalks
- a longer barrier be erected to prevent pedestrians crossing at grade
Instead of over the bridge provided
• signage be improved and updated
• research be conducted into changing the behaviour of VRUs such as pedestrians.

Various common problems, which have a negative impact on road safety, are experienced in informal settlements and townships (DoT 2003b), including:
• hawkers in the road reserves which block pedestrian sidewalks
• small businesses which operate on the sidewalk such as car maintenance, telephone booths, etc.
• shacks/houses built up to the edge of the road
• minibus taxis which use the sidewalk as stops, ranking areas and even repair and washing bays
• boulders placed on the walkway to protect properties against traffic
• lack of drainage, or poorly maintained drainage systems, force pedestrians onto the roadway during the rainy season. Regular maintenance of such drainage systems would improve the plight of pedestrians walking alongside roads especially during inclement weather conditions
• non-existent or poorly maintained street lighting, which is a very important amenity for pedestrians who often leave early in the mornings or arrive home late in the evenings. A major proportion of pedestrian casualties in South Africa are recorded during the hours of darkness.

The forthcoming 2010 FIFA World Cup will provide an important incentive for NMT infrastructure in the cities and towns where qualifying matches will be played (DoT 2005). The Towards a 2010 Transport Action Agenda (DoT 2005) lists the non-motorised project opportunities for cities and towns that will assist in the acceleration of implementation and delivery, e.g. Johannesburg, City of Cape Town, eThekwini, Nelson Mandela Metro, Mangaung, Rustenburg, Polokwane, Kimberley/Sol Plaatjies Municipality, Tshwane Metro, Mbombela/Nelspruit and Orkney/Klerksdorp.

**Inadequate integration of land-use and transport planning with regard to NMT**

In South African cities, examples illustrating the inadequate integration of land-use and transport planning abound. This deficiency is reflected in permitting housing areas for the poor, or squatters, to be established next to freeways and other high volume roads, and positioning pedestrian generators (shops, schools, industrial areas, sport stadiums, etc.) next to major roads. Inevitably these developments lead to people crossing those roads at grade to access transport, and to go to work, school or the shops.
In a study conducted in 2000, Johnson, Davidson & De Beer (2000) identified 19 sites on national and provincial sites in Gauteng that could be considered as hazardous pedestrian locations. The study showed that some of the major issues related to these problem sites being located next to major roads were: schools (26%), high activity zones such as commercial areas (21%), squatter and low income areas (42%), and industrial areas (16%). Therefore, safe crossing facilities, such as footbridges with proper barriers to channel people to them, must be provided initially and not only after many people have been killed crossing high speed roads.

Such footbridges, unless properly designed, may actually prove disadvantageous to the 30% of the population that includes the sick, pregnant women, physically disabled, and aged and even those with a fear of heights. Thus, they must have appropriate ramps, smooth ground level access and hand railings. Mohan (2005) has argued that: “We will never eliminate carelessness, absentmindedness and even neglect in day-to-day activities, but by designing products and environment to be more tolerant of these normal variations in human performance, we can minimise the number of resulting crashes and injuries” (p. 35). It is only when society learns to put people before technology, that they will have learnt compassion and only through compassion that we can heal our prejudices (Noah 2004).

There are a number of good practice examples where the South African Roads Agency Limited (SANRAL) and other road authorities have provided footbridges and barrier walls to prevent pedestrians from adjacent settlements from crossing freeways at grade, e.g. the R300 and N2 freeways in Western Cape, the N1 freeway at Hammanskraal in Gauteng, the N4 freeway in and near Witbank in Mpumalanga, and Edwin Swales VC Drive and South Coast Road in KwaZulu-Natal.

Currently, the Integrated Development Planning (IDP) plans of most of the municipalities have yet to cover road safety issues and therefore the needs of VRUs have not been addressed. Hopefully, more emphasis will be placed on the integration of land-use and transport planning through the IDP process (in terms of the Municipal Structures Act, Act No. 23 of 2001) and the Integrated Transport Planning (ITP) process (in terms of the National Land Transport Transition Act, Act No. 22 of 2000).

The national and provincial departments of education can also play a significant role in this process as many schools have yet to be provided in the previously disadvantaged areas through the new schools provision programme.
When planning the location of school sites, due consideration should be given to the fact that these sites should preferably be located away from major roads. Liaison with responsible authorities should also take place on adjacent road design in order to ensure the provision of safe taxi and bus bays off the main route.

**Inadequate public transport planning for unnecessary exposure and risk to VRUs**

A number of problems have been identified at public transport facilities that contribute to the unnecessary exposure and risk of pedestrians. The *PBFGM* (DoT 2003b) highlights some of these issues. Typical problems include the offloading of passengers on major routes and the inadequate planning of facilities at public transport termini, bus and taxi stops, etc.

In many cases public transport is not routed into informal settlements and townships, thus creating the problem of passengers being loaded and off-loaded along major roads and freeways. In a study conducted on the R59 freeway, De Beer and Davison (2002) found that motor vehicle access to the service roads parallel to the freeway had been gained by removing sections of the fence. Vehicles thus stopped under freeway bridges to offload passengers, who then crossed the freeway or made their way up the embankments of interchanges. Footpaths were often seen leading from the bridge parapets down to the road shoulder under the bridges. In many other areas taxi drivers loaded or off-loaded passengers at the entrances to the main roads and returned for another load of passengers during peak hours, e.g. the R550 at Olienvenhoutbosch. A good example of integrated planning is to be found at the Nseleni Interchange near Richards Bay where a major road crosses the N2 and commuters are involved in changing taxis. In an innovative design for SANRAL, four taxi bays on route MR 231 and two on the N2 are linked by surfaced walkways and stairs.

Very high concentrations of pedestrians are often found in public transport facilities such as railway stations, bus termini and mini-bus ranks. Such concentrations typically occur in the early morning and late afternoon peak periods. Accidents tend to occur at these locations due to factors such as pedestrians running across the road to catch a bus or train. The *PBFGM* (DoT 2003b) recommends that at public transport termini and stations, sufficient and proper pedestrian facilities be provided. Due to the large volumes of pedestrians using these facilities, it is not sufficient to provide minimum designs. Wider than minimum sidewalks are typically required, while pedestrian crossings must be provided where needed. Particular attention should also be given to the provision of pedestrian refuge islands.
and traffic calming measures. The PBFGM (2003b) also recommends that in the planning of pedestrian facilities at public transport termini and stations, it is imperative that pedestrian desire lines need to be studied in order to determine the needs of commuters. Such desire lines can be established by means of pedestrian counts or by aerial photographs.

Pedestrian crossing facilities are also often required near or adjacent to bus and mini-bus stops. The SA and SADC RTSM (SADC 1997) prescribes the road signs and markings required to accommodate such facilities. Pedestrian accidents at bus stops often occur because of pedestrians stepping out from behind or in front of the bus and moving directly into the path of an oncoming vehicle. This problem can be addressed by providing space for the bus to move well clear of the travelled way by painting or constructing an island between the bus lay-by and the roadway.

SECTORAL RESPONSES TO PROMOTE THE SAFETY OF VRUS
The improvement of the road environment for NMRUs depends on the co-operation of all key stakeholders. The major governmental role-players would be the DoT (and its agencies), the DoPLG, provincial and municipal road authorities. All these and the private sector should work together to refine injury prevention practices to promote safe usage of the road by VRUs especially NMRUs. The role that each of these governmental stakeholders play or should be playing will be briefly highlighted.

THE DEPARTMENT OF TRANSPORT, ITS AGENCIES AND COMMUNITIES
The DoT has taken the lead in initiating a programme for the improvement of pedestrian safety through its Road to Safety Strategy, 2001-2005 (DoT 2001a). One of the four pillars of this programme is focussing on “safer pedestrians”. Two specific actions are contained in the Strategy to achieve this outcome, i.e. the Arrive Alive campaign and the National Pedestrian Action Plan. Both these actions are aimed at identifying hazardous pedestrian locations and improving the road environment. The Arrive Alive campaigns are intended to improve the 10 worst hazardous pedestrian locations in each province.

The National Pedestrian Action Plan (DoT 2002a) identified 356 hazardous pedestrian locations countrywide. The main conclusion of this analysis was that an amount of R520m - phased over a five-year period - would be required for the implementation of countermeasures at the 356 hazardous pedestrian locations identified in this business plan. The major engineering shortcomings were: lack of crossing facilities (at 164 sites); lack of roadside
facilities (at 118 sites); lack of street lighting (at 118 sites); and poor geometric design (at 77 sites). Other main findings were that more than half (53%) of the hazardous pedestrian locations were situated in metropolitan/local areas on arterial and collector roads. Another one third (35%) were located on provincial roads, especially arterials, many of which traversed formal and informal settlements. Altogether 43 sites were identified on national roads of which 25 were on freeways (dual carriageway roads). Almost half (48%) of all the hazardous pedestrian locations were situated on arterial roads.

Various manuals published by or with the DoT including the *PBFGM*, the *South African Road Safety Manual* (SARSM) (DoT 1999) and the *SA and SADC RTSM* (SADC 1997) contain standards and guidelines for improving the road environment for pedestrians and cyclists. Since the more general application of these manuals would significantly improve the situation, their role will be briefly highlighted. The *PBFGM* (DoT 2003b) covers a wide spectrum of engineering guidelines that could be employed to improve the road environment. The *SARSM* (DoT 1999) consists of seven volumes, which provide road authorities with tools to evaluate traffic operations and assess the road safety aspects of their road network, including the needs of VRUs. The *SA and SADC RTSM* (SADC 1997) covers all the road signage and markings required to provide safe road infrastructure, including those for pedestrians and cyclists.

The *Shova Kalula* Bicycle Programme (DoT 2001b) is part of the process to improve rural mobility. It is aimed at two target groups: first, the young - particularly the estimated 350 000 secondary school students and 445 000 primary school students who currently walk more than 3 km to school; and second, the estimated 573 000 urban workers and 472 000 rural workers who currently walk for more than 20 minutes daily to get to work.

A study by UNIARC (Mpanza 2002) aimed at developing a coherent strategy for the *Shova Kalula* Bicycle Programme covered three rural villages in KwaZulu-Natal. The study revealed that the programme was well received although possible cultural inhibitions relating to women and girls riding bicycles were indicated. Of the cyclists surveyed 89% used bicycles for commuting to school, 14% to work and 5% for recreation. One of the main issues relating to the infrastructure and safety of cyclists was the need for targeted road safety education. This is vital for the correct use of available infrastructure as internationally, Mohan (2005) has found that two thirds of cyclists killed and injured in accidents involving cars have violated a law or safety rule. Furthermore, the percentage of crashes is greatest in
the 12 and under age group. It would seem that topography played a part in that although the flat terrain around Mbazwane is ideal for cycling, it is also problematic in that heavy vehicles maintain high speeds and the high and low pressures they create endanger cyclists. The major issues relating to infrastructure in areas of gravel roads relate to: potholes which cause vehicles and cyclists to deviate from the left-hand side of the road; dust which reduces visibility and obscures cyclists; and the presence of the gravel “windrow” at the edge of the carriageway which makes riding hazardous.

Thus, one of the major problems that has yet to be resolved regarding the Shova Kalula Bicycle Programme is where the children who are the main supporters of the programme must ride when they go to school. Currently, there are only limited planning guidelines in South Africa to address this problem on rural roads and further research is required. In addition, in many of the areas (Izinqoleni, Bakenberg, Witpoort, etc.) theft of cycles is a problem, hence secure “parking facilities” must be considered in design. The schools must obviously be the focal point of any cycle infrastructural planning especially in rural areas.

The Rural Transport Strategy (DoT 2002b) is directed at the delivery of rural transport infrastructure and services. The strategy states clearly that “Rural transport infrastructure” does not cover access roads only, but also district roads, public transport interchanges, tracks and other NMT infrastructure - provided mainly by the provincial and local spheres of government, the National Department of Public Works (NDoPW) and SANRAL - all of which are directly or indirectly involved in communities and create local construction-related jobs. Besides the National Land Transport Strategic Framework (NLTSF), which is a legal requirement in terms of Clause 21 of the National Land Transport Transition Act, Act No. 22 of 2000, the rural transport strategy is aligned to: the Integrated and Sustainable Rural Development Programme (ISRDP); the requirements for Integrated Development Planning (IDP) as set out in the Municipal Structures Act, Act No. 117 of 1998; and the government’s main social and economic development programmes, such as the Poverty Alleviation Programme, the Community Based Public Works Programme (CBPWP), the Local Economic Development (LED) Programme, the White Paper on National Transport Policy (1996), the Road Infrastructure Strategic Framework, and the Provincial Land Transport Frameworks (PLTFs) that have been developed in all of the provinces.

THE DEPARTMENT OF PROVINCIAL AND LOCAL GOVERNMENT
The DoPLG has initiated a number of national imperatives to improve
conditions in the previously disadvantaged areas of the country. These include the introduction of IDP, the Urban Renewal Programme (URP), the Integrated Sustainable Rural Development Strategy (ISRDS), the Municipal Infrastructure Grant (MIG), and others. The role that some of these strategies could play in improving the huge backlog of infrastructure, including NMT infrastructure, in townships and rural areas (especially the urban and rural residential nodes) will be highlighted.

Most IDPs and Integrated Transport Plans (ITPs) do not cover the issue of road safety infrastructure provision. The enabling transport legislation (the National Land Transport Transition Act, Act No. 22 of 2000), which through its National Land Transport Strategic Framework (DoT 2006) covers the field of road safety and Provincial Land Transport Frameworks, should thus be extended to cover this aspect as well. The role of NMT and its infrastructure requirements should also be catered for.

MIG is a conditional grant which supports municipal capital budgets to fund municipal infrastructure and to upgrade existing infrastructure, primarily benefiting poor households. The provision of infrastructure for NMRUS, e.g. sidewalks and footbridges, falls within the ambit of this funding, seeing that the major shortfall of these types of infrastructure lies in the areas occupied by the poor households.

**CONCLUSION**

The following shortcomings still exist in engineering practice and government policies as well as strategies:

First, there is no comprehensive national NMT policy in South Africa. The planning, design and provision of facilities for these VRUs are therefore not properly co-ordinated and considered. The DoT should take the lead in collaborating with the provincial and municipal road authorities and the DoPLG to develop such a policy.

Second, road authorities should consider developing pedestrian and bicycle master plans for formerly disadvantaged suburbs as part of an ITP in conjunction with the IDP process, the URP and the ISRDS. Such master plans should be based on pedestrian desire lines and major land uses that generate pedestrian traffic in the community.

Finally, the lack of pedestrian facilities in informal settlements and in many formerly disadvantaged suburbs is often a cause for many road safety problems. A summary of the most important facilities required in such areas includes:
• An internal network of pedestrian sidewalks and walkways should be provided based on pedestrian desire lines and major land uses generating pedestrian traffic in the area such as schools, sports fields, commercial centres, etc.
• Pedestrian crossings should be provided at locations where the internal network of pedestrian walkways crosses major roads.
• Land uses such as schools and other pedestrian generators should be located away from major roads, or situated in such a way that major roads do not need to be crossed. If this is not possible, provision should be made for grade separation and the channelisation of pedestrians to these crossing points. In designing these products and environment cognisance should be taken of the normal variations in human performance in order to minimise the number of resulting crashes and injuries.
• Roads should be designed in such a way to limit speeds. Where this is not possible, traffic calming measures should be included in the upgrading of settlements to safeguard VRUs.

**Recommendations**

The PBFGM (DoT 2003b) provides information and guidelines on a variety of aspects related to pedestrian and bicycle facilities. During subsequent development of the manual, however, a number of issues have been identified which require further study and research. These issues could not be adequately addressed in the current edition of the manual and most of the recommendations are based on studies undertaken in other, more developed countries.

Some of the more important areas identified that need further research are:

• The causes and types of accidents involving pedestrians and cyclists in South Africa.

• The maximum walking and cycling distances acceptable to the local population: Limited local interviews conducted by UNIARC (Van Schalkwyk & Naidoo 2004) found that children in Umlazi walked 15 km to school every day. It is likely that at least 1 to 2 hours (1.5 to 3 km) are common, although not necessarily acceptable, amongst poorer communities in South Africa.

• According to the National Road Traffic Regulations, pedestrian crossings are implicitly defined at all road junctions, i.e. they do not have to be marked. Pedestrians therefore have right of way at junctions, irrespective of whether an approach to a junction is controlled or not. In practice, most drivers do not seem to be aware that this requirement also applies to uncontrolled approaches to junctions.
A simple system, which does not rely on the collection or availability of traffic and accident data, has been proposed for prioritising pedestrian sidewalks. However, the system should be extended to include other types of pedestrian (and cyclist) facilities.

The provision of a separate bicycle road parallel to a street or road within the reserve boundaries in urban areas poses a serious problem when there are driveways along the road. Drivers exiting from driveways generally do not pay attention to cyclists, which increases the danger of accidents. Such bicycle roads on streets and roads with driveways will only be successful if they are provided directly adjacent to the street and road itself (similar to a bicycle lane), and if it is clear to drivers that they must yield to cyclists.

More cost-effective barricades and fences for use along roads to prevent pedestrians and cyclists entering the road reserve: The most effective form of barricade appears to be a concrete or brick wall, but the cost of such barricades is very high. Consideration of vegetated barriers may be an option.

Traffic calming is particularly important for pedestrians and cyclists. The current national guidelines are outdated and urgently need to be updated. Local experience especially with regard to security must be incorporated.

Current guidelines for the planning, design and provision of facilities for rural pedestrians and cyclists are very limited and should be expanded into a set of useful tools.

When promoting cycling, especially in informal townships, designers should consider adopting the designs used by developing countries in the east where NMT predominates rather than those advocated by the more developed western societies.

Lower order urban streets and rural roads must be viewed and designed as transport infrastructure for the entire range of transport modes, i.e. vehicles, motor cycles, cycles, animal drawn and pedestrian. No one mode should have exclusive use and priorities (if any) should be allocated according to the prevailing circumstances. NMT must be viewed as part of the solution rather than the problem of road transport.
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ADVERSE DRIVING BEHAVIOURS: 
THE CASE OF AGGRESSION, EXCESSIVE SPEED 
AND ALCOHOL IMPAIRMENT

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ABSTRACT
Aggressive and “other high-risk driving behaviours”, such as driving above the speed limit 
or above the legal blood alcohol limit, are significant contributors to the burden of road 
traffic injuries in South Africa. For example, like many other countries in the world, these 
driver behaviours have been reported to play a role in about 80-90% of all road traffic 
crashes in South Africa. Using a multi-source multi-method approach, these behaviours 
were also shown to be very prevalent in a variety of settings and contexts. Yet, in spite 
of this, psychosocial perspectives are relatively neglected in research, policy and practice. 
In this regard, epidemiological data for these adverse driver behaviours are presented 
for the South African setting. These findings are discussed in the context of the country’s 
sectoral responses and international good practices for addressing these behaviours. Whilst 
a comprehensive ecological and health promotion approach is proposed for the prevention 
and control of these behaviours, greater attention is afforded to the active psychosocial 
approaches that are deemed imperative in modifying behavioural risks.

Key-words: aggressive driving behaviours, high-risk driving behaviours, 
South Africa

INTRODUCTION
In South Africa, approximately 6 million licensed drivers together with 
6.7 million registered vehicles interact, often on a daily basis, with the 
physical traffic environment as well as with other fellow road users (DoT 
2002). These complex interactions together with drivers’ individual 
pre-dispositions (e.g. drivers’ physical characteristics, such as age; 
psychological characteristics, such as personality and cultural norms on 
driving) influences motorists’ conceptualisation of the driving experience 
as well as their responses to other motorists. For some, this experience 
may be enjoyable offering the driver freedom and control, while for others, 
this provides an insulating and empowering opportunity to vent daily

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frustrations. Furthermore, the psycho-physiological stimulation of the driving experience (e.g. from information overload, noise and crowding) may influence the affective state of drivers and hence their behaviours in the traffic environment. These are some of the issues that contribute to the huge burden of road traffic crashes arising from driver-related factors. Risky driving behaviour is considered to contribute significantly to the huge burden of injury and death worldwide (WHO 2003). In South Africa, like in many other countries, between 80-90% of all collisions are related to driver factors (DoT 2002) and driver aggression and “other high-risk driving behaviours” are assumed to contribute significantly to collisions and associated fatalities.

It is also well recognised that high-risk driving behaviours have the potential to increase the probability of a crash, the probability of injury given a crash, as well as the severity and outcomes of an injury. Hence, considering the large influence and contribution of behavioural factors in road traffic collisions, the allied psychological and sociological disciplines provide useful perspectives on behavioural responses in the traffic environment and are important considerations in our efforts to address traffic safety.

But, although human error plays a role in such a large percentage of crashes, this does not imply that the responsibility for road safety should be placed on individuals or that they should be the main target of intervention programmes. The “systems” approach to road traffic injury (RTI) prevention suggests that the cause of road traffic crashes is often multifaceted with dynamic interaction between the different components of the traffic system. Hence, while human behaviour may be a trigger factor, it is not necessarily the underlying cause. Motorists are often predisposed to crashes and injury due to their social and economic dispositions or the prevailing land use policy and practices. Hence, from this perspective, predominant strategies would be passive and structural, placing a larger responsibility on professionals that create the road systems to ensure the safety of the different users.

On the other hand, although it is well accepted that traffic systems need to be designed to accommodate human error, it is imperative that motorists, especially those at risk of engaging in adverse driving behaviours, be made aware of good driving practices and the consequences of driving irresponsibly. Besides, we cannot rely on motorists to make the safest decisions in the traffic environment. While psycho-educational and skills development programmes should be available to those that are at risk, adequate legislation and enforcement is also important to punish and deter motorists from engaging in driving behaviours that are unacceptable to society. Furthermore, the implementation of environmental and engineering
advances have to be coupled with behavioural strategies, for example, encouraging and educating the public on child seating position or the correct use of child restraints. Evans (1990) has also pointed out that many engineering-type solutions are reaching a point of diminishing return or a saturation level and suggests that greater emphasis needs to be placed on behavioural approaches. In the above regard, social-psychological solutions involving enforcement, education or other behaviour modification activities would be paramount.

The above discussion highlights some of the multifaceted issues concerning road traffic crashes and would imply that the use of a single public health strategy for intervention, for example, engineering countermeasures, is unlikely to be successful on its own. Comprehensive and multidisciplinary approaches that embrace behavioural strategies are essential to our efforts to make South Africa’s roads safer.

While there are several behavioural factors that compromise traffic safety and to varying extents, in this chapter, we examine those behavioural issues among motorists that have been shown to be the leading contributors to road traffic crashes and injury, namely, aggression, excessive speed and substance impairment. The pertinent literature on these behaviours will be reviewed followed by findings in the South African context. These findings are discussed in the context of the South African sectoral responses, and priorities for prevention and control of these behaviours are discussed. Whilst a comprehensive intervention strategy is proposed, greater attention is given to the relatively neglected area of psychosocial approaches and active intervention strategies that are necessary to modify behavioural risks. A multi-source multi-method approach is used in the presentation of South African data, which is generally advocated to facilitate a comprehensive perspective on risk factors. Data used in this chapter are a combination of those from the MRC-UNISA Crime, Violence and Injury Lead Programme (CVILP) and the Department of Transport (DoT). The CVILP projects include the National Injury Mortality Surveillance System (NIMSS), the Trauma and Drug Surveillance System and a city-level study on Aggressive Road Behaviours (hereafter referred to as the Aggressive Road Behaviour Study). The DoT data are based on a national survey of road traffic offences in 2003, which was undertaken by the ITP Consortium for the DoT (hereafter referred to as the Road Traffic Offence Survey) (DoT 2003).
AGGRESSIVE ROAD BEHAVIOURS

BACKGROUND
Aggressive road behaviours are a significant traffic problem world-wide. In the United States of America (US), the National Highway Traffic Safety Administration (NHTSA) attributed 66% of all annual traffic fatalities to driver aggression (Martinez 1997). In the United Kingdom (UK), a survey by the Automobile Association established that 90% of motorists there reported at least one “road rage” encounter over a one-year period (Joint 1995). In comparison, a recent survey on aggressive driving by Synovate (Arrive Alive 2005) across 10 countries ranked South Africa the highest for “Aggressive and/or threatening driving behaviour” (67%) and for “Threatening behaviour where the person physically got out of the vehicle” (11%). The remaining countries included Brazil, Greece, France, India, Korea, Malaysia, Taiwan, the UK and the US. The total sample comprised over 4 000 participants and was based on randomised telephone interviews.

PRECURSORS TO AGGRESSIVE ROAD BEHAVIOURS
The literature on aggressive road behaviours points to an array of factors that may predispose motorists to aggression in the traffic environment and these may broadly be grouped into state factors, trait factors and other factors relating to driver demography or driving characteristics.

Aggressive road behaviours have often been related to exposure to traffic congestion (Shinar 1998; Parkinson 2001). However, a recent study by Shinar and Compton (2004) has shown that the likelihood of aggressive driving was higher when the value of time was high (as in weekday rush-hour traffic) than when the value of time was low (during weekday non-rush traffic or weekend hours). Thus, they concluded that while congestion alone may be a necessary condition for aggressive driving, it is not a sufficient condition. Other situational factors that have been shown to increase the likelihood of driver aggression include situations that confer anonymity, for example, tinted windows or increased traffic volume (Ellison et al. 1995; Wiesenthal & Janovjak 1992) and unfamiliarity with a particular traffic environment, which may facilitate blame being projected onto fellow road users (Lajunen, Parker & Stradling 1998; Parkinson 2001).

Emotions may lead to thoughts and behaviour that affect performance on a range of tasks. For example, several international studies examining anger in the traffic environment have suggested that aggressive driving is associated with the experience of anger (Arnett, Offer & Fine 1997; Deffenbacher et al. 2000, 2001; Parker, Lajunen & Summala 2002). When motorists are
angered, they may respond aggressively (behaviours related to the emotion), but they also may suffer from attention loss or decrease in reaction times as a result of anger. Anger or the inability to deal effectively with anger was also shown to be associated with higher crash involvement (Selzer, Rogers & Kern 1968; Wells-Parker et al. 2002). However, anger may not always be a precursor to aggressive driving behaviour and in these instances aggression may be used as a problem-solving strategy or an instrument to reach one’s goals (Baron & Richardson 1994). Another postulation is that anger is associated with territoriality in that upon being threatened, a motorist may become territorial and sometimes aggressive (Whitlock 1971). Some of the significant personality traits that may predispose certain motorists to respond aggressively include sensation-seeking (Jonah 1997; Jonah, Thiessen & Au-Yeung 2001), anxiety (Spielberger 1972, 1983) and impulsiveness (Novaco 1991).

Demographic factors positively associated with aggressive driving include being of a young age and being male (Wiesenthal, Hennessy & Gibson 2000; Shinar & Compton 2004). Lajunen and Parker (2001), in their review of the driver aggression literature, concluded that younger motorists were generally less experienced and therefore more likely to engage in driver aggression.

While these factors relate to aggressive driving behaviours, the strong association between “other high-risk driving behaviours” and aggressive driving behaviours together with international literature suggests that these factors may also be extended to other related behaviours, such as driving above the speed and/or alcohol limits (see definitions below).

DEFINING AGGRESSIVE ROAD BEHAVIOURS
Due to the sensational nature of road rage and aggressive driving, their definitions are often obscured and hence, for the Aggressive Road Behaviour Study (Sukhai et al. 2005), aggressive road behaviours were operationalised and located on a continuum consisting of four levels including:

(a) **Expressions of annoyance (Level 1 aggressive road behaviour)** refers to mild, verbal, but non-threatening expressions of annoyance or self-irritability, such as complaining and/or yelling to oneself and/or fellow passengers in response to another driver’s behaviour.

(b) **Aggressive driving (Level 2 aggressive road behaviour)** refers to mild, verbal or gestural expressions of anger on the road, such as the use of insensitive or obscene gestures and inappropriate and/or excessive use of the horn and lights.

(c) **Direct threatening and/or intimidating behaviour (Level 3 aggressive road behaviour)** includes trying to cut another motorist off the road or following or chasing another motorist in anger.
(d) *Direct confrontational behaviour (Level 4 aggressive road behaviour)* may include arguing with or assaulting another motorist.

Based on the above definitions, “road rage” may be defined as a display of uncontrolled anger, which may be manifested as Level 3 or Level 4 aggressive road behaviour. The expression of anger may, at a behavioural level, be directed at the perceived offending driver, vehicle, road signage or other objects in the traffic environment. The term, “other high-risk or hazardous driving behaviour”, refers to those instrumental behaviours that constitute deliberate and dangerous driving, but do not involve an intentional aggressive interaction and may include driving above the speed limit or above the legal blood alcohol limit.

**SA FINDINGS**

The Aggressive Road Behaviour Study showed aggressive road behaviours to be a significant problem in the South African context (Sukhai *et al.* 2005). The study was carried out among a representative sample of 1 006 motorists in the eThekwini Metropolitan Area (incorporating Durban) and examined the nature, extent and profiles of aggressive road behaviours in the metropole. Table 1 shows the prevalence data for victimisation and perpetration of the different levels of aggressive road behaviours in this setting.

**Table 1: Prevalence of experiencing and perpetrating Level 1 to Level 4 behaviours**

<table>
<thead>
<tr>
<th>Level 1 behaviours</th>
<th>Victimisation n (%)</th>
<th>Perpetration n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Say bad things to oneself or passenger</td>
<td>82 (84.9)</td>
<td></td>
</tr>
<tr>
<td>1.2 Yell at oneself or passenger</td>
<td>780 (81.9)</td>
<td></td>
</tr>
<tr>
<td>Level 2 behaviours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1 Give another driver “dirty looks”</td>
<td>749 (74.8)</td>
<td>462 (46.9)</td>
</tr>
<tr>
<td>2.2 Hoot/yell at another driver</td>
<td>818 (83.8)</td>
<td>519 (53.6)</td>
</tr>
<tr>
<td>2.3 Make obscene gestures at another driver</td>
<td>630 (64.3)</td>
<td>196 (20.0)</td>
</tr>
<tr>
<td>Level 3 behaviours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1 Prevent another driver from entering lane</td>
<td>789 (80.1)</td>
<td>261 (26.4)</td>
</tr>
<tr>
<td>3.2 Prevent another driver from passing</td>
<td>687 (69.5)</td>
<td>241 (24.5)</td>
</tr>
<tr>
<td>3.3 Tailgate another driver</td>
<td>777 (78.6)</td>
<td>280 (28.5)</td>
</tr>
<tr>
<td>3.4 Try to cut another driver off the road</td>
<td>330 (34.3)</td>
<td>47 (4.9)</td>
</tr>
<tr>
<td>3.5 Follow/chase another driver</td>
<td>89 (9.5)</td>
<td>35 (3.6)</td>
</tr>
<tr>
<td>Level 4 behaviours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1 Get out of car and argue with another driver</td>
<td>174 (17.8)</td>
<td>71 (7.2)</td>
</tr>
<tr>
<td>4.2 Get out of car to hurt another driver</td>
<td>49 (5.1)</td>
<td>29 (2.9)</td>
</tr>
<tr>
<td>4.3 Deliberately collide with or damage another car</td>
<td>90 (9.2)</td>
<td>18 (1.8)</td>
</tr>
<tr>
<td>4.4 Point a gun or shoot at another car</td>
<td>57 (5.9)</td>
<td>3 (0.3)</td>
</tr>
</tbody>
</table>
Roughly eight out of ten motorists reported that they engage in Level 1 aggressive road behaviours (mild, verbal, but non-threatening expression of annoyance). For Level 2 aggressive road behaviours, the reported prevalence for victimisation ranged from 64%-84%, while for perpetration, the prevalence ranged from 20%-54%. Direct threatening and intimidating aggressive road behaviours (Level 3) were relatively diverse in severity and the reported prevalence ranged from 10%-80% for victimisation and 4%-29% for perpetration. For the most extreme direct confrontational aggressive road behaviours (Level 4), the reported prevalence ranged from 5%-18% for victimisation and 0.3%-7.2% for perpetration. These findings were found to be consistent with international research reporting high prevalence data for similar categories of behaviours (Arrive Alive 2005; Joint 1995; Miller et al. 2002).

The study also used multiple linear regression modelling to identify the predictors of the different levels of aggressive road behaviours. This analysis is also useful in demonstrating the link between high-risk driving behaviours, such as driving above the speed limit or above the legal blood alcohol limit. The statistically significant predictor variables for victimisation and perpetration of the different levels of aggressive road behaviours are summarised in Table 2.

**Table 2:** Statistically significant predictor variables for victimisation and perpetration of Level 1 to Level 4 behaviours

<table>
<thead>
<tr>
<th></th>
<th>Level 1 behaviour</th>
<th>Level 2 behaviour</th>
<th>Level 3 behaviour</th>
<th>Level 4 behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive above posted speed limits</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed through yellow or run red lights</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Weave in traffic</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Maintain inadequate following distance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive while under the influence of alcohol</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Carry weapon while driving</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Received at least one traffic fine over past year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (young drivers)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender (male)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive almost every day</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Source: Adapted from Sukhai et al. 2005)
For victimisation and speed-related behaviours (driving above posted speed limits, speeding through yellow or running through red traffic lights, weaving in traffic and not maintaining adequate following distances), weaving in traffic predicted the experience of all levels of aggressive road behaviours (Level 1 not applicable); speeding through yellow or running through red traffic lights predicted the experience of Level 2 and Level 3 behaviours; and driving above posted speed limits predicted the experience of Level 3 behaviours. Driving while impaired with alcohol predicted the experience of both Level 3 and Level 4 aggressive road behaviours.

The perpetration of all levels of aggressive road behaviours was predicted by at least two speed-related behaviours. With behaviours constituting road rage (Level 3 and Level 4), driving above posted speed limits was a predictor for both groups. Additionally, weaving in traffic and not maintaining adequate following distances only predicted Level 3 behaviours, while speeding through yellow or running through red traffic lights only predicted Level 4 behaviours. Driving while impaired with alcohol was a significant predictor for engaging in Level 2 and Level 4 behaviours.

With demographic and driving-related factors, significant associations were only found for Level 1 and Level 2 behaviours. Carrying a weapon while driving (most often a firearm) was a significant predictor for being a victim and a perpetrator of the extreme behaviours constituting road rage. Receiving at least one traffic fine over a one-year period also predicted victimisation of the extreme forms of road rage.

**VEHICLE SPEED BACKGROUND**

Speed per se is not a problem, but excessive speed (driving above posted speed limits) or inappropriate speed (travelling at a speed that is not suitable to prevailing road and traffic conditions) is a major contributing factor to road traffic crashes worldwide. In high-income countries, excess and inappropriate speed contribute to around 30% of fatal crashes (European Road Safety Action Programme 2003), while in Ghana, half of all road traffic crashes between 1998 and 2000 were attributed to speed-related factors (Afukaar 2003). In South Africa, excessive speed or speed too fast for circumstances plays a role in approximately 30% of all crashes and about 50% in the case of commercial freight and public passenger vehicles (DoT 2002).

The role of driving speed in traffic safety is contentious, but there is strong empirical evidence from several studies showing a significant positive
relationship between vehicle speed, crash risk and crash severity. The relationship between speed and the relative incidence of crashes may be influenced by factors, such as decreased reaction times, decreased ability to negotiate curves and obstacles and increased distance required to stop a vehicle in response to a hazard. The relationship between vehicle speed and crash severity is undeniable and governed by the laws of physics. The kinetic energy of a moving vehicle is a function of its mass and the square of its velocity. In a crash, the kinetic energy that is dissipated (and hence the severity of injuries) will be exponentially related to the speed of the vehicle. For example, a classic study by Finch et al. (1994) showed that an increase of 1 km/h in mean traffic speed typically results in a 3% increase in the incidence of injury crashes and an increase of 4-5% for fatal crashes. Furthermore, it has been shown that travelling at just 20 km/h above a road speed limit of 60 km/h results in an increase in the relative risk of being involved in a casualty crash that is comparable with having a blood alcohol concentration (BAC) of about four times the legal alcohol limit of 0.05 g/100 ml for driving (McLean & Kloeden 2002).

SA FINDINGS

In the Aggressive Road Behaviour Study (Sukhai et al. 2005), motorists also reported on the “other high-risk driving behaviours” that they engaged in over a one-year period. Table 3 shows the reported prevalence and frequency of engaging in these behaviours.

Table 3: Prevalence and frequency of engaging in other high-risk driving behaviours

<table>
<thead>
<tr>
<th>High-risk driving behaviour</th>
<th>Prevalence (n, %)</th>
<th>Frequency (mean*, S.D.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive above posted speed limits</td>
<td>524 (52.6)</td>
<td>4.8 (2.9)</td>
</tr>
<tr>
<td>Speed through yellow or run red lights</td>
<td>475 (47.6)</td>
<td>3.5 (2.2)</td>
</tr>
<tr>
<td>Weave in traffic</td>
<td>205 (20.6)</td>
<td>4.1 (2.8)</td>
</tr>
<tr>
<td>Maintain inadequate following distance</td>
<td>299 (30.1)</td>
<td>3.4 (2.4)</td>
</tr>
<tr>
<td>Drive while under the influence of alcohol</td>
<td>113 (11.4)</td>
<td>3.9 (2.6)</td>
</tr>
<tr>
<td>Drive above legal blood alcohol limit</td>
<td>81 (8.2)</td>
<td>4.0 (2.8)</td>
</tr>
<tr>
<td>Carry a weapon while driving</td>
<td>68 (7.0)</td>
<td>N/A</td>
</tr>
<tr>
<td>Received at least one traffic fine in the past year</td>
<td>384 (38.5)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*Arithmetic mean, calculated for the positive responses only

(Source: Adapted from Sukhai et al. 2005)

In this study and with speed-related behaviours, just more than half the motorists (53%) reported driving above the posted speed limits and at a
frequency of about half the time that an opportunity arose (4.8 out of 10 times). Half the motorists also acknowledged to speeding through yellow or running through red traffic lights. About one-fifth and just under one-third of motorists acknowledged to weaving in traffic and not maintaining adequate following distances, respectively. Four in every ten motorists have also received at least one traffic fine (for a moving traffic violation) over a one-year period with an average number of fines of two per motorist.

The Road Traffic Offence Survey examined a range of traffic offences including speed- and alcohol-related offences (DoT 2003). Speed offences were measured in urban settings with speed limits of 60 km/h and 80 km/h, and in “rural” settings being inter-city and inter-provincial national or main roads with speed limits of 100 km/h and 120 km/h (for light motor vehicles). Taxis and buses are limited to 100 km/h on roads with a speed limit of 120 km/h while trucks that have a gross mass in excess of 3 500 kg are limited to a maximum speed of 80 km/h. Table 4 shows the percentage of vehicles exceeding the speed limit by province, type of vehicle and type of area (urban versus “rural”) for 2003. Adjusted percentages that include the 10% tolerance as required by the Judiciary for law enforcement purposes are also provided and these conservative figures are described below.

Table 4. Percentage of vehicles exceeding the speed by province, type of vehicle and type of area, 2003

<table>
<thead>
<tr>
<th></th>
<th>GA</th>
<th>KZ</th>
<th>WC</th>
<th>EC</th>
<th>FS</th>
<th>MP</th>
<th>NW</th>
<th>LI</th>
<th>NC</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light motor vehicles, urban, 60 km/h</td>
<td>Sample size</td>
<td>500</td>
<td>475</td>
<td>542</td>
<td>548</td>
<td>589</td>
<td>334</td>
<td>389</td>
<td>510</td>
<td>442</td>
</tr>
<tr>
<td>% exceeding limit</td>
<td>80.2</td>
<td>45.5</td>
<td>43.4</td>
<td>58.2</td>
<td>56.7</td>
<td>71.3</td>
<td>55.0</td>
<td>64.2</td>
<td>31.2</td>
<td>61.0</td>
</tr>
<tr>
<td>% incl. 10% tolerance</td>
<td>56.4</td>
<td>25.9</td>
<td>23.2</td>
<td>33.8</td>
<td>37.4</td>
<td>50.0</td>
<td>33.7</td>
<td>35.7</td>
<td>17.6</td>
<td>39.0</td>
</tr>
<tr>
<td>Light motor vehicles, urban, 80 km/h</td>
<td>Sample size</td>
<td>300</td>
<td>160</td>
<td>105</td>
<td>103</td>
<td>30</td>
<td>352</td>
<td>305</td>
<td>60</td>
<td>158</td>
</tr>
<tr>
<td>% exceeding limit</td>
<td>77.0</td>
<td>56.9</td>
<td>36.2</td>
<td>32.0</td>
<td>36.7</td>
<td>47.2</td>
<td>48.5</td>
<td>76.7</td>
<td>20.3</td>
<td>56.0</td>
</tr>
<tr>
<td>% incl. 10% tolerance</td>
<td>52.7</td>
<td>25.6</td>
<td>19.0</td>
<td>20.4</td>
<td>13.3</td>
<td>31.0</td>
<td>29.5</td>
<td>46.7</td>
<td>8.9</td>
<td>33.0</td>
</tr>
<tr>
<td>Light motor vehicles, rural, 100 km/h</td>
<td>Sample size</td>
<td>400</td>
<td>525</td>
<td>430</td>
<td>306</td>
<td>500</td>
<td>174</td>
<td>194</td>
<td>446</td>
<td>120</td>
</tr>
<tr>
<td>% exceeding limit</td>
<td>44.0</td>
<td>36.8</td>
<td>51.9</td>
<td>33.0</td>
<td>53.4</td>
<td>34.4</td>
<td>54.6</td>
<td>41.7</td>
<td>41.7</td>
<td>43.0</td>
</tr>
<tr>
<td>% incl. 10% tolerance</td>
<td>29.0</td>
<td>14.1</td>
<td>25.1</td>
<td>16.7</td>
<td>29.0</td>
<td>17.2</td>
<td>33.5</td>
<td>20.9</td>
<td>25.0</td>
<td>22.0</td>
</tr>
<tr>
<td>Light motor vehicles, rural, 120 km/h</td>
<td>Sample size</td>
<td>150</td>
<td>149</td>
<td>250</td>
<td>369</td>
<td>250</td>
<td>236</td>
<td>489</td>
<td>400</td>
<td>326</td>
</tr>
<tr>
<td>% exceeding limit</td>
<td>34.7</td>
<td>22.1</td>
<td>21.2</td>
<td>16.8</td>
<td>36.4</td>
<td>25.0</td>
<td>23.7</td>
<td>25.5</td>
<td>16.3</td>
<td>27.0</td>
</tr>
<tr>
<td>% incl. 10% tolerance</td>
<td>9.3</td>
<td>8.7</td>
<td>9.2</td>
<td>6.8</td>
<td>9.6</td>
<td>11.0</td>
<td>7.8</td>
<td>6.8</td>
<td>6.1</td>
<td>9.0</td>
</tr>
<tr>
<td>Minibus Taxi, rural, 100 &amp; 120 km/h</td>
<td>Sample size</td>
<td>182</td>
<td>90</td>
<td>69</td>
<td>74</td>
<td>150</td>
<td>140</td>
<td>92</td>
<td>114</td>
<td>67</td>
</tr>
<tr>
<td>% exceeding limit</td>
<td>88.6</td>
<td>43.3</td>
<td>40.6</td>
<td>58.1</td>
<td>54.0</td>
<td>50.7</td>
<td>29.3</td>
<td>54.4</td>
<td>14.9</td>
<td>59.0</td>
</tr>
<tr>
<td>% incl. 10% tolerance</td>
<td>50.9</td>
<td>30.0</td>
<td>20.3</td>
<td>28.4</td>
<td>38.7</td>
<td>32.1</td>
<td>13.0</td>
<td>24.6</td>
<td>7.5</td>
<td>34.0</td>
</tr>
<tr>
<td>Minibus Taxi, rural, 100 &amp; 120 km/h</td>
<td>Sample size</td>
<td>92</td>
<td>106</td>
<td>28</td>
<td>71</td>
<td>67</td>
<td>64</td>
<td>72</td>
<td>118</td>
<td>41</td>
</tr>
<tr>
<td>% exceeding limit</td>
<td>10.4</td>
<td>21.1</td>
<td>17.4</td>
<td>20.3</td>
<td>12.0</td>
<td>15.7</td>
<td>32.6</td>
<td>19.3</td>
<td>10.4</td>
<td>16.5</td>
</tr>
<tr>
<td>% incl. 10% tolerance</td>
<td>41.0</td>
<td>18.5</td>
<td>21.0</td>
<td>27.5</td>
<td>41.0</td>
<td>8.5</td>
<td>10.0</td>
<td>24.5</td>
<td>12.0</td>
<td>27.0</td>
</tr>
</tbody>
</table>
With light motor vehicles, the national offence rate ranged from 9.0% for drivers exceeding the 120 km/h speed limit to 39.0% for drivers exceeding the 60 km/h speed limit. Gauteng recorded the highest percentages for urban speed offences (60 km/h and 80 km/h), while North West had the highest percentage for exceeding the 100 km/h speed limit and Mpumalanga for exceeding the 120 km/h speed limit. With minibus taxis and nationally, about one-third of drivers were found exceeding the urban speed limits and about one-quarter were exceeding the “rural” speed limits. Gauteng recorded the highest percentages for exceeding both urban and “rural” speed limits. Nationally, roughly one in five truck drivers exceeded both urban and “rural” speed limits. KwaZulu-Natal recorded the highest percentage for these drivers exceeding urban speed limits and Eastern Cape for exceeding “rural” speed limits. Provincial speed offence data was not available for buses. However, on a national level, 23% were found exceeding the 60 km/h limit, 34% the 80 km/h limit, 4% the 100 km/h limit and 8.2% the 120 km/h limit (set at 100 km/h for buses).

In terms of reported trends between 2002 and 2003, of concern is the large increase from 28%-39% in the national average for drivers exceeding urban speed limits. The largest increases were found in Gauteng (17%-56%) and Free State (23%-37%).

**ALCOHOL**

**BACKGROUND**

In the same way as for speed, there is sufficient empirical evidence supporting the positive association and the direct dose-response relationship between alcohol and the risk of road traffic injuries. For example, compared with a BAC of 0, the risk of crash involvement at a BAC of 0.05 g/100 ml is estimated at around 1.8 (McLean & Holubowycz 1980), and increases to nearly five at 0.1 g/100 ml (Allsop 1966; Moskowitz 2002).

With fatal crashes, each 0.02% increase in BAC level approximately doubles the risk of involvement in a fatal single-vehicle crash (Zador 1991). Zador, Krawchuk and Voas (2000) later showed the disproportionately high relative

<table>
<thead>
<tr>
<th>Sample size</th>
<th>116</th>
<th>103</th>
<th>76</th>
<th>76</th>
<th>40</th>
<th>78</th>
<th>84</th>
<th>119</th>
<th>*</th>
<th>692</th>
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<tr>
<td>% exceeding limit</td>
<td>32.8</td>
<td>39.8</td>
<td>18.4</td>
<td>25.0</td>
<td>37.5</td>
<td>41.0</td>
<td>21.4</td>
<td>27.7</td>
<td>*</td>
<td>30.7</td>
</tr>
<tr>
<td>% incl. 10% tolerance</td>
<td>19.8</td>
<td>28.2</td>
<td>7.9</td>
<td>11.8</td>
<td>17.5</td>
<td>26.9</td>
<td>7.1</td>
<td>15.1</td>
<td>*</td>
<td>17.9</td>
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<table>
<thead>
<tr>
<th>Sample size</th>
<th>126</th>
<th>97</th>
<th>108</th>
<th>81</th>
<th>140</th>
<th>67</th>
<th>163</th>
<th>251</th>
<th>*</th>
<th>1033</th>
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</thead>
<tbody>
<tr>
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<td>38.9</td>
<td>33.0</td>
<td>48.1</td>
<td>30.9</td>
<td>52.1</td>
<td>55.2</td>
<td>62.6</td>
<td>35.5</td>
<td>*</td>
<td>41.0</td>
</tr>
<tr>
<td>% incl. 10% tolerance</td>
<td>20.6</td>
<td>12.4</td>
<td>24.1</td>
<td>12.3</td>
<td>32.9</td>
<td>29.4</td>
<td>28.0</td>
<td>14.7</td>
<td>*</td>
<td>20.0</td>
</tr>
</tbody>
</table>

Abbreviations: GA = Gauteng, KZ = KwaZulu-Natal, WC = Western Cape, EC = Eastern Cape, FS = Free State, MP = Mpumalanga, NW = North West, LI = Limpopo, NC = Northern Cape, SA = South Africa (Weighted total)

* Information not available
risks for young (16-20 year old) male drivers involved in single vehicle alcohol-related fatal crashes. The relative risk for this sub-group increased from 17 for the BAC range 0.050-0.079 g/100 ml to 52 for the 0.080-0.099 g/100 ml range and 241 for the 0.1-0.149 g/100 ml range.

Startling findings for the eThekwini Metropolitan Area showed that 37 976 (15%) of all drivers that were involved in an accident between 2000 and 2003 had been involved in at least one other accident during the same period and 181 drivers had been involved in 10 or more accidents over the four-year period (Goldstone 2005). This is particularly significant in light of recent data showing the link between engaging in risky driving behaviours and involvement in recurrent road traffic crashes. For example, a recent prospective study carried out in a hospital setting in Italy showed a positive BAC among drivers to be the leading predictor of a recurrent motor vehicle crash where levels in excess of 0.05 g/100 ml increased one's risk by nearly four times (Fabbri et al. 2005). Similarly, Brewer et al. (1994) used a case control study in the US to show that drivers who died in motor vehicle crashes and who had a BAC of at least 0.02 g/100 ml (case drivers) were more likely to have been arrested for driving while impaired than drivers who died in crashes but had a BAC below 0.02 g/100 ml (control drivers). In terms of relative risk, case drivers in the 21-34 year age group were 4.3 times more likely and in the 35 years or older group were 11.7 times more likely than control drivers to have been arrested for driving while impaired.

The effects of alcohol on the human body are generally well recognised and, essentially, alcohol has the potential to significantly affect a person's psychomotor and cognitive skills that are needed for safe and responsible driving. Also well documented is the effect of alcohol in reducing inhibition and the positive association between alcohol and risk-taking behaviours.

SA FINDINGS
Self-reported drinking and driving findings from the Aggressive Road Behaviour Study (Sukhai et al. 2005) showed that about one-tenth of motorists reported consuming alcohol and driving, and most reported doing so at above the legal alcohol limit. Of those that reported driving above the legal alcohol limit, more than half reported experiencing a greater likelihood of aggression on the roads (see Table 3).

Data from the Road Traffic Offence Survey (DoT 2003) on the percentage of drivers found driving “under the influence” of alcohol are presented in Table 5 below. The legal alcohol limit for driving is 0.05 g/100 ml for non-professional drivers and 0.02 g/100 ml for professional drivers. The figures
reported in Table 5 include the 10% tolerance as required by the Judiciary for law enforcement purposes and reflects on the general daily rate.

Table 5: Percentage of drivers found driving under the influence (DUI) of alcohol by province, 2003

<table>
<thead>
<tr>
<th></th>
<th>GA</th>
<th>KZ</th>
<th>WC</th>
<th>EC</th>
<th>FS</th>
<th>MP</th>
<th>NW</th>
<th>LI</th>
<th>NC</th>
<th>SA Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>All vehicles, all times Sample</td>
<td>700</td>
<td>715</td>
<td>562</td>
<td>634</td>
<td>609</td>
<td>620</td>
<td>608</td>
<td>697</td>
<td>743</td>
<td>5 888</td>
</tr>
<tr>
<td>% DUI</td>
<td>1.1</td>
<td>1.7</td>
<td>2.9</td>
<td>1.7</td>
<td>1.5</td>
<td>4.7</td>
<td>2.6</td>
<td>3.7</td>
<td>2.3</td>
<td>2.1</td>
</tr>
<tr>
<td>All vehicles, 18h00-21h00 Sample</td>
<td>151</td>
<td>156</td>
<td>123</td>
<td>121</td>
<td>91</td>
<td>149</td>
<td>105</td>
<td>146</td>
<td>128</td>
<td>1 170</td>
</tr>
<tr>
<td>% DUI</td>
<td>2.7</td>
<td>4.5</td>
<td>8.1</td>
<td>2.5</td>
<td>4.4</td>
<td>13.4</td>
<td>2.9</td>
<td>8.9</td>
<td>4.7</td>
<td>5.1</td>
</tr>
<tr>
<td>Trucks, buses &amp; taxis Sample</td>
<td>208</td>
<td>221</td>
<td>195</td>
<td>219</td>
<td>200</td>
<td>196</td>
<td>215</td>
<td>208</td>
<td>243</td>
<td>1 905</td>
</tr>
<tr>
<td>% DUI</td>
<td>1.4</td>
<td>0.9</td>
<td>0.5</td>
<td>2.7</td>
<td>0.5</td>
<td>6.1</td>
<td>1.8</td>
<td>1.9</td>
<td>1.2</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Abbreviations: GA = Gauteng, KZ = KwaZulu-Natal, WC = Western Cape, EC = Eastern Cape, FS = Free State, MP = Mpumalanga, NW = North West, LI = Limpopo, NC = Northern Cape, SA = South Africa (Weighted total)

(Source: Adapted from DoT 2003)

Nationally, and for drivers of all types of vehicles, a staggering 1 in every 50 were found to be driving under the influence of alcohol, increasing to a ratio of 1 in 20 drivers for the hours from 18:00 to 21:00. Mpumalanga recorded the highest percentage for the overall and night prevalence (4.7% and 13.4%, respectively). Also of concern is the high percentage of professional drivers found driving under the influence of alcohol. Once again the highest percentage was found in Mpumalanga (6.1%). In terms of reported trends from 2002-2003, the national percentage of drivers found driving under the influence of alcohol increased from 1.8%-2.1% and the largest increase was in Mpumalanga from 1.8% in 2002-4.7% in 2003.

The above high prevalence data from the DoT are echoed by those found in fatal and non-fatal injury settings. Blood alcohol data for vehicle drivers involved in fatal crashes were extracted from NIMSS and are presented in Table 6. NIMSS covers approximately one-third of all fatal injuries in South Africa.

Table 6: Blood alcohol results for drivers involved in fatal crashes, NIMSS, 1999-2003

<table>
<thead>
<tr>
<th></th>
<th>Driver cases included n (%)</th>
<th>BAC analysis (n) %</th>
<th>BAC positive (n) %</th>
<th>Mean BAC (g/100 ml)</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>464</td>
<td>188 (40.5)</td>
<td>101 (53.7)</td>
<td>0.16</td>
<td>0.09</td>
</tr>
<tr>
<td>2000</td>
<td>590</td>
<td>313 (53.1)</td>
<td>170 (54.3)</td>
<td>0.15</td>
<td>0.09</td>
</tr>
<tr>
<td>2001</td>
<td>958</td>
<td>357 (37.3)</td>
<td>185 (51.8)</td>
<td>0.17</td>
<td>0.10</td>
</tr>
<tr>
<td>2002</td>
<td>966</td>
<td>499 (51.7)</td>
<td>276 (55.3)</td>
<td>0.17</td>
<td>0.09</td>
</tr>
<tr>
<td>2003</td>
<td>1021</td>
<td>562 (55.0)</td>
<td>327 (58.2)</td>
<td>0.18</td>
<td>0.09</td>
</tr>
</tbody>
</table>

(Source: MRC-UNISA CVILP NIMSS database)
For each of the five years from 1999-2003, between 50-60% of all driver cases tested, were positive for alcohol. Although the highest percentage of cases that tested positive for alcohol was in 2003, none of the annual variations were statistically significant. The highest average level of alcohol consumption was also in 2003 at just under four times the legal limit for driving of 0.05 g/100 ml. The increase in the mean level of consumption between 2002 and 2003 was statistically significant ($p = 0.049$).

Findings from the Trauma and Drug Study (TADS) have also shown high prevalence data for drivers involved in non-fatal collisions. TADS was carried out at sentinel trauma units in South Africa from 1999-2001. Results showed that among drivers, 45% tested positive for alcohol and 68% of them had results in excess of the legal blood alcohol limit for driving. Additionally, about one-third of drivers were classified as problem drinkers based on the CAGE questionnaire (Marais, Sukhai & Donson 2004). Similarly, international data have shown that about half the drivers arrested for driving while impaired are alcoholics (Fine & Scoles 1976).

**PRIORITIES FOR INTERVENTION**

A comprehensive and integrated ecological approach that embraces education (together with behavioural modification), enforcement, environmental and engineering-type interventions is recommended. However, as mentioned earlier, a larger focus is dedicated to the relatively neglected area of active intervention strategies, such as education and enforcement-type interventions, to help emphasise the importance of these strategies and also help locate them within a comprehensive approach to addressing adverse road traffic behaviours. The broad public health strategies for intervention are discussed below.

**ACTIVE INTERVENTION STRATEGIES**

The motivation underlying traffic behaviour is an important determinant of the degree of success of behaviour change strategies and should be an important consideration for behavioural interventions. In this regard, Goldenberg, Levelt and Heidstra (2000) have identified three broad classes of motivation of driver behaviour:

- **Reasoned or planned behaviour:** Here the advantages and disadvantages of a certain behaviour and its alternatives are appraised before engaging in that behaviour. According to the related theory, behavioural change can be brought about by influencing behavioural attitudes or social norms concerning a behaviour and an example of an intervention strategy would be to convince motorists of the risks and consequences of an adverse driving behaviour.
• **Impulsive or emotional behaviour:** Refers to an immediate impulsive reaction elicited by feelings they attach to experiencing a behaviour (e.g. pleasure in driving fast) or to the expected consequences of a behaviours (e.g. fear of penalties).

• **Habitual behaviour:** This is an almost automatic response where there is no conscious appraisal of a situation and the behaviour is only analysed afterwards. These behaviours are seldom determined by attitudes and intention.

To a certain extent all of these behaviour types may be applicable to driver aggression, speed and alcohol-impairment, but education-type interventions would be more effective for reasoned or planned behaviour, while enforcement-type interventions (or the use of rewards) would be necessary to change impulsive/emotional and habitual behaviours.

**EDUCATION, AWARENESS AND TRAINING**

Educational interventions may include behavioural modification, skills transfer, psycho-educational support and population-wide public campaigns. Importantly, when used in isolation, several education and awareness programmes have been shown to be ineffective in reducing crashes and injuries. For example, with adults, two Cochrane reviews that dealt with school-based driver education (Roberts, Kwan, & The Cochrane Injuries Group Driver Education Reviewers 2001) and post-licence driver education (Ker et al. 2003) have shown no evidence of preventing road traffic injuries or crashes. In fact the former review on school-based driver education showed that this leads to early licensing and may also lead to an increase in the proportion of teenagers involved in traffic crashes. The general reasoning is that motorists often acknowledge the risks and consequences of their adverse road behaviours, but seldom believe that they may be part of the problem. Furthermore, motorists who are predisposed to adverse road behaviours, seldom act in accordance with their knowledge (O'Neill & Mohan 2002). Hence, education strategies per se are not sufficient to change behaviour. While these strategies may improve knowledge, the challenge lies in translating knowledge to improved behaviours.

However, behavioural strategies serve a vital role in traffic safety. The important condition, as mentioned earlier, is that they need to be used in conjunction with other public health strategies for intervention. For example, a recent systematic review showed educational strategies that targeted aggressive and “other high-risk driving behaviours” by way of mass media campaigns to be effective when implemented together with other types of interventions, such as legislation and enforcement (Randy et al. 2004).
Eight studies were reviewed and the median decrease in alcohol-related crashes resulting from the campaigns was 13% (IQR: 6%-14%).

In contributing to responsible driving practices, education and awareness strategies also have the potential to influence internal attitudes, beliefs, values and social norms. While changing awareness through educational strategies does not necessarily translate to a change in behaviour, motorists who are predisposed need to at least be made aware of the risks and consequences of their behaviours. For example, there are several behaviours that generate high levels of anger among motorists in certain contexts and have been shown to have a high likelihood of provoking aggressive reactions in the traffic environment (Sukhai, Seedat & Jordaan 2005). A further example where awareness strategies will be useful is when motorists are often “forced” into driving above speed limits due to being “pushed along” in traffic where there is a general expectation for motorists to travel at least as fast as the speed limit. Education-type interventions will also be useful as a punitive or rehabilitative measure where those prosecuted for serious driver aggression could be compelled to attend psycho-educational and skills programmes. Furthermore, education-type strategies could provide valuable support to other strategies for intervention, for example, informing the public of the appropriateness of speed limits in certain areas in order that they are respected and not flouted. The Aggressive Road Behaviour Study (Sukhai 2003) showed public support and acceptability for education-type interventions where nearly one-fifth of the motorists felt that training was required for motorists on stress/anger management; 9% felt that motorists need education on this topic in the form of workshops/courses; and 7% felt that media awareness was needed on the problem.

Three specific education-related interventions relating to graduated licensing, recidivism and harm reduction strategies that are deemed to be important considerations in the South African context, are discussed below.

**Graduated driver licensing**

Young and/or beginner drivers have a disproportionately higher risk of traffic crashes, essentially due to their lack of skills, experience and maturity. One possible solution lies in adopting a graduated driver licensing system that is already being used in several countries internationally. The important principle is for these novice drivers to gain their skills and experience under conditions of low risk and in a protective environment. Hence, supervision is a key feature and so are restrictions which may be placed on night-time driving, the carrying of passengers, and drinking alcohol and driving. Such a system also provides an ideal environment to introduce passive training in anger management and in dealing with issues around driver aggression. A Cochrane review by
Hartling et al. (2004) showed the effectiveness of graduated driver licensing programmes in reducing the crash rates of young drivers. The authors reviewed 13 ecological studies that evaluated 12 graduated driver licensing programmes and found the median decrease in overall population crash rates among 16-year-old drivers to be 31% (range 26-41%) during their first year. However, the authors also concluded that further research is required on the effectiveness of the individual components of these systems.

Recidivism

As shown earlier, research supports the idea that motorists who drive while under the influence of alcohol are likely to do so repeatedly, and in doing so, they increase their likelihood of being involved in a future alcohol-related crash. Hence, aggressive intervention is required and as early as possible when motorists are arrested for alcohol intoxication or involved in collisions and are identified at trauma centres. Furthermore, our findings (also supported by international research) suggested that a high percentage of motorists who drink and drive may have a problem with alcohol dependency and this should be an important component of rehabilitation programmes. While there is evidence for the effectiveness of drink-driving rehabilitation courses in reducing re-offending (ETSC 1995; Wells-Parker et al. 1995), McKnight and Tippetts (1997), in their comparison of Accident Prevention Courses (APC) and Recidivism Prevention Courses (RPC) in Arizona, showed clearly that instruction that was designed primarily to reduce recidivism was more effective in reducing both violations and collisions among repeat offenders than instruction that was directed toward accident prevention in general. In their study, offenders participating in the RPC experienced 8% fewer violations and 18% fewer collisions during the year following their offence than did participants in the APC.

Harm reduction strategies

In addressing alcohol-impaired driving, sensible drinking and harm reduction approaches by way of designated drivers and safe ride programmes, which are relatively unexplored in the South African context, would be worthwhile considerations. Importantly, the aim is not to accept and condone the consumption of alcohol, but to provide “reasonable” alternatives to driving whilst impaired. People are first encouraged not to drink and drive, but if they do drink, they are encouraged to limit their intake to within legal limits and to designate a sober driver or use a “safe ride” scheme to get back home.

Enforcement and legislative strategies that would be useful to combine with these education-related interventions are discussed below.
LEGISLATION AND ENFORCEMENT

In view of the high prevalence data for aggressive and “other high-risk driving behaviours” in South Africa, enforcement measures may be useful to supplement the above education and behavioural-type interventions. Furthermore, from the Aggressive Road Behaviour Study (Sukhai 2003), just under half the motorists were in favour of enforcement-type interventions to address aggressive and “other high-risk driving behaviours”, and recommended measures comprised “increased enforcement” (16%), “harsher penalties” (14%) and “increased police visibility” (13%).

The important role of legislation and enforcement is well documented. For example, it has been estimated that half of all traffic deaths and injuries in European Union countries could be prevented if their current cost-effective road traffic enforcement strategies were applied rigorously (ETSC 1999). Hence, legislation in itself is not sufficient and has to be backed with strict enforcement.

South Africa has first class legislation and policies, but unfortunately, these are not enforced adequately. For example, with alcohol, roadside testing is generally concentrated only during the popular holiday seasons and testing is conducted only on drivers showing overt signs of intoxication. The Road Traffic Offence Survey revealed that, on average, traffic officers were only observed five times over a total distance of 4 600 km travelled on the inter-city and inter-provincial road network (DoT 2003). Similarly, a study that examined drinking and driving habits in Durban showed that that 61% of respondents had not seen a roadblock over a one-year period (Watson 2000). Highly publicised strategies such as the “Zero tolerance, 100% compliance” strategy by the KwaZulu-Natal DoT is a bold and commendable stance, but here again, these have not been matched by adequate levels of enforcement. This creates an additional danger where motorists lose respect for these campaigns and may even erode respect for other traffic regulations that are beneficial to safety. This creates a sense of lawlessness and has the potential to undo other recognised efforts in traffic safety.

International experience has shown that there are several good practices that are almost prerequisites for enforcement to be effective. Several studies have shown the effectiveness of enforcement to be related to the perceived risk of being caught and punished (Homel 1990). In this regard, enforcement measures need to be frequent and maintained over a long period of time (Zaal 1994). Additionally, efforts should be random and widespread to increase the chances of detection (ETSC 1999). If drivers perceive their risk of being detected and punished to be low, even stricter penalties (such as higher fines or prison sentences) will be relatively ineffective (Ross 1993).
and may even reduce levels of enforcement (Bjornskau & Elvik 1992).

Importantly, once fined or apprehended, offenders need to be dealt with efficiently and timeously and hence greater support and cooperation from the South African Criminal Justice Department needs to be secured. Furthermore, as a deterrent, the proposed point demerit system for traffic offences in South Africa has the potential to contribute largely as a means of self-regulation and needs to be implemented with greater urgency.

The widespread use of speed cameras and alcohol testing, which have sufficient evidence of being highly effective, needs to be optimised in the South African setting.

**Speed cameras**

Due to financial restrictions and competing demands, automated enforcement systems, such as the advanced measures for the use of cameras in capturing high-risk driving behaviours, have been shown to be very cost effective (e.g. Mäkinen & Oei 1992) and their use needs to be expanded in the South African traffic environment. A recent systematic review that examined 14 observational studies showed that all but one of the studies showed that cameras were effective up to three years or less after their introduction (Pilkington & Kinra 2005). The reductions in outcomes across these studies ranged from 5%-69% for collisions, 12%-65% for injuries, and 17%-71% for deaths in the vicinity of the camera sites. Automatic speed enforcement with cameras seems to be even more efficient (Keall, Povey & Frith 2002).

**Alcohol testing**

Both random breath testing (RBT) and sobriety checkpoints have been shown to be highly effective in reducing road traffic injuries resulting from alcohol-impairment. An international review showed that the sustained and intensive use of these measures can contribute to a one-fifth reduction in alcohol-related crashes (Elder et al. 2002). In South Africa, the Road Traffic Offence Survey reported on resource allocation by offence type and showed that while 45% of resources are dedicated to enforcing speed, a mere 0.4% is dedicated to enforcing alcohol-impaired driving (DoT 2003). In light of the burden of alcohol-impaired driving and availability of evidence-based interventions to address this burden, the above allocation of enforcement resources needs to be critically reviewed. Furthermore, as mentioned earlier, an important consideration is to increase the perceived risk of being caught; hence the use of RBT methods should be prioritised over general sobriety checks, where motorists are tested irrespective of external signs of impairment.
PASSIVE INTERVENTION STRATEGIES

The main merit of passive measures is that they have an effect on all road users and their effectiveness is generally less dependent on motorists’ risk-taking behaviour, skills or other limitations. This lends support to a “systems-oriented approach”, as advocated for in the *World Report on Road Traffic Injury Prevention* (Peden et al. 2004). The basic premise of the “systems” approach is to identify and rectify the major sources of error or design weakness that contribute to fatal and severe injury crashes, as well as to mitigate the severity and consequences of injury. Countries that have taken the lead in systems approaches, such as Sweden and the Netherlands, place high priority on environmental speed control where the guiding principle is to adapt the environment to the limitations of the road users. Furthermore, physical speeding restraints are also recognised to be very cost-effective in resource-strapped settings. Traffic calming techniques, especially by way of traffic circles, have been shown to be very effective in crash reduction. For example, studies have shown area-wide traffic calming to reduce the incidence of road traffic crashes by an average of 15% and to be most effective in residential areas where accident reductions of about 25% can be achieved (Elvik 2001; Hydén & Várhelyi 2000). Other related components to area-wide traffic calming may include the use of rumble strips, speed humps, raised areas, narrowings and staggerings.

Vehicle-related strategies that are widely available and that have been shown to be effective in addressing alcohol and speed include speed limitation systems/devices and alcohol interlocks. With excessive speed, speed limitation systems that control the maximum speed that a vehicle can travel at have shown the potential to reduce fatal crashes by between 20-60% (Carsten, Fowkes & Tate 2001). These systems comprise various types and may be advisory, voluntary (where there is an option for the driver to override the warning), or mandatory. Furthermore, the mandatory-type system will be a useful consideration as a legislative adjunct for recurrent speed offenders. Speed governing devices will be particularly useful for professional drivers in the public and commercial transport industry, and in the case of heavy goods vehicles, there is evidence of a 2% reduction in the total number of injury crashes (Elvik, Mysen & Vaa 1997). However, in South Africa, especially among private enterprises, drivers are often encouraged and pressured into speeding as this determines their remuneration. Hence, the installation of these devices would most likely be resisted, and if they were installed, they might be disabled, unless creative strategies addressing these issues were used in their implementation. With regard to alcohol-impaired driving, the alcohol ignition interlock is a useful device for use in cases of recidivism or...
as a routine measure for professional drivers in the public and commercial transport industry. These devices prevent a driver from starting a vehicle if he or she is above a certain alcohol level as they need to blow into the device before the vehicle will start. A study has shown evidence of reductions of between 40%-95% in the rate of repeated offending (Marques et al. 2000).

CONCLUSION
While aggressive and “other high-risk driving behaviours” pose a serious threat to traffic safety in the South African traffic environment, several good practices relating to driver behaviour have been shown to have the potential to significantly reduce the burden of traffic injuries. Importantly though, caution is required in adapting international good practices to the South African setting due to contextual differences in these settings.

Adverse traffic behaviours should be treated as part of a broader social problem that needs to be addressed together with other forms of injury and violence that threaten society at large. In this regard, the ideal would be to aim for prevention initiatives as opposed to the control of behaviour-related RTIs, in other words, responsible and safe behaviours should be forged early in the developmental stage rather than attempting to modify attitudes and behaviours, which is often relatively more difficult to accomplish. On the broader societal level, campaigns encouraging respect and cooperative driving behaviours, together with attempts to reduce the competitive aspects of driving, should be strengthened.

Importantly though, we need to be always questioning the value of our intervention initiatives. The use of good practices and scientific approaches together with optimising on methods that encourage the uptake of this data for policy and practice decisions will be imperative. Furthermore, formal evaluation of intervention programmes is a crucial component of injury prevention. Besides being a moral obligation to justify expenses, such an exercise provides an opportunity to identify weaknesses and strengths of these programmes which could be used to enhance their effectiveness. Very few intervention programmes in South Africa, including the national Arrive Alive traffic safety strategy, have been systematically evaluated and documented. Finally, as noted in the World Report on Road Traffic Injury Prevention (Peden et al. 2004), advocacy, political will and commitment from stakeholders in the sector would be critical for the success of intervention strategies, and importantly, to ensure the sustainability of these initiatives.
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Crime, Violence & Injury Prevention in South Africa
CURRENT TRENDS AND RESPONSES TO CRIME IN SOUTH AFRICA

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ABSTRACT
South Africa suffers high levels of crime and violence. Although crime statistics for the financial year 2006/2007, reported some decreases, such as attempted murder (3%), rape (5.2%), some categories show ongoing increases. South Africans have constant exposure to crime and violence, both through direct victimisation and through extensive and detailed daily media reports. Media coverage combines with rumour and anecdote to fuel growing fear of crime and perceptions of increased vulnerability. The annual release of official crime statistics by the South African Police Service (SAPS) does nothing to reduce public concern and the fear of crime as the media presents a linear relationship between high crime rates and poor police performance. Crime is however a complex phenomenon that cannot be understood by interpreting crime statistics alone. In order better to understand current crime trends in South Africa there is a need to combine analysis of crime statistics with other useful information sources such as Victims of Crime Surveys. The Council for Scientific and Industrial Research (CSIR) has developed the Three Spheres Convergence Model that assists in understanding the elements that converge to result in crime and the way in which these elements must transform to result in peace and safety. This is useful in identifying data sources to both understand crime patterns and to measure progress towards a safer place. The model is also used to demonstrate the essential role of many stakeholders outside of the SAPS in the effort to reduce crime.

The South African Government has introduced well respected policies to address crime and violence. These include the National Crime Prevention Strategy of 1996 (NCPS) and the 1998 White Paper on Safety and Security. Strategies have also been formulated and to some extent implemented to integrate the Criminal Justice System (CJS). Unfortunately, there has been inconsistent and inadequate implementation that has not well enough integrated role players or established joint accountability both within and outside of the CJS. This chapter proposes that an effective strategy for a safer South Africa must be based on an understanding of the cycle of crime, violence and distrust that characterises many communities. The Government has shown commitment to curb crime, but there is a long way to go. A synergised and collective effort is needed in order to achieve a

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Safer South Africa.

Key-words: crime; violence; prevention

[A]INTRODUCTION

The release of the crime statistics for the financial year 2006/2007, aroused much public interest and concern, perhaps intensified by the prevalent increase in the murder and aggravated robbery rates. There were some reported decreases, such as attempted murder (3%), rape (5.2%) and indecent assault (5.5%). There is an urgent and sustained need for an explanation of crime trends and consistent monitoring of this phenomenon. Whilst overall crime figures show a downward trend in violent crimes, the extraordinarily high base from which we start renders such improvement less significant in terms of overall safety in South Africa. There is a concerning tendency to debate whether crime is up or down rather than to discuss the apparent normalisation of the very high crime rate. To normalise crime at its current level is to give up on the vision of South Africa as a safe place.

This chapter aims to redress that balance by contemplating a different approach to crime prevention and safety. The first step in such an approach is to dispel the assumption that crime statistics and police performance have a linear relationship. High crime statistics do not necessarily reflect poor police performance; neither therefore, can a drop in the crime level be seen as a direct result of improved police performance. In conclusion, the authors argue that crime is a much more complex phenomenon and demands a more complex analysis and response. The Three Spheres Convergence Crime Prevention Model is discussed to foster an understanding the complex phenomenon of the “cycle of crime, violence and distrust” with the aim of validating the above argument.

A DIFFERENT APPROACH TO CRIME PREVENTION AND SAFETY

WHAT DO SOURCES OF CRIME INFORMATION TELL US?

The crime statistics for 2006/2007 (SAPS 2007) did not clearly indicate whether South Africa was winning or losing the battle to reduce crime as the figures tended to fluctuate. A lot of resources were put into fighting crime, but it was worrying that violent crime was increasing. What also needs to be taken into account is that many of the categories indicating decreases were crimes where the victim might be strongly influenced not to report the incident due to risks of secondary trauma, inadequate victim support and lack of victim-friendly processes.

The cynicism and scepticism with which South Africans receive news of the
country’s crime statistics is echoed in most places around the world yet, like many other societies, we demand that they be published regularly and we are outraged when they are not. Perhaps the greatest value in recording and reporting on crime as accurately as possible lies in the potential of crime statistics to hone safety and security resource management and ensure that resource allocation responds to areas of greatest need for these services. This applies in terms of the number of a particular type of crime (e.g. bank robberies) as well as where and when such crimes typically occur. Such information is an obvious and useful management tool and simultaneously informs crime prevention strategies.

Crime statistics, however, are typically regarded as a reflection of only a part of the crime that occurs in any society, and under-reporting of - in particular - certain types of crimes is widely assumed. Regardless, crime statistics help us to understand the patterns of crime in our environment. It is for instance important to know that the category “Contact crime” accounts for 33.3% of South Africa’s recorded crimes (SAPS 2007). Six of the eight contact crimes, namely rape, attempted murder, assault with grievous bodily harm, common assault, indecent assault and common robbery, decreased by between –8.7% and –3.0% in 2006/2007. Contact crime includes the types of crime in which physical contact, mostly of a violent nature, necessarily occurs between the victim and the offender. As a proportion of all crime in the country, 33.3% is high. This is the category that tends to characterise public perception about crime in South Africa; it is the category that generates the greatest fear of crime and feeds into the insecurity that best defines South Africans’ collective state of mind about crime – and thus arguably their responses to it.

CRIME STATISTICS AND VICTIM SURVEYS (INTERPRETATIONS AND IMPACT)

In contrast to the 2003/2004 crime statistics, those for 2006/2007 revealed a significant downward trend in contact crimes. These statistics also showed that crimes heavily dependent on police action increased significantly thereby reaffirming that combating crime is a priority action. They are also an indication that SAPS and other policing agencies are doing their utmost to combat these crimes, which are also strong generators of other offences. Drug-related crime, illegal possession of firearms and ammunition, and driving under the influence of alcohol or drugs increased by 8.2%, 5.6% and 14.3% respectively (SAPS 2007).

The category “Murder statistics” is believed to be most accurate as murders are recorded not only by SAPS, but also by the health and mortuary
systems. The 2006/2007 murder rate increased to 40.5 as compared to the previous years. SAPS 2006/2007 crime statistics indicated that a docket analysis showed that in 81.5% of murder cases, the perpetrators were known by their victims, and in 20.1% of cases, the perpetrators were relatives, friends or acquaintances of the victims (SAPS 2007). Thus, the murder of strangers, often a by-product of other crime such as robbery, remains the smallest part of this category. According to mortuary studies, a significant proportion of murders occurs between young men and is associated with drinking. Alcohol both makes the offender more aggressive and the victim more vulnerable (MRC 2006).

Interpersonal crimes, such as domestic violence, are believed to be less well reported and sexual offences the least well reported. In this last case, a combination of reasons is given: women have little confidence that their complaint will be properly addressed or result in a conviction, and they experience resistance from service providers who display negative attitudes towards them and they doubt they will be believed. Reporting often compounds the trauma and involves an invasive and unpleasant investigation. Sometimes the victim is unaware that what has occurred is an offence and does not know that she has a right to assistance (Burton et al. 2003; Eastern Cape Customer Satisfaction Survey 2005; Jewkes & Abrahams 2000; Rasool et al. 2002). The high number of contact crimes occurs in social environments, which are often outside the reach of policing. Thus, in order to demystify the perception that when statistics are high, the police are not doing their job we need to understand what else causes and can prevent crime and what will make South Africa safe.

The assumption of low reporting of rape provides the basis for a new and potentially dangerous analysis of rape statistics. For a number of years now SAPS has reported an increase in reported rape yet has claimed that this does not indicate an increase in rape, but rather an increase in accessibility and an improvement in service delivery to victims of rape. There are no data to support this claim. While it is arguably true that the CJS has made strides in improving its response to rape, conviction rates are still very low and most women are still exposed to secondary trauma once they report a rape (Camerer 1996; CSIR 2004; Fedler, Motara & Webster 2000). To attribute the increase in reported rape to anything other than an increase in accessibility and an improvement in service delivery to victims of rape.

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2 EU/SAPS Survey conducted by the CSIR Crime Prevention Centre (CCPC) and Development Research Africa (DRA), unpublished.

3 Victim Empowerment (VE) Sector Glossary 2005: Feelings, personal distress and symptoms often experienced by helpers working with people suffering from traumatic stress. Secondary traumatisation is also alternately referred to as vicarious traumatisation and compassion fatigue.
than an increase in the incidence of rape is to confound logic. A favourable assumption is that the increase in the incidence of rape is accompanied by an improvement in the capture of rape statistics. The slight decrease in recorded rapes in 2006/2007 can similarly be attributed to a range of factors, not least a perception (since the much publicised case against Jacob Zuma) that the victim will be re-victimised on the stand. Also, if the victim has a history of previous sexual or emotional abuse, this will make the case against the accused harder to prosecute successfully.

The other common statement by SAPS regarding (particularly) rape and child abuse is that these crimes typically occur behind closed doors within families, where the offender is known to the victim. As a result the police have no access to prevention mechanisms, cannot reduce rape, cannot dramatically increase reporting rates, and are often hampered in their investigation of the case. They say that the victim is often dependant on the offender for subsistence and is thus unlikely to report the incident, or having reported it, is more likely to withdraw cooperation before the case is properly investigated or prosecuted.

Vetten (2005), an acknowledged expert on and researcher into gender-based violence and CJS responses thereto, has said: “These self-congratulatory claims, offered without so much as a smidgen of supporting evidence, certainly demonstrate chutzpah on the part of the police. At the same time they point to the threadbare nature of our crime figures, as well as the need for critical public engagement with these statistics (p. ??).”

Studies have revealed that in almost 67% of cases at least some of the variables may be present and the assumptions therefore true (CSIR 2003; Rasool et al. 2002; Snyman, Mistry & Van Zyl 2001). The scale of the problem in South Africa, however, is so big that even if only 33% of cases involve rape outside of the home or in the public domain, with offenders unknown to the victim, this figure represents more than 15 000 reported rapes annually where police action is not hampered by social restraints (Hirschowitz, Worku & Orkin 2000; Jewkes & Abrahams 2000; Rasool et al. 2002).

Vetten (2005) has made the point that the lack of believable statistics, not only from SAPS, but even more importantly perhaps from the National Prosecuting Authority (NPA), regarding the number of cases prosecuted and convicted, “demonstrates that the measure of women’s right to justice counts not at all” (p. ??).

Morna (2004) reported that:

The Ministry of Justice and Constitutional Development has established
52 Special Offences Courts, which achieve a 64% conviction rate compared to the 7% conviction rate for sexual offences in other courts. While there has been a general decline in other crime, levels of rape continue to increase. During the 10 years of democracy the number of reported cases of rape rose by 17.8% to its 2003/2004 level of 52 733 cases. The Law Reform Commission estimates that there are 1.7 million cases of rape a year, meaning that the vast majority of cases are not reported. Many cases are also withdrawn, often because of societal pressure. Police statistics on child abuse (6 504 cases in 2003/2004) have been disputed by those working in the field, who say they alone have handled more cases. (p. ??)

According to Minister Ngakula (Justice Crime Prevention and Security Cluster 2005):

Between March 2004 and March 2005, there were on average 63 Specialised Sexual Offences Courts in session, including dedicated courts that alternate bi-monthly. Some of these courts are operating on an additional basis. In March 2005, there were 70 courts in session. Between April 2004 and February 2005, 5 771 cases were finalised. The average number of cases finalised per court remained the same as the previous financial year. However, the conviction rate increased from 61% to 63%. In April 2005 these specialised courts achieved a conviction rate of 70%. (p. ??)

Whichever way we look at it, these figures represent an unacceptable rate of sexual offences and are a sad reflection of the status of women and children in our society.

Motor vehicle hijacking and motor vehicle theft are typically well reported (it is assumed because of insurance claims), while property theft of smaller items is believed to go largely unreported (CSIR 2005c; Burton et al. 2003). In 2006/2007, car hijackings showed a steady increase since 2004/2005 thereby confirming the perception that not only are people no longer safe in their own homes, but they face the constant threat of being hijacked (Acta Criminologica 2007).

South Africa has recorded less property related theft in this category than many International Criminal Police Organization (INTERPOL) member countries. A slow but significant decrease of property theft of smaller items may be positively attributed to more focused and increased conventional policing methods as well as ever more sophisticated target hardening through improved security measures protecting against theft from buildings.
and motor vehicles. These assumptions must however be mitigated with the National Victims of Crime Survey (NVCS) (Burton et al. 2003) reports that only 36% of the victims said that they report such theft to the police. This low reporting rate is attributed to several scenarios; people without insurance would not bother reporting, those in the rural areas have problems of access and some use the traditional authorities to resolve the matter. Positive outcomes of reporting are not very common.

The decrease recorded in car theft, however, is more likely to be reliable. Estimates are that 97% of victims notify the police when their vehicles are stolen and this is corroborated with data released by South Africa’s major motor insurance and security companies showing a sharp decrease in car theft related insurance claims (Burton et al. 2003; Louw & Du Plessis 2004).

According to the SAPS website (http://www.saps.gov.za), theft accounts for 19.0% of all South Africa’s recorded serious crime. With 415 163 registered cases during 2006/2007, the single largest category of crime among the 27 categories featured is “All theft not mentioned elsewhere”. Cell phone theft is hidden somewhere in this category and is thought to be the major contributor to it. Cell phone theft has a high level of nuisance attached to it as well as being a contributor to feelings of lack of safety. Recent moves towards an aggressive and integrated approach to reducing cell phone theft (BAC 2005) will hopefully eventually encourage disaggregating of cell phone theft statistics as a precursor to measuring the impact of implementation of the project.

The 1999 INTERPOL Report revealed that the high percentage of theft is not peculiar to South Africa. Other countries also have high percentages of theft; Denmark (54%), Australia (46%), France (41%), Germany (30%), Finland (29.8%), Canada (30.3%) and Norway (29.8%). What differentiates South Africa is once again the scale of the problem, where local percentages are worked out from a very high total number of crimes recorded.

High crime statistics do not necessarily reflect poor police performance; neither therefore can a drop in crime be seen as being the direct result of improved police performance. Crime is a much more complex phenomenon and demands a more complex analysis and response. Police performance should be measured according to different indicators; is the law enforced, are cases properly recorded and investigated, are perpetrators arrested and properly prosecuted; do police investigations result in convictions and appropriate sentencing? The one crime category that may provide an insight into police performance, at least in as far as their proactive policing is concerned, is crimes heavily dependent on police action for detection. In this
Case an increase of recorded crime may be seen as improved performance by the police as this category includes crimes such as illegal possession of firearms, drug related crime (use and possession), and driving under the influence of alcohol or drugs. Members of the public do not generally report these types of crime to the police. They are discovered mainly through police action such as roadblocks and searches (SAPS 2005). Research conducted in the Central Karoo and Gauteng (CSIR 2005a, 2005c) has found that between 95 and 99% of all violent crimes is drug or alcohol related; either the victim or the offender or both are under the influence of a substance at the time of the offence.

Thus, this analysis is not to dispute the value of accurate crime statistics – properly interpreted, they offer us valuable insight into the kinds of crime that are committed, the characteristics that make some people more vulnerable than others and some people more likely to offend than others. They tell us where crimes are most likely to be committed and when – all information essential to effective crime prevention.

For a full understanding of crime in South Africa today, we must combine an analysis of crime statistics with information gathered in other ways. We tend to be less demanding of the Department of Justice and Constitutional Development (DoJ & CD), as well as the Department of Correctional Services (DoCS) to provide accurate statistics. A search for official statistics regarding for instance, prosecution and conviction rates leaves us decidedly under informed. The NPA website (http://www.npa.gov.za) offers generic figures for the years 2000 and 2001, while the Sexual Offences and Community Affairs (SOCA) website (Need web address) has a statistics heading, but the contents are “under construction”. We would not tolerate this from SAPS, yet there is hardly a murmur of complaint against the NPA. Accurate court records would arguably be even more useful than SAPS figures as they would provide evidence of the successfulness or not of CJS responses to crime, rather than just an indication of how many crimes were reported. Similarly it would be useful to know accurate and disaggregated recidivism figures for the DoCS, since the department claims to be focused on correction rather than on punishment. Once again we might find these statistics useful in assessing the contribution made by the DoCS to a safer South Africa.

Victim surveys are typically believed to add value and provide a much more meaningful understanding of the way that crime is experienced in a society. The first NVCS in South Africa was conducted by Statistics SA (Stats SA) in 1998 and a follow-up survey was conducted by the Institute for Security Studies (ISS) in 2003. Victim surveys have greatest value when they are
regularly conducted and can therefore be used as real comparators in assessing the information provided by crime statistics (Burton et al. 2003).

OTHER RESEARCH – CRIME PREVENTION STRATEGIES AND CAUSES OF CRIME

Other crime prevention related research is equally valuable in filling in some of the gaps. Whilst strategies and policies are often set at national level, crime is experienced – and should arguably therefore be addressed – at local level. Community based crime prevention strategies are based on local perceptions and experiences of insecurity and provide valuable windows into the social circumstances in which crime thrives (CSIR 2005d).

Research constantly highlights a need for the police to improve communication in communities regarding the process to be followed when reporting cases (CSIR 2007b).

Local Crime Prevention Safety audits, while for the most part relatively small and often less than purely scientific studies, offer a comparison of results of studies of one such community and another and this often renders more similarities than differences (CSIR 2005a, 2005c). The safety and security needs and priorities of communities across South Africa are surprisingly similar; less surprisingly they respond to common kinds of crime and violence.

Substantial effort is expended on research that aims to define the causes of crime. In a society where victimisation is as significant as in ours, individual responses to crime are subjective, emotional and fuelled by regular discussion and stories. In broad terms, crime proliferates where there is a combination of societal problems such as poverty and inequality between the rich and poor, unemployment, a history of violence and deep-rooted patriarchy. Easy access to firearms/guns, high levels of substance abuse and limited access to essential services all feed into creating a society that is particularly vulnerable to both victimisation and a high incidence of offenders (Rasool et al. 2002).

Demographic information, gathered for purposes other than crime or crime prevention related provides a less obvious but equally important window on crime in South Africa. There is a great variation of recorded crime rates by provinces. The socio-economic and other demographic features vary considerably from province to province and with this variance come a change in the experience of crime. Gauteng, Western Cape and KwaZulu-Natal are typically the centres of economic activity and have the most intense population and urbanisation levels, exacerbated by high numbers of
migrants (CSIR 2005c; Stats SA 2004). Crime profiles of these provinces reflect these demographics, while other less populated, poorer provinces suffer high levels of contact crimes related to the lack of opportunities and higher proportion of rural communities (CSIR 2005c; Rasool et al. 2002).

These formal and research based approaches to understanding crime, violence and to developing appropriate responses are sometimes supported but more often than not confused by anecdotal and subjective reporting of the crime situation in South Africa:

Public perceptions of crime are influenced by both primary and secondary factors. Primary factors include first hand experiences of crime that an individual or their family or friends may have had. Secondary factors, which often have a wider impact, include media reports, other documentary information about the crime situation, and generally word of mouth. (Burton et al. 2003, p. 41)

MEDIA, RUMOUR AND ANECDOTE (INFORMING PUBLIC PERCEPTIONS AND FUELLING FEARS ABOUT CRIME AND VIOLENCE)
When the media play down certain crimes or highlight and sensationalise others, a normalisation of such responses occurs (Holtmann & Eloff 2005). The reporting approach currently used by most national radio stations and newspapers to report on crime “feeds a general fear of crime4 and a perception of increased vulnerability” (Maxfield 1984, p. 3). This was most apparent in the Index of African Governance (Mo Ibrahim Foundation 2007), which ranked South Africa as the third most dangerous country after “war zone” countries Sudan and Burundi, thus confirming that South Africans have been justified in complaining about crime for years.

According to Emmett and Butchart (2000), this normalisation of violence as a part of daily life in South Africa has once again contributed to a general unease and sense of insecurity. Holtmann and Eloff (2005) have stated that, “whilst arguments rage over the necessity and/or the right of the media to present such images, it cannot be argued that such reporting contributes in any positive way to the reduction of vulnerability” (p. ??). Occasionally the media do assist with crime prevention and awareness. For example, reports on where or when crimes such as rapes, smash and grab thefts or hijacking occur can assist in making people more alert and vigilant. At times the media usefully encourage members of the public to report crimes to the police or to assist with the identification or apprehension of a suspect.

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4 In general, the concept “fear of crime” has been used to refer to perceived threats to personal safety rather than threats to property or the more generalised perception of risk.
The media combine with one-on-one rumour and anecdote to fuel fears and anger about crime and violence. Discussion about crime is as common an occurrence as is crime itself. However uninformed or unscientific such discussion may be, it often has serious consequences, both in terms of fear and in formal or informal response. The mythology that has developed about the rape of babies and virgin girls is a good example; while it is widely accepted that men rape virgins because they believe it cures or protects them from HIV/AIDS, there is little or no evidence that this is true (Jewkes 2002). Significant and costly research has been done to counter this myth, yet it proliferates, aptly demonstrating the power of interpersonal communication in the absence of verified fact. This is particularly problematic where there is a low level of trust in or respect for the CJS. It is widely believed that the CJS should, but does not, act as a deterrent to those contemplating crime. This leads communities and individuals to believe that they must protect themselves, with potentially damaging results.

The most obvious result of low trust in the CJS is the burgeoning private security industry which has become one of the country’s largest private employers. There are more than three private security guards for every uniformed police officer. The industry has access to 80 000 vehicles compared to the 37 000 of the SAPS.

Over the past decade, state spending on the criminal justice system (i.e. the department of safety and security, justice, and correctional services) as a proportion of the national budget has more than doubled from less than 5% in 1987/88 to almost 10% today (SAIRR 2007). This is manifested particularly in middle class urban and business areas where there has been a proliferation of gated communities, road closures, armed guards, armed response units, surveillance installations and domestic security systems including target hardening such as barbed wire or electric fencing, burglar bars and high walls. This “fortress mentality” has the effect of deepening the divide between the haves and the have-nots in terms of safety in South Africa, in many instances displacing crime to poorer areas than cannot afford target hardening investments. A link can be made between the way in which safety has become a privilege of the rich and the vigilante action most often witnessed in poorer areas.

There is evidence that many such resource based interventions are less successful than believed by those who invest in them. The assumption of those who can afford a particular kind of home that they will be safest if locked in with others about whom they know nothing except that they can afford a similar home is unproven. What is clear is that it provides peace
of mind to these people, as security cluster living has become aspirational – and consumers are prepared to pay a considerable premium for what is promoted as safe living.

**INSTITUTIONAL RESPONSES TO CRIME IN SOUTH AFRICA**

The period between 1994 and 2005 generated a wide and comprehensive range of new and adapted policies relating to safety, security and crime prevention. The South African Government adopted the NCPS in 1996 in an attempt to articulate a more homogeneous approach to dealing with diverse communities, while for the first time disaggregating the approach to different crime types. This meant that there was commitment to an equitable response to the crime problems of different communities whilst at the same time dealing differently with for instance rape and property theft. This policy shift was an attempt to deal simultaneously with the need to redress the wrongs of previously disadvantaged communities and the need to transform from law and order strategies to a service delivery and proactive orientation in line with international trends in policing. Although the Government adopted the NCPS in 1996, it has never been implemented in any recognisable way. Bits of it have surfaced from time to time and some programmes are still active today. It underpinned the development of the White Paper on Safety and Security, adopted by Cabinet in September 1998, but implementation of this policy has been even more patchy – in fact in some instances, such as the capacity, functions and organisational structure outlined for the National Secretariat for Safety and Security in the White Paper, subsequent actions have conflicted directly with the recommendations of the White Paper. The National Secretariat for Safety and Security is no more than a pale shadow of the institution envisaged in the White Paper – or indeed in the Constitution of South Africa.

The NCPS promotes a victim-centred restorative justice approach in which the CJS performs the tasks of removing from society those who infringe on the rights of others and violate the laws of the land with the purpose of correcting their behaviour and restoring them to society as constructive and contributing citizens. While the CJS grapples with this transformation, NGOs such as the South African National Institute for Crime Prevention and the Reintegration of Offenders (NICRO) have contributed to a greater understanding of such approaches. NICRO manages diversion programmes for young offenders, serving 10 450 young people per year. The organisation has offices in all nine provinces, many service points, and over 40 community victim support centres. Since 1996 more than 400

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5 Diversion programmes aim to channel young offenders away from the CJS into activities that make them accountable for their actions.
Community-based victim support centres have been established nationwide, contributing to a much more inclusive understanding of the need articulated in the NCPS to balance the rights of offender and victim (DoSD 2005).

The PROVIDE NAME IN FULL (IJS) concept is in line with the NCPS’ vision and recognises that where the individual departments work in isolation, the result is a cycle of blame and poor performance of the CJS. Thus, the police blame the courts for their inability to process arrestees and the courts blame the police for poor investigation of cases and for conducting crime combating operations that result in an overload of cases. The PROVIDE NAME IN FULL (DCS) in turn blames the courts for overcrowding as a result of delays to court proceedings (CSIR 2004).

The Department of Social Development (DoSD) is responsible for social aspects within crime prevention, with its focus on vulnerable groups and poverty alleviation, and diversion of young offenders and probation. The DoSD is also the lead department in the Victim Empowerment Programme (VEP) as envisaged in the NCPS. This is one of the few NCPS programmes that have delivered sustained integrated and coordinated delivery and partnership with civil society through the VEP Management Team (DoSD 2004, 2005).

There is undoubtedly a significant link between poverty and crime. Research suggests that poverty increases vulnerability to crime and the impact of crime on victims, who often have less access to support and assistance (Holtmann & Du Plessis 2004). A further link is acknowledged; a young man engaging with crime for the first time very often commits himself to a life of subsistence crime and poverty. Relatively few criminals are very successful; those who commit street crimes and household thefts are unlikely to achieve material wealth. Thus the role of the economic sector is important, because work skills and mainstream opportunities are essential if young men are to be encouraged to make better life choices.

Local Government responsibility for safety is articulated in the White Paper on Safety and Security and the White Paper on Local Government, but in neither case is the role clearly formulated. While responsibility for policy and strategy governing crime prevention may appropriately remain the ambit of National Government, crime is experienced at local level and must therefore be addressed at local level. Many local authorities include crime prevention in their Integrated Development Plans (IDPs) and this mainstreaming of safety issues is encouraged by SAPS and other role players. Some of the larger metros have also established Municipal Police Services with the intention of expanding local capacity to enforce laws and by-laws.
Community Safety Forums (CSFs) include local crime prevention partnerships formed to coordinate and integrate local crime prevention and safety interventions through Local Government. CSFs are based on the premise that increased cooperation and interaction amongst crime prevention stakeholders will improve the functioning of the CJS and the delivery of crime prevention projects (Tait & Usher 2002).

Considering how difficult it is to create a common platform for those involved in different aspects of community safety and crime prevention, the challenge inherent in requiring an informed and objective response from communities is almost overwhelming. It remains a key priority in making South Africa safer at local level for all.

Local environments are themselves made up of diverse elements. In most local authorities in South Africa there is a mix of relatively affluent (in some cases extremely affluent) neighbourhoods with lower income and very poor communities. The effect of this diversity is to splinter the commitment of citizens according to their specific – and very varied – needs for security. For instance the most affluent tend to invest in private security measures ranging from surveillance systems to guards to armed response. They favour high walls, electric fences, automated and managed access, exclusion zones such as “gated” or “boomed” communities. This is seen as crime prevention but is no more than displacement of crime, very often resulting in higher levels of victimisation in less resourced areas, with the ultimate result that crime is worst in the poorest neighbourhoods (Landman 2002). Poor people do not have access to security measures that require material or financial investment. They have to rely on natural resources and state services. In some cases this results in more creative approaches to crime prevention, but at times their responses veer towards vigilantism and revenge attacks (Landman 2002). The ideal is to create a common vision of a safe community for all – where there can be a combination of creativity, resources, technology and practical intervention that benefits the community as a whole rather than one section of it at the cost of another. This is not exclusive to crime prevention – in a society where the differential between rich and poor is as stark as it is in South Africa (Baden, Hassim & Meintjies 1999; Rasool et al 2003).

It would be extraordinary for such divisions to be absent. Despite the ongoing investment in transformation of our society, much remains to be done in terms of creating a common understanding of the connectivity between the well-being – and safety of each sector of our society on the well-being of others.
Working in the Central Karoo (CSIR 2005a) for instance, it was immediately obvious that whilst the poor sections of communities were visible and well represented at workshops aimed at developing local crime prevention strategies, the business communities in these towns were hardly if at all represented, despite being invited to participate. Few opportunities for jobs exist in these communities and the wealth and potential wealth typically rests in the hands of a relatively small group of business people, many of whom have come to the area from the outside because they recognise the economic opportunity. Tourism is booming in such towns yet the benefit is felt only peripherally by locals who work in the menial jobs offered as a consequence of the growing tourist trade. Women are employed as cleaners, men as barmen, waiters or gardeners. Some construction work results from renovation and a growing investment in property in the town. These jobs do little to improve the social circumstances of local families – and if anything result in more neglect of children and further marginalisation of the poor. Alcohol abuse is rampant and the additional small wages earned are often squandered in unlicensed (or licensed) shebeens. The lack of engagement by business people in the crime prevention strategic process is assumed to be reflective of their lack of engagement in community life as a whole.

The towns, designed and developed a long time before there was any contemplation of racial integration in South Africa, offer a clear visual and social demarcation between rich and poor. Those with resources live along the only tarred roads in the area, with hotels, shops, schools and sports facilities. They know each other well, work together, support each other’s businesses and socialise together. The poor live slightly apart from the town in what is for most of the year effectively a dustbowl. They must walk a considerable distance to and from any available work and have no easy access to recreational facilities. Their relationship with local business people is at arm’s length and there is little cross-pollination.

Under the previous dispensation, different strategies were, quite normally within the circumstances of the policies of the time, applied to different sectors of such communities. Trying to unravel the expectations and norms that are the legacy of such discrimination makes the achievement of an integrated, shared vision approach to crime prevention and community safety even more difficult than it may otherwise have been.

**CIVIC RESPONSES TO CRIME IN SOUTH AFRICA**

In contrast to other African countries, in South Africa, the Government is not as reliant on chiefs for governance. In response to this chiefs have sought to improve their image by reminding people of their tradition and custom and
locating those opposed to the re-assertion of tradition with the anti-African movement (McIntosh 1990, cited in Palmary 2004).

The key judicial role of chiefs in South Africa relates to their main functions and sources of authority which lie in dealing with land distribution, particularly in the face of the increased demand for land. These roles are most important when considering the potential involvement of chiefs in crime prevention (McIntosh 1990, cited in Palmary 2004).

Crime is experienced subjectively and often very emotionally. It is known that crime makes people and whole communities feel powerless and out of control (Friedman 1998; DoSD 1998). The demands made on the Government – and in particular on the police – to improve safety at the local and community level are more often than not inappropriate and ill informed. For instance, there is a regular clamour for a “Zero Tolerance” or “Broken Windows” approach to neighbourhood crime and antisocial behaviour, yet there is no context for such a response in a developmental and under-resourced environment. Similarly, the death penalty is often demanded by a public seeking revenge or extreme deterrence, despite the national commitment to Human Rights and evidence that it does not work (Bartol 2002, cited in Holtmann & Eloff 2005). This subjective response to the depth and breadth of victimisation in South Africa is also reflected in calls for corporal punishment in schools and demands for a return to military discipline in the police (KZN MEC of Education 2000)[This must be corrected according to the corrected Reference].

COMMUNITY POLICE FORUMS

Community Police Forums (CPFs) are legislated structures responsible for, amongst others, establishing relations between the community and police, and making input into policing priorities. They are established in terms of the SAPS Act, Act No. 68 of 1995. Over the years their roles and functions have evolved and many CPFs are now central to local crime prevention initiatives. The representivity and usefulness of CPFs varies greatly from place to place.

Community policing has its core reference in the Constitution of the Republic of South Africa, Act No. 108 of 1996. Section 221(1) and (2) of the interim constitution directed that an Act of Parliament was to “provide for the establishment of community-police forums in respect of police stations” with the various functions thereof outlined. In reinforcing the constitutional prescripts on safety and security, in 1994 the then Minister of Safety and Security released a draft policy document entitled “Change”. In the document, greater emphasis on the democratic control of the SAPS, and community involvement in safety and security issues were key milestones. Gauteng announced that as part of the CPF initiative, the Department of
Community Safety and Liaison would spend more than R1.3 million that year, providing accredited training to 400 CPF members from 100 policing precincts throughout the province. CPFs, Community Safety Patrollers and Victim Support Workers were among the categories of volunteers who would be trained and recruited.

[A]LLIANCE FOR CRIME PREVENTION
In 2003, with support from the Open Society Foundation of South Africa (OSF-SA), the Alliance for Crime Prevention (ACP) was established, including key organisations engaged in crime prevention, research or capacity building work in the CJS. Membership is made up of the Centre for the Study of Violence and Reconciliation (CSVR), the CSIR, NICRO, the PROVIDE NAME IN FULL (UMAC), the University of Cape Town (UCT) Institute for Criminology, ISS, the PROVIDE NAME IN FULL (NC CPC), and the PROVIDE NAME IN FULL (CJCP).

CHiLD JUSTiCE ALLiANClE
The Child Justice Alliance (CJA) is an unconstituted network of organisations and individuals who are concerned with child justice issues in South Africa and in particular the content and implementation of the Child Justice Bill (49 of 2002) (CJB).

The CJA was formed in February 2001 largely in response to the release of the CJB in July 2000 by the South African Law Commission. The main purpose of the CJA is to create awareness around, and gather support for, the enactment of the CJB. The CJB is innovative in its interpretation and handling of children in conflict with the law and conforms to the principles of the United Nations Convention on the Rights of the Child. However, although the CJB came before Parliament in 2002, at the time of writing, it had not yet been enacted. Also during the Parliamentary process and debates over the years the CJB has been altered a number of times which has to some extent impacted negatively on its original essence. In response to this and the belated enactment of the CJB, the CJA – although not deviating from its original purpose – has subsequently committed itself to conducting research with respect to the enactment and implementation of the CJB (CSIR 2007a).

BUSINESS AGAINST CRiME
Business Against Crime (BAC) was initially established in 1996 as a short-term intervention in response to a request from then President Nelson Mandela for the business sector to assist with the fight against crime. BAC’s major focus has always been on strengthening the CJS, but BAC has also contributed to the development of Victim Support and School Safety.
programmes. BAC coordinates a wide range of sectoral forums including those representing the private security industry and the retail sector. BAC pioneered the use of closed circuit television (CCTV) in Cape Town and Johannesburg, an initiative that garnered extensive support from business communities.

OTHER PRIVATE SECTOR RESPONSES
Although it could be assumed from its name that BAC is a collective and inclusive sectoral response to crime, this is not true. There have been many other responses from within the private sector, such as large corporations engaging in community-based projects or crime prevention related sponsorships within their social responsibility programmes. Many such responses are more directly related to local crime prevention initiatives or specific interventions and programmes in the CJS, related to their own priorities or needs. For example, Vodacom has provided financial support (R5.8 million) to conduct research and formulate a strategy for “clamping down on women and child abuse. Vodacom’s support has seen the establishment of seven Sexual Offences Courts and four Thuthuzela Care Centres” (Vodacom 2004).

Others businesses have internal strategies or policies that impact on safety; for instance a petrol station owner in Beaufort West employs mainly women to work on the forecourt. He found that they were at great risk travelling to and from home to work night shifts, so he hired a taxi to transport the women to and from work.

The role of the private sector is often measured in terms of material donation, but in reality localised initiatives focusing on the safety of employees and their families are often the most appropriate and useful contribution that a company can make. South Africans are not getting value for their tax from the state-run CJS. Greater private sector involvement in South Africa’s CJS will make the country a safer place to live in. It will also be cost effective for both the consumer (who will be able to choose in a competitive market) and the state (which can contract out many of its criminal justice functions to the competitive sector) (SAIRR 2007).

CONCLUSION
UNDERSTANDING THE “CYCLE OF CRIME, VIOLENCE AND DISTRUST”
An interpretation of the inter-relationship between the elements and characteristics of the South African environment is encapsulated in the Cycle of Crime, Violence and Distrust (CSIR 2005b) (hereafter the cycle) shown in
Figure 1. This cycle is based on primary research findings and lessons learned during the development of, amongst others, the Local Crime Prevention Strategy (LCPS) (CSIR 2005a) for the Central Karoo and the Gauteng Safety Plan (GSP) (CSIR 2005c). An effective strategy to address crime must be based on an understanding of what is behind the cycle that characterises the life cycle of many South Africans. This strategy aims to identify entry points for planned interventions that will break the cycle and therefore reduce crime and increase peace and stability. The cycle predicates that the earlier the intervention in an individual's life cycle, the less the cost to society and the greater the return on investment. If the intervention is made after a child has progressed beyond the meridian line, then the money spent should be regarded as a cost rather than an investment.

The cycle explained

Everything in the first half of the cycle (right-hand side of Figure 1) deals with children and their vulnerability to victimisation of one kind or another. Once the child moves past the meridian line to the left-hand side of Figure 1, his/her risk profile shifts from vulnerability to anti-social and ultimately criminal behaviour – and a perpetuation of the cycle. In this cycle the likely perpetrator is a young male, while young women fall victim to ongoing abuse and risky sexual behaviour, either willingly, or without explicit consent, under the influence of alcohol, drugs, or non-consensual sex, i.e. rape. They perpetuate the cycle by becoming mothers at an early age with no plan or vision for their children, few or poor parenting skills, and no visible means of support or career opportunities (MRC 2002; Holtmann 2001).
In the centre of Figure 1, substance abuse, drug syndicates and illegal shebeens are identified as forces that drive the cycle. In many places in South Africa, these drivers are significantly impacted by the availability of guns/firearms. The proliferation of firearms contributes to a heightened fear of crime and also to much worse crime statistics, for instance, whereas the theft of a cell phone is a minor crime, the theft of a cell phone at gunpoint is a serious crime. Serious crime also has a much more significant impact on the CJS, requiring more capacity and resources in response, as well as resulting (where detected and a perpetrator convicted) in much longer prison sentences.

The cycle starts and ends with dysfunctional families: parents who have neither the skills nor the capacity to nurture their children or provide opportunities for them are thus incapable of raising them to become good parents themselves. The young men described in this cycle achieve adulthood with no experience of love or nurture, no self-esteem and most significantly, no hope for the future. While social control models promote the idea of external and enforced deterrents against anti-social and violent behaviour, research points to the need for inner and more immediate constraints: a sense of self and a relationship with family and community that would not allow an individual to contemplate committing a crime of violence against someone else. Inherent in this constraint is the notion of a better tomorrow, of inter-generational well-being that anticipates a safe and happy future for his children. A young man who has no experience of safety and happiness cannot be expected to conjure such a vision.

The inner part of Figure 1 also reflects an underlying cycle of crime and poverty. Employment opportunities are few, substance dependence is expensive (young people commit crimes to support their drug habits) and entry-level crime often commits a young person to a life of poverty and at worst a lifetime of serial prison sentences. Alcohol abuse contributes to the entrenchment of poverty.

Apart from the direct cycle of impact described above, other key consequences are an ever-deteriorating relationship between the police and communities, as a result of poor trust between them. Communities also believe that the police should “do something” about street children. Poor relations between the police and communities result in low levels of cooperation. This in itself has a negative impact on crime and law enforcement.

In South Africa today, people experience and are exposed to crimes of unspeakable violence. The CJS does of course have a key role to play in enforcing the law, as well as removing from society (and correcting) those
who make it dangerous for the rest of society to live their lives in accordance with the rights afforded them in the Constitution. The problem of crime, however, is never going to be solved by the CJS alone. It is a problem embedded deeply in South African society, in communities and in the country’s violent history. If South Africans want to live in a safe place, they need to urgently commit themselves to rebuilding South Africa from the core – by supporting families and investing in them so that they can raise children who will in turn be good parents.

THE THREE SPHERES CONVERGENCE CRIME PREVENTION MODEL

Figure 2: The Three Spheres Convergence Crime Prevention Model
Crime is the convergence of a willing offender, a vulnerable victim and an environment that enables the offence. All three spheres must be present for crime to occur.

- Where there is the will to offend and an enabling environment, but no potential victim, anti-social behaviour results.
- Where there is the will to offend and a vulnerable victim, but no enabling environment, there is threatening behaviour, bullying and harassment – but crime itself cannot occur.
- Where there is vulnerability and an enabling environment, but no willing offender, fear and perceptions of insecurity proliferate, but once again, no actual crime occurs.

Transformation model
If this convergence is to be transformed into peace and safety, the three converging spheres must be transformed. In defining this transformation, the Three Spheres Convergence Crime Prevention Model identifies the need for an inclusive range of role players who must work together to achieve
peace and safety. This model highlights the need for the establishment of sustainable multi-disciplinary partnership mobilised around a common vision as a precursor to effective crime prevention, and sustained safety for all. By examining the population of each sphere, role players and interventions can be identified that will reduce that sphere and consequently reduce the area of convergence. Crime is arguably a complex social problem and deserving of a complex solution or set of solutions. It is clear that there is a rich and diverse set of responses already in place in South Africa, yet crime appears to be a problem that will be around some time to come.

The NCPS and the policies and strategies that have followed its lead provide an enabling framework for a safe South Africa. What remains is a sustained, dedicated and well coordinated effort to ensure that mandates are met and role players are equipped to play their part. Implementation requires a combination of political will and administrative accountability. Crime prevention is not someone else’s role, it is everybody’s role.
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MURDER AND ROBBERY IN SOUTH AFRICA:
A TALE OF TWO TRENDS

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ABSTRACT
This chapter seeks to unpick the relationship between murder rates (which have declined substantially over the past 10 years) and robbery rates (which have grown substantially). It does this first by exploring what we know about murder rates in South Africa, by looking at the relationship between murder and a variety of socio-economic data. In relation to murder rates, the chapter shows that, however concerned South Africa’s policy makers are about the level of violence against women, the epidemic of lethal violence in South Africa is, to a very large extent, a male problem. Beyond this, however, it shows that present data do not unambiguously support other conclusions, including the notion that murder rates in the Coloured community are significantly higher than the national average; that murder rates in urban communities are significantly higher than those in rural communities; or that per capita murder rates are higher in station areas with low average household incomes. While the data do not provide a sufficiently robust foundation to reject these widely held assumptions about violent crime in South Africa, they also do not lend unequivocal support to them. Having looked at some of the standard socio-economic factors usually thought to be associated with criminality, the chapter looks at another factor which seems to suggest that murder rates at different police stations in South Africa seem to track variations in robbery rates. This analysis suggests that although murder rates have moved in precisely the opposite direction to robbery rates over the past decade, variations in robbery rates seem to account for variations in the murder rate, particularly in stations with large numbers of both murder and robbery. This does not mean that robbery rates explain murder rates, but that where robbery has grown fastest, the decline in murder rates has been reduced.

Key-words: murder, robbery, causes of crime

1 A draft of this paper was written while the author was working at the Institute for Security Studies.
INTRODUCTION
Since the peak of the crack epidemic in the early 1990s, levels of violent crime in the United States of America (US) have fallen dramatically, with the per capita murder rate, which had reached 9.8 per 100 000 in 1991 (Blumstein 2000), falling by 42% over the following 12 years (FBI 2004). Dramatic as this fall may seem, it conceals an intriguing story: most of the decline in the murder rate is accounted for by a decline in murders committed by and against young, black men in major urban centres and involving the use of a handgun. Other types of murders - of older people, women and White victims; that took place in rural areas; or that involved weapons other than handguns - also fell, but their per capita rates were virtually static in comparison to the precipitous decline in the first type of murder.

The decline in murders generally, therefore, was driven by a huge decline in a very precise category of killing. At the same time, however, the per capita robbery rate (a category that includes both the crimes called “common robbery” and “aggravated robbery”) declined by about 50% from a high of about 280 per 100 000. This parallel decline suggests that the fall in murders of young, black men in urban areas was also a decline in robbery-murders: the declining number of young Black men killed, reflected the fact that fewer were being held up at gunpoint. This, in turn, also reflects the maturation and decline of the crack market and the resulting decline in the crime and violence that develops around these markets. (For two complementary accounts of this, see Blumstein 2000 and Wintemute 2000.)

South Africa has also seen a large decline in murder over the past few years. The per capita murder rate has fallen by 36%, from nearly 67 per 100 000 to less than 43 per 100 000 between 1994/5 and 2003/4 (SAPS 2004). In contrast to the US, however, the decline in the murder rate has not been accompanied by a parallel decline in the robbery rate. In fact, the per capita rate of aggravated robbery rose by 32% between 1994/5 and 2003/4, from 219 to 288 per 100 000. The common robbery rate rose even faster: by 145% from 84 to 206 per 100 000.

Given the divergent trends, it seems unlikely that the decline in South Africa’s murder rate has the same causes as the decline in the murder rate in the US. Unlikely, that is, but not impossible.

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2 It will be shown later that the figures are not entirely uncontroversial.
It might be the case, for instance, that the rise in the robbery rate reflects either or both the increasing reporting rate and/or the more accurate and comprehensive recording of statistics. It is possible, in other words, that the apparent rise in common and aggravated robbery does not reflect a rise in the underlying number of incidents, but only in the number being recorded. If this is so, there might be no reason to expect murders to increase in parallel since their reporting rate would already have been high.

This explanation, however, seems implausible since both the changes have been both too fast and have lasted too long to be readily explained by an improvement in reporting rates. In any event, 17 police stations, all large and urban, accounted for fully 50% of the total increase in the number of aggravated robbery cases recorded by the South African Police Service (SAPS) between 2000/1 and 2003/4.\(^3\) Since these were not previously under-serviced stations in deep rural areas, the increased number of cases cannot be attributed to the widening of the SAPS footprint. It is unclear, moreover, why increased reporting rates should be confined to so tight a geographic area. Finally, there was evidence in the 2003 National Victims of Crimes Survey that the reporting rate for robbery actually fell between 1998 and 2003 (Burton et al. 2004). It seems unlikely, therefore, that the sustained increase in the robbery rate (common and aggravated) is primarily a reporting phenomenon.

Another reason why the increasing per capita rate of robbery might not lead to a similar increase in the murder rate is that even if robberies were increasing, it is conceivable that changes in the character of robberies might have driven down the average lethality of each incident. If for some reason fewer people are killed or injured during the average robbery today than was the case a decade ago, it might be a possible explanation as to why the murder rate would not be dragged upwards even as the robbery rate rose.

This possibility cannot be dismissed entirely. Nevertheless, it is hard to see how a 32% rise in the aggravated robbery rate that coincides with a 36% fall in the murder rate could be accounted for in this way. It would suggest, after all, that the average aggravated robbery in 2003/4 was about 50% less lethal than the average aggravated robbery in 1994/5.\(^4\) It is submitted that no conceivable change in technique could, by itself, account for so large a drop.

\(^3\)The stations, in order of the increased number of robberies, were Hillbrow, Umlazi, Sunnyside, Durban Central Point, Park Road, Tembisa, Pretoria Central, Mitchells Plain, Rustenburg, Booyens, Empangeni, Mamelodi, Honeydew, Douglasdale, Linden and Pretoria West.

\(^4\)This is a back-of-the-envelop calculation premised on the fact that there were nearly 26 000 murders and nearly 85 000 aggravated robberies in 1994/5, while there were nearly 20 000 murders in 2003/04 despite the nearly 134 000 aggravated robberies.
It is likely, therefore, that the declining trend in the murder rate is a result of factors affecting murders that are not robbery related, and that this trend has overwhelmed whatever may have been happening with respect to the robbery rate and the average lethality of robberies in South Africa. Thus, in South Africa, trends in the murder rate can only be partly explained by trends in the robbery rate. However, what is surprising is that these trends are diametrically opposed. This poses important questions about the profile of South African murders, and the answers might give an explanation for the drop in the murder rate and what might be done to help continue the trend.

This chapter explores some of the current data on murder and robbery in an attempt to develop an answer to the question: “What drives South Africa’s murder rate?” In seeking to answer this question, this chapter explores the risk differentials faced by members of different communities, for instance, the differentials between the murder rates of men and women, between provinces and between different geographically defined communities. This is unsurprising, particularly because it has been an axiom of the debate over criminal justice policy in South Africa that the poor and the marginalised confront higher levels of crime than do the rich. However, a closer look at station-level data suggests that there must be more to it since there is little correlation between average household income levels and murder rates. Nor, indeed, is the relationship between urbanisation levels and murder rates as clear cut as might be expected. These findings suggest, in turn, that there is a need for far more data about various socio-economic factors and their relationship to murder rates. These issues will be explored in more detail below, but first it is necessary to ask a more basic question: “How much murder is there?”

**HOW MUCH MURDER IS THERE?**

SAPS has reported that the murder rate in South Africa has fallen from 66.9 per 100 000 in 1994/5 to 42.7 in 2003/4. These figures are not the only estimate of the level of homicide in the country, however; the Medical Research Council (MRC) has another estimate, one that is significantly higher than the SAPS one.

The following chart (see Figure 1) compares the MRC and SAPS estimates for the murder rates in 2000/1 in South Africa's provinces (SAPS 2004; Bradshaw et al. 2004). As is obvious, some of the estimates differ considerably: the MRC’s estimate for Limpopo is nearly three times the SAPS one, while in Mpumalanga and North West, the MRC’s figures exceed the SAPS’s by 97% and 62% respectively. The net effect is that the MRC’s estimate for South Africa as a whole is nearly 19% higher than the SAPS's.⁵

⁵ It should be noted that the precise dates of the two estimates differ. For the MRC it is July 2000 to June 2001. The
Differences of this magnitude demand careful scrutiny and require some assessment as to which is more reliable.

One possibility that can be quickly dismissed is that these differences spring from differences in the denominator, i.e. that the MRC and SAPS use different population figures for the provinces and the country, and that this accounts for the different per capita rates. In fact, the MRC uses higher figures for its population estimates than does SAPS and, in fact, the difference in the absolute number of murders estimated by the MRC and reported by SAPS is larger than the differences between the per capita rates. Indeed, in absolute terms, the MRC’s estimate is that nearly 5 000 murders occurred in South Africa in 2000/01 which were not reflected in the SAPS’s figures. These included nearly 1 900 in Gauteng, nearly 1 500 in Limpopo, and nearly 1 000 in Mpumalanga. Only in the Northern Cape and the Eastern Cape are the MRC’s estimates and the SAPS’s reports reasonably close.

SAPS numbers, on the other hand, are for April 2000 to March 2001. These differences alone, it is submitted, cannot account for the wide divergence in the estimated homicide rates. It seems implausible that the murders included in the MRC’s timeframe, but excluded in the SAPS’s timeframe (i.e. April, May and June 2001) would be so far in excess of the murders in the SAPS’s period, but not in the MRC’s (April, May and June 2000) as to account for the divergence. The improbability of this is heightened by the fact that SAPS reported a decline in the murder rate in 2001/2, a period which would have included the months included in the MRC’s estimate, but excluded from that of the SAPS.
One explanation of the differences is that SAPS systematically understates the murder rates it undercounts the number of murders. This thesis could be made on a number of different grounds. It might be argued, for instance, that the undercounting of murders is deliberate, a fraud perpetrated on the public in order to delude them into believing themselves to be safer than they truly are. Another approach might be to say that the combination of poor systems, poor infrastructure and poor training means that murders are either not reported to SAPS (because of the difficulty of doing so), or are misrecorded in the docket management system. Consequently, non-natural deaths, the causes of which are unknown at the time of being reported to SAPS, are systematically recorded as something other than murder. This argument also makes the case that when evidence emerges that a particular death was the result of a homicide, the new information is not entered into the system as is supposed to occur. This theory cannot be dismissed as inconceivable, especially after the finding, reported in a separate MRC study into intimate femicide, that:

In 6.9% of probable homicides identified at mortuaries there was no police case number. This conclusion was drawn after many months of exhaustive searching. There was thus no evidence of a police investigation. Attempts to find these numbers revealed that victims of homicide could not be traced via their names or ID numbers in the SAPS computerised database, even when these are known. Reference?

If any of these infrastructural, training or procedural issues were the key to the problem, it might explain the apparent undercounting of murders in Limpopo. Even so, the extent of the undercount - 23% of the bodies the MRC reported to have been murdered appear to have been missed by SAPS - would be surprising. More puzzling, however, would be the fact that the police in Gauteng - an urbanised province with a relatively accessible infrastructure - appear to undercount murdered bodies, but that no apparent
undercount occurs in the Eastern Cape, where access to policing is
undeniably more limited.\textsuperscript{6}

It is, of course, impossible to assert that none of these problems exists.
Nevertheless, a plausible alternative possibility is that there is a disparity
between the MRC’s estimates and the SAPS’s figures because the former are
an overestimate.

There are two potential problems with the MRC’s estimation technique. The
first relates to its estimate of the number of non-natural deaths and the second
relates to their breakdown of those deaths between the various categories that
fall within the broader definition of a non-natural death. Both are important
since the MRC’s method was first to estimate the number of non-natural
deaths and then to estimate the number of murders within that category.

Consider first the issue of how the MRC estimated the number of non-
natural deaths in South Africa in 2000/01. According to Bradshaw et al.
(2003), this involved obtaining an estimate of the proportion of all deaths
that resulted from non-natural causes in the total number of deaths and then
applying this to the number of fatalities that were believed to have occurred.
(This latter figure was itself an estimate based on an Actuarial Society of
South Africa model.) Thus, if either (or both) the proportion of deaths that
were non-natural, or the actual number of fatalities was over-estimated, so
too would be the number of non-natural deaths.

While this chapter has nothing whatever to say in relation to the estimate
of the total number of deaths, it does appear that the proportion of all
deaths attributed to non-natural causes (estimated at 12\%) may have
been greater than the true figure.\textsuperscript{7} There are two reasons for this. First,
the estimate was based on a sample of all death certificates reviewed by
Statistics South Africa (StatsSA) for the period 1997-2001. Over that period,
however, the proportion of deaths attributable to non-natural causes was
falling very quickly: having started the period at nearly 16\% of the total,
it had fallen to under 9\% by 2001. In the StatsSA sample for 2000, it
accounted for only about 10\% of all deaths. The application of the average
over the period (i.e. the 12\% used by Bradshaw et al. 2004), therefore,
might have overestimated the number of non-natural deaths by as much
as 20\%, implying that the nearly 69 000 non-natural deaths predicted in

\textsuperscript{6}Pelser (2000) reported, for instance, that a survey conducted in rural areas suggests that nearly two-thirds of all
respondents either never saw a police officer or saw one less than once a month.

\textsuperscript{7}The comments made on the possible over-estimation of the proportion of non-natural deaths are based on a
conversation with D Bradshaw of the MRC, and one of the authors of both papers referred to here. Her forthrightness
about the limitations of the estimation are gratefully appreciated (D Bradshaw, personal communication).
Bradshaw et al. (2004) may have been closer to 58 000. That alone may account for the 5 000 additional murders that the MRC estimated over the number reported by SAPS, since the MRC used the National Injury Mortality Surveillance System (NIMSS) assessment of the breakdown of all non-natural deaths as reported in Burrows et al. (2001) to determine the breakdown of these deaths (see Bradshaw et al. 2004). Since NIMSS found that 45% of all non-natural deaths were homicides, the reduction of non-natural deaths from 69 000 to 58 000 would account for the approximately 5 000 “missing” bodies.

A second reason to question the MRC’s estimate, however, is precisely the use of the NIMSS breakdown of non-natural deaths. The NIMSS data, for all the value they offer, are not nationally representative. This is simply because the mortuaries involved in NIMSS tend to be in major urban centres. Using the NIMSS findings to project the make-up of all non-natural deaths in South Africa in any given year amounts, in other words, to using the pattern of non-natural deaths in Johannesburg and Cape Town to predict the pattern in Limpopo. This is partly justified by Bradshaw et al. (2004) on the basis that the NIMSS findings are not all that different from those at two rural sites at which demographic data, including the causes of death, are being collected. It is submitted, however, that the use of these sites - one in KwaZulu-Natal and the other on the Mpumalanga/Limpopo border - to validate the deployment of the NIMSS findings does not provide sufficient evidence that the very urban-centric NIMSS findings should be extrapolated to the national picture. It is this approach, however, together with the use of an assumed 12% of all deaths being the result of non-natural causes, that explains why the MRC’s estimated number of murders in Limpopo was nearly three times higher than the numbers reported by SAPS.

The upshot of all this is that the MRC’s figures cannot be reliably used to refute the numbers presented by SAPS. It is, therefore, on the latter which the rest of this chapter relies.

THE DISTRIBUTION OF MURDER IN SOUTH AFRICA

In relation to those countries for which reliable statistics exist, South Africa has extremely high per capita rates for murder and most other violent crimes.⁸ This is so even after the most recent declines. It is not true, however, that everyone is uniformly likely to be murdered. In fact, there are important differences based on demographic and socio-economic factors, as a look at the difference between male and female homicide rates makes clear.

⁸ For an account of the gaps and anomalies in the available statistics, see Altbeker (2005).
MALE AND FEMALE HOMICIDE RATES

Consider, for instance, the NIMSS findings for 2001 (Matzopoulos 2002). In the sample of nearly 11 200 homicides arriving at 32 mortuaries participating in the survey in 2001, 87% of victims were male and 13% were female. If it is assumed that a similar breakdown by gender applied to the 21 405 murders reported by SAPS between April 2001 and March 2002, that would imply that about 18 600 men were murdered and 2 805 women. Given that men make up 47.8% of the population, the per capita murder rate for men, at nearly 87 per 100 000, was 7.2 times higher than the 12 per 100 000 for women.9 Surprisingly, despite the attention paid to violence against women in South Africa, the extent of the divergence between the male homicide rate in South Africa and the homicide rate of men in the rest of the world is, in fact, far bigger than the divergence between the female homicide rate in South Africa and that in the rest of the world.

According to World Health Organization (WHO) estimates, the global homicide rate in 2000 was 8.8 per 100 000 in 2000 (WHO 2002). Disaggregating by gender, it thus appears that the male murder rate was 13.6 per 100 000 and the female, 4 per 100 000. Thus, the implication is that while South Africa’s women are about 3 times more likely to be murdered than women around the world, South Africa’s men are 6.4 times more likely to be murdered than men around the world. Moreover, this discrepancy between male and female homicide rates in South Africa compared to those in other parts of the world holds whether figures for poor countries (where men are 3.4 times more likely to be murdered than women) or for Africa (2.8 times more likely) are used.

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9 Police statistics come from The South African Police Service Annual Report, 2003/2004 and are available on the SAPS website: www.saps.gov.za. Population figures are official Stats SA results from the 2001 census. Unless otherwise stated, crime and population statistics used in this chapter all relate to 2001. The reason for this is that, given the widely different rates of population growth between police station areas, a difference with its roots in the processes of internal and international migration, station-level per capita analysis cannot be done effectively except in the year in which census data were collected.
These data, then, are unambiguous: even more decisively than is the case in the rest of the world, gender makes a difference to the level of risk an individual faces in South Africa. Surprisingly, perhaps, the impact of race on homicide rates is far less clear.

**RACE AND MURDER**

Race in South Africa, for all the efforts at social transformation, remains a key determinant of an individual’s life chances. It is, for instance, strongly correlated with income and poverty, unemployment, educational achievement and a host of other socio-economic variables. Does race count in determining an individual’s chances of being murdered?

In this regard, the evidence currently available is (surprisingly, perhaps) far from conclusive. There are three sources of information on race and homicide: NIMSS, a police docket analysis of murders (SAPS 2004), and a study by the Gender and Health Unit of the MRC into female homicide in South Africa (Mathews et al. 2005). In addition, two analyses based primarily on the NIMSS data have also appeared (Leggett 2004; Thomson 2004). The results of these studies are displayed in Figure 3.

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*Figure 2: The ratio of male/female murders in South Africa and elsewhere*
Figure 3: Race and murder (% of murders v share of population: 1 = parity)

The four studies appear to agree on a few points, namely that the proportion of African victims is more or less in line with their share of the population (something that is mathematically unsurprising given that Africans make up nearly 80% of the population); that Coloured victims are over-represented, possibly dramatically so; and that Indian and White victims constitute a smaller proportion of homicide victims than their shares of the population.

Despite the broad agreement between the studies, however, there are some serious doubts about these figures. For example, the NIMSS sample is based on an analysis of bodies received by about 35 mortuaries. Although these mortuaries are spread across the country, the resulting sample is not nationally representative because the mortuaries themselves are largely in urban areas, thus creating an important bias. This is because, for historical reasons, Coloured, Indian and White communities tend to be more urbanised than African ones. This means that these three population groups are likely to be over-represented in the NIMSS sample. In relation to White and Coloured victims, this over-representation is increased by the fact that 23% of the NIMSS sample come from Cape Town and Kimberley despite the fact that, according to the SAPS statistics, the entire Western and Northern Cape provinces account for only 18% of all murders. Since the combined population of Cape Town and Kimberly is 47% Coloured and 18% White, this would tend to bias the NIMSS sample towards over-representing Coloureds and Whites since each group makes up less than 10% of the national population. White over-representation is also reinforced by the fact that 40% of the victims in the NIMSS sample come from cities in Gauteng where Whites are significantly over-represented relative to their share of the national population.
Thus, the fact that the NIMSS data suggest that Coloureds have a significantly higher per capita murder rate than other South Africans needs to be treated cautiously. In addition, it seems likely that Whites, though apparently under-represented in the population of victims, may actually be over-represented in the NIMSS survey. This conclusion must be qualified, however: given the incidence of farm attacks, it is possible that rural Whites are murdered at a higher per capita rate than are their urban compatriots. The over-representation of Coloureds, on the other hand, cannot be qualified in this manner, and it seems to have misled Thomson (2004), who relied exclusively on the NIMSS data for post-1990 murder rates, into overstating the per capita murder rate in the Coloured community. Leggett (2004), who followed Thomson’s (2004) conclusions, was also misled in this manner.

The second study that is relevant to this question is a docket analysis done by members of the SAPS Crime Information Analysis Centre (CIAC) in 2004 which looked at 2,645 of the 23,289 murder dockets that were closed in 2001. It found that 75.5% of murder victims were African, 20.1% were Coloured, 3.1% were White and 0.9% were Indian. African murder victims are marginally under-represented given their share of the national population, while Coloured victims are dramatically over-represented. In addition, Whites and Indians are significantly under-represented.

Unfortunately, the methodology used in this study means that its results also cannot be taken as representative of all murders. This is because cases that are closed are not necessarily an unbiased sample of all cases that are opened. The reason for this is straightforward: murder cases in which evidence about the perpetrator’s identity is deficient are kept open far longer than are other cases. (This may also explain why only 12.4% of murders of which the causes could be identified were committed in the course of other crimes, most of which were aggravated robberies.) The effect of the bias in this sampling methodology is that the sample over-represents cases in which the identity of the offender is unknown. All that can be safely said based on these results, therefore, is that Coloured victims appear to be over-represented in samples of murder dockets in which offenders are known to SAPS. It does not follow that people in the Coloured community are more likely to be murdered.10

The study with the least problematic sampling technique is that of the MRC’s Gender and Health Research Group which sought to estimate

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10 It also appears that there may be some over-representation of Western Cape and Northern Cape in the CIAC analysis. Although Western Cape, which accounted for more than 16% of murders in 2001/02 contributed less than 11% of cases in the sample, the over-representation of Northern Cape more than makes up the difference. This province accounts for about 2% of murders, but contributed nearly 10% of cases to the sample.
the level of female homicide in the country and then to determine what proportion of those deaths were caused by intimates (Mathews et al. 2005). It concluded that the rate at which women and girls older than 14 were killed by “intimate partners” was 8.8 per 100 000 for the country as a whole, but varied between 2.8 per 100 000 for White women and 18.3 per 100 000 for Coloured women. African women were killed by intimates at the rate of 8.9 per 100 000, while Indian women were murdered at the rate of 7.5 per 100 000. All of these figures were for 1999.

These figures were derived on the basis of a sample of 25 mortuaries which was then extrapolated to the national picture on the basis of data on bodies arriving at all mortuaries. This resulted in an estimated 3 798 female homicides in 1999 (of which 1 349 were intimate femicides), which would imply that something like 16% of all murders recorded by SAPS were of female victims.11 This figure is not too dissimilar from the 13% recorded by NIMSS in 2001.

There is a much greater rigour associated with extrapolating the sample to the national population in this study than is the case of the docket analysis or the two articles that relied on the raw NIMSS data. Thus, it is far harder to reject the idea that the murder rate in the Coloured community is substantially higher than it is in other communities. Nevertheless, the fact that the report deals only with intimate femicide means that it would not be appropriate to extrapolate these results to all murders in general, especially since, as was shown earlier, women constitute only a minority of murder victims. Indeed, it could be argued that these figures simply reinforce the only conclusion that can be reached on the basis of the SAPS docket analysis: that for some reason murders committed by people who are known to their victims are more common in the Coloured community than in others. Even here, though, there is room for caution: since the Mathews et al. study (2005) relied on an examination of dockets and/or interviews with investigators to assess the likely perpetrator in female homicides, it is possible that the fact that the Coloured community is concentrated in Western Cape and Northern Cape may explain some of the disparity. If, for instance, police in Western Cape are for some reason more likely to solve cases than are their colleagues elsewhere in the country, it may account for a higher proportion of cases involving Coloured victims being identified as intimate homicides than is the case for other race groups.

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11 It is impossible to be more precise than this. The Mathews et al. (2005) data related to the calendar year 1999 while SAPS reported figures over its financial year. The recorded 22 600 murders between April 1999 and March 2000 were about 10% lower than the figures for the preceding financial year which would have included January, February and March 1999.
This does appear to be the case, as evidenced by the data presented by Redpath (2002) who found that the crude conviction rate for murder in 2000 was 18%, Northern Cape and Western Cape had the highest rates at 46% and 27% respectively. That being the case, the reason why Coloured women appear to be much more likely to be murdered by an intimate partner than women of other races, could be that they happen to live in the two provinces where cases are most likely to be solved. It is possible, in other words, that the police in Western Cape and Northern Cape are better able to solve all cases (but especially those that involve perpetrators who are known to the victim) and, as a result, it may be that the victims in those provinces (who will come disproportionately from the Coloured community relative to the share Coloureds make up of the national population) will appear to have higher rates of intimate homicide.\[12\]

All of this leaves a somewhat confusing picture from which only a broad set of conclusions can be drawn. It appears that African communities’ murder rates are close to the national average: Africans make up 80% of the population, so murder rates in African communities will play a very large role in determining the national murder rate. It also appears that White and Indian communities suffer lower per capita murder rates than the national average and that the Coloured community suffers a somewhat higher one. Unfortunately, none of the studies currently in the public domain can definitively answer how great the disparity in risk is for people of different races in South Africa.

GEOGRAPHY AND MURDER
Race and gender are naturally not the only variables governing the distribution of risk. Murder rates, for instance, vary widely by geographic area. Thus, while the national average murder rate was 47.8 per 100 000 in 2001/2, this varied dramatically between the provinces. In 2001/2 per capita murder rates per 100 000 ranged between 16.1 (Limpopo) and 76.2 (Western Cape). This divergence was also reflected in the rate of change of murder which fell by 36% between 1994/5 and 2003/4 across the country, but by as much as 46% in Gauteng and by as little as 14% and 16% in Mpumalanga and Western Cape, respectively. Indeed, if the period considered were 1994/5 to 2002/3 (as opposed to 2003/4), Western Cape’s murder rate would actually have increased by 11% despite a national decline of 29% over the same period.

\[12\] Having said that, it must be acknowledged that it is impossible to dismiss the possibility that causality runs the other way. It may be that the reason why murder cases are solved more frequently in Western Cape and Northern Cape is precisely because many are committed by intimates.
It is probably worth pointing out that the fact of rapid urbanisation means that some of these trends might well be over- or under-stated. The SAPS figures presented in Table 2 are based on implicit population figures which must be adjusted every year. Since a population census is taken only every five years, and, in the interim, migration patterns affect the number of people living in each province differently, it is necessary to estimate underlying population trends. Those estimates must then be corrected when new census data are available. As Table 2 shows, this can lead to quite dramatic adjustments, as is apparent for 2001/2. In that year, the SAPS’s implicit population estimate for Gauteng went up by 12.2% relative to that of the year before, while population estimates for four provinces were reduced. The effect of this is that estimates for crime rates between census years must be deemed more problematic than those for census years themselves. This, in turn, means that estimates of the murder rate for 2003/4 might under- or over-state the true per capita incidence of murder if estimates of population growth in different provinces are inaccurate.

Table 3: Implicit population growth rates in SAPS data

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Figures taken from SAPS (2005).
DISPARITIES IN STATION-LEVEL MURDER RATES

Differences in per capita murder rates are not, however, confined to differences between provinces. This fact is amply demonstrated if the way in which the population and number of murders accumulate is compared to the number of murders committed in every police station area. When this is done, it is found that fewer than 120 police station areas, which are home to 32% of the population, account for fully 50% of all murders, while as few as 33 stations account for 25% of all murders, but only 12% of the country’s population.

![Figure 4: Murder and population (cumulative cases and population figures)](image)

Similarly, the 20 stations with the most murders in absolute terms are home to 8.4% of the country’s population, but account for 18% of all murders. These stations (from most recorded murders to fewest) are Khayelitsha, Nyanga, KwaMashu, Inanda, Hillbrow, Umlazi, Katlehong, Plessislaer, Tembisa, Moroka, Kuilsrivier, Gugulethu, Alexandra, Umtata, Mitchells Plain, Kraaifontein, KwaZekele, Ivory Park, Johannesburg Central and Empangeni. They are, in other words, a mixture of inner city and township stations with most also being in and around Johannesburg, Cape Town and Durban.

The list of stations with the highest per capita rates of murder, however, looks quite different. In some station areas, murder rates in 2001/2 were estimated to have been greater than 300 per 100 000, while in 67 stations, no murders at all were reported throughout 2001/2. Indeed, as the following graph reflects (see Figure 5), in the 10% of stations with the highest murder rates, the average was nearly 140 per 100 000. In the 10% of stations with the fewest murders, that ratio was below 5 per 100 000.\(^{14}\)

\(^{14}\)The data used for compiling station level crime rates are drawn from SAPS station-level crime statistics available on [www.saps.gov.za](http://www.saps.gov.za) and census data reconfigured by station boundary by the HSRC. Because the census data are the country’s “master set”, there is no way to double check the validity of station population figures. It must be said that some of the figures appear to the lay person to be somewhat surprising (Hillbrow, for instance, emerges from the census...
EXPLAINING THE DISPARITIES: IS IT THE LEVEL OF URBANISATION?
What accounts for the disparity in murder rates? Why are the 105 most murderous stations nearly 30 times more murderous than the 105 with the lowest per capita rates? These are difficult questions, and require a degree of care in their answering.

It is not, for instance, simple to characterise the stations with the highest per capita murder rates. They are not all large stations and there are very big differences between the list of the 105 stations with the most recorded murders (in absolute terms) and the list of the 105 stations with the highest per capita murder rates. Indeed, while the stations with the most recorded murders tend to be large and urban, there are many small and rural stations in the list of stations with the highest per capita murder rates. Thus, although stations like Johannesburg Central, Hillbrow, Langa, Nyanga, Kwamashu and Empangeni appear on both lists, smaller settlements and rural areas like Calvinia, Stanford, Rhodes and Maclear, pepper the list of South Africa’s most murderous locales (on a per capita basis, at any rate). It does not appear to be the case, in other words, that high per capita murder rates are the exclusive preserve of South Africa’s cities. Given the attention that urbanisation receives in accounting for high levels of violent crime, this is a surprise (UNODC 2005). At the same time, however, it must be said that of the 105 stations with the lowest per capita murder rates, the majority were small rural centres. Even here, though, there were exceptions: Giyani, Mokhado, Phuthaditjaba, Thohoyandou and other large centres, particularly in Limpopo, also had very low per capita murder rates.

With the available data, then, it is extremely difficult to test whether...
urbanisation by itself accounts for the per capita murder rate. One very crude way of testing this, however, is to establish what proportion of households in a police station area live in what the census defines as “traditional dwellings” and then to set a level above which the area is, by definition, rural and below which the area is urban. Even setting this level at 5% of households living in traditional structures, however, yields only 561 stations that may be classed as rural. This must be an under-count. Nevertheless, there does appear to be a significant difference between these 561 rural stations, which are home to 19.1 million people and which have a murder rate of about 41.8 per 100 000, and the remaining 489 stations which are home to 22.1 million people and which have a murder rate of 56.7 per 100 000.

It appears, in other words, that while rural areas have high levels of lethal violence, per capita murder rates are about 24% lower than those of urban stations. But it would be a mistake to make too quick a judgement.

The measure of “ruralness” used here - the proportion of houses that are “traditional” - is very crude. Many stations which qualify as rural will have both rural and urban or peri-urban areas. It may well be that lethal violence is concentrated in the more densely populated areas even within rural police stations. In addition, these results are not robust; they would change if the definition of a rural station were limited to include only those stations in which more than 30% of households live in traditional dwellings. If this is done, 219 stations qualify as rural. They have a murder rate of 43.2 per 100 000 compared to 48.7 per 100 000. The disparity in safety levels between urban and rural stations, in other words, actually shrinks by half (to a little more than 11%) when a more restrictive definition of rural stations is used. This suggests that the level of urbanisation may not actually play a decisive role in determining the per capita murder rate in South Africa.

The lack of robustness is also evident in the following graph (see Figure 6), which charts murder rates in stations based on their level of urbanisation. As is evident, despite the very large differences in the level of urbanisation, the murder rate does not vary a great deal and, what variation does exist, does not appear to be systematic.
EXPLAINING THE DISPARITIES: IS IT THE LEVEL OF AVERAGE HOUSEHOLD INCOME?

If urbanisation does not explain the variation in murder rates adequately, another possibility might be that the difference is explained by differences in average household income. It might be supposed, for instance, that people who live in poor areas might be more likely to be murdered than people who live in richer areas. This, so the argument may run, would be because people in poor areas live among those who are most affected by poverty and unemployment, the socio-economic factors thought to be most responsible for South Africa’s high crime levels, particularly its high levels of inter-personal violence. In addition, being poor, these people probably lack the resources to secure themselves and their homes. Also, they may well spend proportionately more time commuting to work or shops along poorly lit roads, during the course of which they would be more vulnerable to the depredations of muggers. Add to that the fact that anecdotal evidence suggests that poor areas have fewer police resources than rich ones, and it would be expected that per capita murder rates would be higher among the poor than the rich. This, after all, is also suggested by the fact, reported earlier, that the murder rate for Whites, who are on average richer than other South Africans, appears to be a good deal lower than the national average.

Perhaps the most surprising finding of an analysis of the data, however, suggests that this is not the case: there appears to be no relationship between the average household income in a station area and its per capita murder rate. This is reflected by the near-perfect flatness of the slope of the trend-line in the following graph (see Figure 7) and the fact that the $r^2$ is very close to zero.

Having said that, the graph does reflect that although poorer station areas
can have a very wide range of per capita murder rates, this variation falls with average household incomes above about R150 000. These areas also tend to have murder rates below the national average.

![Average household income and murder per 100,000](image1)

**Figure 7:** Average household income and murder per 100,000

The absence of a clear relationship between average household income and per capita murder rates results from, and is made apparent by, the variability of the murder rate among station areas in which households earn less than R100 000 a year, as is reflected in Figure 8.

![Average household income and murder per 100,000](image2)

**Figure 8:** Average household income and murder per 100,000

As is apparent from this scatter-plot, a relatively large number of poor station areas had very low per capita murder rates. Indeed, about 60 stations in this sub-population recorded no murders at all in 2001/2. At the same time, there were also a large number of poor station areas with per capita murder
rates more than twice that of the country as a whole. Station areas with low average household incomes, in other words, may have had either very low or very high murder rates, and the effect of average household income appears to be negligible. This does not mean, however, that rich and poor have the same chance of being murdered in South Africa: there are, after all, poor people in every rich neighbourhood and richer people in even the most poverty-stricken district. To work out precisely how rich and poor differ in the risk they confront, far more fine-grained demographic and socio-economic data about victims than are currently available would be needed. Nevertheless, this result is intriguing given the consensus among scholars, practitioners and politicians that crime rates in South Africa’s townships are higher than crime rates in the country’s suburbs.

The crucial question, then, is: “What can explain the very wide variation in murder rates in stations in which household income is in the range of R50 000 to R100 000 per year?” Perhaps one answer, which is really a way of begging the question, is that stations with high levels of murder, also appear to have high levels of other types of violent crime.

**MURDER AND ROBBERY**

I began this chapter by noting that in the US, murder trends are strongly correlated with robbery trends. This is not the case in South Africa where the aggravated robbery rate increased at about the same rate that the murder rate declined. This final section looks at the relationship between murder and robbery in South Africa.

Apart from the empirical relationship between murder and robbery in the US reported earlier, there are sound theoretical grounds on which a link could be supposed. Not the least important of these is that some portion of all murders are robbery related and, just as importantly, there may be socio-economic factors which drive both robbery and murder independently. It is, therefore, surprising to find that in the 10 years from 1994/95, the robbery rate has increased by 32%, while the murder rate has fallen by 36%. Is there, then, no relationship between robbery and murder in South Africa? The answer to this question is far from unambiguous.
Recall that Figure 4 reflected the disparity between the cumulative proportion of murders in station areas with the most incidents and the cumulative proportion of the population who live in those station areas. The same graph is reproduced here, but a second line reflecting the accumulation of aggravated robberies has been added. This makes it appear as if the number of aggravated robberies in a station area is a far better predictor of the number of murders in that station area than is the number of people living there.

The most striking thing about the graph in Figure 10 is that the 33 station areas that account for 25% of murders account also for 25% of all aggravated robberies; that the 118 station areas that account for 50%
of murders, also account for 50% of aggravated robberies; and that the 289 station areas that account for 75% of murders, account for 76% of aggravated robberies. This would suggest a very strong relationship between the proportion of murders that a station area contributes to the national total, and the proportion of aggravated robberies that that station area contributes to the national total of that crime.

This is, however, something of a misrepresentation, because the aggregation of large groups of station areas serves to disguise differences. Thus, although same 33 station areas that account for 50% of murders also account for 50% of aggravated robberies, it does not follow that if a station area accounts for 1.5% of the country’s robberies, it will also account for 1.5% of the country’s murders. This is revealed by the fact that, of the 118 station areas in which most murders occur, and in which none contributes less than 0.22% of all murders, there are a large number of station areas in which the number of recorded robberies falls well below one third of that proportion. Indeed, if Hillbrow (which accounts for a little less than 1% of all murders, but nearly 2.5% of all robberies) is compared to Umlazi (which also accounts for around 1% of all murders, but less than 0.8% of all robberies) it is possible to see that the variation between a station area’s murder rate and its robbery rate can be extremely large. Similarly, a large number of station areas each contribute between 0.22 and 0.28% of the country’s murders. These same station areas can account for anything between 0.03% (Mossel Bay) and 1.1% (Booysens) of all robberies. In effect, Booysens has a disproportionately large share of the country’s robberies relative to its number of murders, while Mossel Bay has a disproportionately large number of murders given its share of robberies.

It is this kind of variation that accounts for the wide dispersion of data points around the diagonal line along which a station area’s contribution to the country’s total number of murders would equal its contribution to the total number of robberies in Figure 11.
Figure 11: Murder v robbery (118 stations with most murders, 2001/2)

The implication here is that although a station area’s robbery rate may appear at first glance to be a good predictor of its murder rate, this is not the case. It can be said that, as a group, the station areas with the most murders also have the most robberies, but within that group, there is a great deal of variation in the ratio of robberies committed to murders committed. Thus, within the group of 33 station areas in which 25% of all murders were committed in South Africa in 2001/2, the number of robberies per murder ranged from nearly 18 in Durban Central to less than 1 in Lusikisiki and Tugela Ferry. The national average for the year was 5.5.

Interestingly, the station areas with the highest ratio of robberies to murders tended to be suburban (though not exclusively), as the following graph of the 30 station areas with the highest ratios shows (see Figure 12). These station areas accounted for 10% of all aggravated robberies recorded, but only 1.4% of all murders. This implies that some areas, despite high robbery rates, do not have equally high murder rates. Conversely, 83 of the 132 station areas recorded no aggravated robberies in 2001/2, recorded at least one murder. These station areas accounted for 1.3% of all murders, but for none of the aggravated robberies in the country.
A final indication that the number of robberies is not a reliable predictor of the number of murders in a station area is that there appears to be no relationship between the annual average growth in the robbery rate between 1994/5 and 2003/4 and the growth in the murder rate over the same period. This is reflected in the following graph (see Figure 13), which shows the results of regressing the increase in the rate of murders in 500 station areas against the increase in the rate of robberies. Although the coefficient is of the right sign and is significant (F = 24.38 with 498 degrees of freedom), the value of $r^2$ suggests that the increase in the rate of robberies explains only about 5% of the observed variation in the increase in the rate of murders. In other words, other factors account for a great deal of the observed variation in the increase (or decrease) in the murder rate over the period 1994/5 to 2003/4. In addition, the value of the independent variable’s coefficient, though it has the expected sign, is quite small. Thus, although murder rates were falling throughout the country and robbery rates were rising, there was still a (small) positive correlation between the rate of increase in robbery and the speed at which murder rates fell: the faster robbery rates grew, the slower that murder rates fell.
The graph in Figure 13 uses only the top 500 station areas (ranked by the number of murders recorded in 2001/2) because the lower the station area on that list, the smaller the number of murders (and, usually, robberies) and the more erratic the percentage change to murders (and robberies). It is instructive, therefore to look at smaller samples of station areas (with higher numbers of murders and robberies, and, therefore, less variability in percentage growth rates) to determine whether a stronger relationship between the rate of change of robbery and murder exists in these station areas. This is done in the following graph (see Figure 14), which reports the relationship between the rate of change of robbery and the rate of change of murder for the 118 station areas which accounted for 50% of all murders in 2001/2.

Figure 14: Rate of change of murder v rate of change of agg. robbery (top 118 stations by number of murders, 1994/5 to 2003/4)
This regression, which is also statistically significant ($F = 64.21$ with 116 degrees of freedom) suggests a much stronger relationship between the rate of change of robbery and the rate of change of murder in station areas with a relatively large number of murders than is the case for all stations. Thus, although the number of murders was generally falling in these station areas and the number of robberies was growing (hence the preponderance of data points in the south-east quadrant), it tended to fall further and faster the slower the rate of change of robbery. Indeed, for very high rates of change of robbery, the number of murders actually rose (i.e. stations in the north-east quadrant). Still, with an $r^2$ of only 0.36, the rate of increase in robbery is not as overwhelmingly strong a predictor of the increase in the rate of murder as might be expected. This is partly confirmed by the fact that the relationship is not especially robust, and that if the population of stations used is either the 289 station areas that accounted for 75% of all murders in 2001/2 or the 33 station areas that accounted for 25% of all murders, weaker relationships with lower $r^2$s are found.

The upshot of all of this is that murder rates are predicted by robbery rates, but that the relationship is quite weak and there is a great deal of variability between station areas both in relation to the ratio of robberies to murders and in relation to how the growth rates of the two crimes have moved. It does appear that there is something of a relationship between an area station's level of aggravated robbery and its murder rate, suggesting that murder rates reflect underlying levels of violence, but the fact that the murder rate has come down 32% over 10 years while the robbery rate has increased by 32%, implies that this is not a simple relationship.

**CONCLUSION**

Despite South Africa's high crime rate, there are a great many important questions about serious crime to which there are few definitive answers. This is obvious in relation to murder, where, although it is known unequivocally that South Africa's murder rate is high and that men are much more at risk than women, it is not known with any great certainty whether per capita murder rates differ greatly by race and income. It does appear as if White and Indian communities experience fewer murders than do African and Coloured communities, and this suggests that there are differences in the murder rate based on race and, possibly, income (which is closely correlated to race). Testing whether average household income in a station area is correlated with murder rates, on the other hand, presents us with data that suggest that there is no relationship between the two.

It also appears that Limpopo, North West, Mpumalanga and Free State
are less violent than the national average, but it is not clear whether the difference is a straightforward matter of urbanisation: large settlements in these provinces have low per capita murder rates, while small rural areas in some provinces seem to have extraordinarily high murder rates.

It is also unclear precisely how the murder rate relates to the robbery rate, and, given the opposite trends of the two types of crime, it must be concluded that the decline in murder has had more to do with the declining rate of non-robbery murders than with the level of robbery. This may well mean that crimes in which victims know their killers may be declining in South Africa. If that is the case, it is well to ask why it might be so. In this regard, I would suggest two factors which may account for it: the increased spending on social services, especially welfare; and the fact that political violence is no longer a feature of South African life. How may these two factors have reduced murder rates, particularly murders committed by people who know their victims?

The rapid increase in the number of welfare recipients in South Africa, while far from sufficient to eliminate poverty, does represent a massive injection of income into the households of the poorest South Africans. While this would not have been sufficient to reduce predatory crime, it is possible that, by taking the edge off extreme need, it has helped stabilise some households that might otherwise have been wracked with potentially violent conflict. The increased income, then, while not enough to make the poor rich, might have been enough to eliminate some of the causes of some of the conflict that might otherwise have pushed up murder rates.

This might also have been reinforced by the fact that political violence has not been a feature of national life in South Africa over the past 10 years. While it is unlikely that the decline in murders from over 26 000 a year in the mid-1990s to under 20 000 a year today can be accounted for simply by the decline in politically-motivated killings, it is possible that cycles of violence are being dampened as distance from the direct experience of violence grows. It is also possible that the habits of moderation, self-regulation, compromise and self-control - the habits that come from living in a less volatile society - have begun to take hold, and that these are reducing the levels of lethal inter-personal violence.

All of this suggests that a great deal more needs to be known about lethal violence in South Africa if before it can be understood how to reduce it. It seems plain that the strategies needed to reduce stranger violence, including but not limited to the violence that results from robberies, will be quite
different from the strategies needed to reduce violence committed between people who know each other. Knowledge of which strategies are needed and where, demands a great deal more knowledge about which forms of lethal violence are most prevalent and how these patterns change over time. These data are not currently available, so any attempts to formulate strategies to reduce lethal violence are, as a result, flying blind.
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CAUGHT BETWEEN POLICY AND PRACTICE: HEALTH AND JUSTICE RESPONSES TO GENDER-BASED VIOLENCE

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ABSTRACT
This chapter takes a critical look at the developments and challenges in research, policy and practice in relation to violence against women since 2004. The chapter draws out intersections between criminal justice and health sector responses over a range of issues, including screening for domestic violence, documentation of injuries following sexual assault, and the collection data on intimate femicide. Throughout the writers emphasise the need for integrated medical and legal responses. In addition to presenting a sample of legislative developments relating to sexual offences, the extent to which the South African judiciary has enforced the constitutional right to freedom from violence through relevant case law is examined. This analysis includes the impact of empirical research and expert testimony from medico-legal, sociological and mental health practitioners on judicial decision-making. In reinforcing violence against women as a serious public health issue, the writers traverse the division between law and health in an attempt to underscore the critical links between the law, public policy and service provision to victims of gender-based violence.

Key-words: domestic violence, rape, sexual offences, gender-based violence

INTRODUCTION

1To whom correspondence should be addressed.
based violence, the extent to which an enabling legislative environment has been put in place for addressing violence against women is striking. At the same time it is equally noteworthy that many of these legislative and policy driven interventions have not been put into effective practice. At best, implementation has been patchy. In this chapter we take a critical look at the developments and challenges in research, policy and practice in relation to violence against women over the past two years, emphasising the need for integrated medical and legal responses to violence against women. In reinforcing the seriousness of violence against women as a public health issue, we traverse the division between law and health in an attempt to underscore the critical links between the law, public policy and service provision to victims of gender-based violence. In addition to presenting a sample of legislative developments relating to sexual offences, we examine the extent to which the South African judiciary has enforced the constitutional right to freedom from violence through relevant case law. This analysis includes the impact of empirical research and expert testimony from medico-legal, sociological and mental health practitioners on judicial decision-making.

In order to ground an analysis of the disjuncture between the law, public policies and the realities of violence against women in the South African context, we look at recent research into the staggering rate of femicide (female homicide) in South Africa. Finally, this chapter provides an analysis of one of the most critical challenges facing public health and legal research to improve services to victims of gender-based violence - access to information. Over the past two years researchers in this sector have experienced a gradual resistance from government structures to granting access to information for research purposes, despite the development of more sophisticated research ethics protocols and methods to protect information. It is argued that access to information is critical to the improvement of services to victims of violent crime and that the opportunity to engage critically with the operational realities of South Africa's criminal justice and public health systems is essential to the improvement of service provision.

**LINKING PUBLIC HEALTH AND CRIMINAL JUSTICE**

There is a critical link between public health and criminal justice and with the courts' increasing dependence on medical, psychological and forensic evidence, there is some urgency to develop this medico-legal nexus in relation to victims of interpersonal crime. In theory, this means recognising the importance of the operational relationship between health and justice and developing more integrated and readily applicable medico-legal and violence management policies. In practice, this means moving away from the
current rhetoric of “integrated case management” and establishing practices that provide the survivor of gender-based violence with a multi-disciplinary service, from the first report of the offence (to the police) or injury (to a medical officer) through to the final criminal justice outcome.

South African law relating to sexual offences is a useful example of the legislature’s attempts to provide a more comprehensive understanding and integrated response to violence against women. The law on sexual offences will be altered substantially when a bill currently before Parliament is passed. This bill, the Criminal Law (Sexual Offences) Amendment Bill (hereafter the Sexual Offences Bill), will bring about far-ranging changes to the definition of rape and other sexual offences, to the procedure for prosecuting such cases, and to the evidence required to obtain a conviction. In effect it should result in a reorientation of how “sexuality”, sexual violation and criminal sexual behaviour are constructed in South Africa and how the country’s criminal justice and public health systems respond to these more generally. It provides a new legislative framework that draws heavily on psychological, criminological and legal research into the circumstances and experiences of rape survivors and develops new legal procedures to ensure the protection of vulnerable witnesses within the criminal trial and the criminal justice process more broadly.

The proposed Sexual Offences Bill aims to revise both the substance of the common law on rape, as well as numerous procedural and evidentiary aspects of the trial process. Perhaps the most significant recommendation contained in the Bill relates to the definition of “rape”. In South Africa, in terms of the common law, “rape” is currently defined as “intentional and unlawful sexual intercourse with a woman without her consent” (Burchell & Milton 1997, p. 487). In terms of this definition, the crime of rape only occurs where there is penetration (however slight) of the victim’s vagina by way of the perpetrator’s penis. It therefore follows that only a man can perpetrate the act of rape and that only a woman can be a victim of it. The prosecution must prove beyond a reasonable doubt that the alleged victim did not consent to sexual intercourse. As currently defined, therefore, “rape” excludes same-sex violations, oral-genital violations, and penetration of the vagina by objects other than a penis. These would currently be defined in South African law as “indecent assault”. “Indecent assault” incorporates a range of acts from sexual fondling to “flashing” to far more severe assaults of a sexual nature. In this way the existing definitional distinctions negate the extreme violence associated with violations which currently fall outside the ambit of “rape” (Artz & Smythe 2006).
The South African Law Reform Commission (SALRC) has proposed, in the Sexual Offences Bill, that the concept of “sexual intercourse” be replaced with that of “sexual penetration” and that the offence of rape be made gender neutral. It has also proposed the creation of two ancillary offences: “sexual violation” and “oral-genital sexual violation” (sections 3 and 4). As conceptualised in the draft Sexual Offences Bill, sexual penetration will now include penetration, to any extent whatsoever, by the genital organs into or beyond the anus, mouth, or genital organs of another person, or the penetration of any object – including any part of the body – into or beyond the anus or genital organs of another person in a manner that simulates sexual intercourse. The definition of “genital organs” has been expanded to include “the whole or part of male and female genital organs” including “surgically constructed or reconstructed genital organs”. The proposed law makes it possible to charge a person with rape if they have compelled someone else to commit an act of sexual assault.

The requirements of intention, unlawfulness and consent are retained as elements of the crime. Consent has been a particularly controversial aspect of the proposed reforms. In those sexual assault cases where there is no question as to the identity of the perpetrator, the issue of consent is always central (Artz & Smythe 2006). For the most part, defendants have tended to call into question factors such as the victim's recollection of events or her mental state. Additional factors brought into question include claiming that the victim consented to sexual intercourse and only later disavowed that consent, or that the victim’s conduct was such that the perpetrator (or any other reasonable person) would have believed that she had consented. The victim’s pre-existing relationship with the perpetrator, delay in reporting the offence, sexual history, reasons for reporting the offence, and the extent of her resistance to the attack, are all meticulously deconstructed in the courtroom (Artz & Smythe 2006).

Defence attorneys often subject rape complainants to harsh cross-examination in an effort to discredit their testimony. This might be done by requiring the complainant to recall in minute detail the specific events that occurred before, during and after the sexual assault in an attempt to find inconsistencies in the testimony presented to the court. Evidence relating to the post-traumatic stress responses and the mental health consequences of rape therefore becomes critical to the rape trial.

In order to address this strategy the SALRC has defined “consent” as requiring free agreement and has specified circumstances under which a person does not freely agree to an act of sexual penetration. With this new
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formulation of what constitutes consent to sexual intercourse, the use of research or expertise by medical or mental health experts becomes vital in assisting the court to establish whether a person may or may not have been likely to consent to sexual intercourse under certain circumstances, for instance: where a threat of harm has been made against a person or their property; where there has been an abuse of power or authority of such a nature that it inhibits resistance; where the victim has been led to believe that the act is something other than sexual penetration; and where the victim was asleep, unconscious, in an altered state of consciousness, mentally disabled, or below 12 years of age. These proposed amendments symbolise a shift in the State's understanding of the complex nature and experiences of sexual offences. It also reflects an understanding that most rapes do not fit into a neat template in which the perpetrator is a stranger, a weapon is used, and the victim forcibly resists the assault. (For more on what constitutes “real rape” in the criminal justice system, see Adler 1987; Estrich 1987.)

The changes in the law pertaining to sexual offences and the extent to which these changes may increase the role of public health and mental health research and expertise within the criminal justice domain cannot be fully interrogated here. We have chosen to present only a few aspects of the proposed legal changes with the objective of providing an example of how these recent reforms in law may open up new avenues for the integration of public health and criminal justice research, expertise and services. Without the passage of the Sexual Offences Bill into a promulgated Act we can only speculate about what changes will in fact be put in place. A more concrete example of how health and legal systems can provide a more integrated response to violence against women is the Domestic Violence Act, Act No. 116 of 1998 (hereafter the DVA) which has been in effect since 1999. Although the DVA does not go as far as providing a legal framework that fully integrates these practices in the delivery of services to victims, it does provide some scope for this to take place. Ongoing monitoring research into the implementation of the DVA has been instrumental in providing researchers with a range of possibilities for more comprehensive services (see Artz 2003; Martin & Jacobs 2003; Mathews & Abrahams 2001; Parenzee, Artz & Moult 2001; Parenzee & Smythe 2003).

DOMESTIC VIOLENCE

The enactment of the DVA represents a substantial contribution by the legislature in the effort to reduce the level of domestic violence in South Africa. The DVA aims to give victims maximum protection from domestic abuse by providing an all-encompassing legal definition of “domestic violence.” The DVA requires that a victim of domestic violence be given protection orders, restraining orders, and other measures to prevent further harm. The DVA also focuses on improving the support services available to victims of domestic violence, including counseling, legal aid, and medical and psychological services. Furthermore, the DVA requires that perpetrators of domestic violence be held accountable for their actions, and it provides for the imposition of severe penalties for those who commit such offenses.

The DVA has been hailed as a significant step forward in the fight against domestic violence in South Africa. However, there are some criticisms of the DVA, including concerns about its implementation and enforcement. Despite these challenges, the DVA represents a significant improvement in the legal framework for addressing domestic violence in South Africa.
violence”, setting out broad-ranging criteria for a “domestic relationship”, and outlining new legal duties and responsibilities mandating law enforcement officials to assist victims. An important impediment to the effective implementation of the DVA, however, is the omission of specific duties of health professionals, or even the recognition of the role that the public health sector should play in addressing domestic violence (Parenzee, Artz & Moult 2001). While the DVA places explicit duties and responsibilities on law enforcement personnel who are presented with a domestic violence case, it does not impose parallel duties on health sector personnel in analogous circumstances. This is of particular concern when research has shown that following incidences of severe abuse women may be more likely to seek medical attention than to report the abuse to the police (Jewkes *et al.* 2001; Rasool *et al.* 2002).

In relation to domestic violence, there have been very few notable developments over the past two years. Since the passage of the DVA almost eight years ago, it seems that little progress has been made to improve criminal justice and public health sector responses to victims of domestic violence. This is true of all sectors implicated – directly or indirectly – by the DVA. The recent publication of an integrated domestic violence training manual by the Sexual Offences and Community Affairs Unit of the National Prosecuting Authority (NPA) is hopeful, but is at risk of suffering the same fate as other national policies if resources are not strategically allocated to its implementation. On the ground – in primary health care settings, in police stations, and in the courts – the DVA is having inconsistent and often ineffectual results. Again it is imperative to ensure that health and justice systems work cooperatively to ensure both protection and effective recourse for victims. Monitoring research conducted by the Consortium on Violence against Women\(^2\) into the implementation of the DVA from 2000-2004, as well as its research into health responses to domestic violence, illustrates the potential for integrated public health and criminal justice practices.

**THE ROLE OF THE PUBLIC HEALTH CARE SECTOR IN ADDRESSING DOMESTIC VIOLENCE**

In addition to the immediate and often long-term physical and mental health outcomes associated with living with violence and abuse, violence against women has serious implications for other public health areas, particularly an increased risk of HIV transmission through direct and indirect mechanisms. Domestic violence affects transmission rates of HIV and other sexually transmitted infections (STIs) through forced sexual coercion as well as

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\(^2\) Institute of Criminology, Faculty of Law (UCT); Gender Project, Community Law Centre (UWC); Rape Crisis Cape Town; Women on Farms Project; and a health consultant.
through the creation and perpetuation of gender inequality. This inequality greatly reduces the ability of women to negotiate safe sex practices successfully, enquire about infidelity, or have a voice in the relationship regarding family planning.

Due to the high prevalence of gender-based violence in South Africa, it is inevitable that health care workers will regularly see patients affected by violence. Research conducted by Rasool et al. (2002) has shown that 53% of women who experienced physical domestic abuse sought medical assistance following the incident. These statistics indicate that the health care sector is a critical point of contact with State systems for many abused women.

Regular screening of patients allows health care workers to identify victims, to provide appropriate diagnosis and care, and to provide a potentially important intervention. Enquiries about abuse provide an immediate opportunity for a woman to disclose incidents or patterns of violence and to identify the abuser. Simply asking the victim about abuse and informing her that abusive behaviour, for any reason, is unacceptable has been found to be the most important service a health worker can provide to a victim (Neufeld 1996). A recent qualitative study conducted in the United States found that in several cases asking about abuse provided the victim with a sense of hope and verification that abuse is wrong (Chang et al. 2005). Failure of the health care worker to make such enquiries may further isolate the victim from assistance and resources as well as discourage her from reporting future incidences of abuse. Furthermore, discussing abuse with the victim enables the practitioner to educate her about her legal rights and the options available within the justice system, including: how and where to apply for a protection order; what services she can expect from the police when reporting; and what social services are available to her and other family members should these be needed. Through this intervention, screening for abuse may increase the likelihood of the victim reporting the incident to the police.

SCREENING PRACTICES IN DOMESTIC VIOLENCE: BARRIERS AND RECOMMENDATIONS
Lack of training and knowledge about domestic violence are frequently cited as reasons why practitioners are reluctant to inquire about abuse (Goff et al. 2003; Nayak 2000). In a recent study on doctors’ attitudes and practices toward victims of domestic violence in South Africa, Peltzer, Mashego and Mabeba (2003) found that only 10% of doctors had received training in domestic violence, a situation that must be remedied if health care workers are to make useful interventions. Additionally, recent informal discussions with medical students at the University of Cape Town (UCT) supported
findings in the literature that hesitancy around screening may stem from:

- age differences between victims and providers that make it awkward to ask about private issues
- cultural differences between victims and providers that make it difficult to communicate effectively about abuse due to language barriers, terminology and approachability of the subject
- a perceived inability to change the victim’s situation or help the victim if she discloses abuse
- fear of offending the victim
- lack of time to address the issue
- fear or lack of preparedness to assist a victim if she were to become emotionally upset.

Martin and Jacobs (2003) have developed a strategic framework for introducing screening practices into state-run health care facilities. The framework, based on research conducted by the Consortium on Violence against Women, emphasises the need for collaboration between the public health and criminal justice sectors to secure the safety and well-being of victims of violence. It provides protocol guidelines that specifically outline the responsibilities of the public health sector if an integrated multi-sectoral service delivery system for victims of domestic violence is to be achieved. The aim of the protocol is to assist health care management in the implementation of screening practices as a preventive health care measure and to provide standardised management guidelines to practitioners should abuse be disclosed. Such a formal standardised protocol for screening and documentation is needed to ensure that:

- health care workers are provided with the appropriate skills to conduct universal screening and to discuss intimate and private issues effectively
- health care workers inquire about abuse in a non-judgemental and compassionate manner so the victim does not experience re-traumatisation
- incidences of abuse are documented regularly for use in the criminal justice system should a victim want to obtain a protection order or lay criminal charges against the perpetrator, as well as for other legal matters such as child custody disputes.

It has been shown that when presenting to a physician for injuries related to domestic violence, the victim frequently identifies the abuser (Peltzer, Mashego & Mabeba 2003). It is expected that positive identification of the abuser will increase as the screening rate increases and as more women disclose abuse. Providing practitioners with a protocol outlining their clinical
responsibilities, and training them to engage in these discussions with patients confidently and comfortably, could increase women’s chances of attaining safety and protection against abuse significantly.

Social services have long addressed the domestic issues that are a relatively new area for the public health and criminal justice systems in South Africa. For this reason, it is also critical that employees in these latter departments are knowledgeable about each other’s services (not what they are supposed to do, but rather how they actually operate). A key function of the public health sector should therefore be to share knowledge with victims about shelters, and places of safety for women and children, as well as providing victims with the necessary information to obtain a domestic violence protection order.

**SEXUAL OFFENCES**

In 2006/2007 the South African Police Service (SAPS) reported 52,617 rape complaints. This represents a prevalence rate of 111/100,000 of the population. It is important to remember, however, when looking at South African rape statistics, that “rape” is still defined in such a way that, by law, only a woman can be raped. The prevalence rate amongst the female population in South Africa is therefore substantially higher than the official prevalence rate, while male rapes are not recorded as rapes at all. Similarly, the current legal definition of “rape” requires penetration of the vagina by the penis and therefore does not include anal or oral penetration or sexual penetration by objects other than a penis. Some of these violations may be captured in the 9,367 indecent assaults recorded by the SAPS for the same period, but certainly not all. Unfortunately, the long awaited and much debated Sexual Offences Bill, which will address some of these legislative shortfalls, has had a very slow passage through Parliament. At the time of writing the Bill had been passed by the National Assembly and was under debate by the National Council of Provinces. There have nonetheless been some promising practical developments, with the Department of Justice rolling out over 20 new specialised sexual offences courts to deal exclusively with the high number of rape prosecutions during the past two years and the continued evolution of the NPA’s Thuthuzela Centres, which provide one-stop services to rape victims. However, investments of this nature are undermined by the disjunctive lack of appropriate legal frameworks. In effect it means that the criminal justice system continues to develop expertise in the management of sexual offences cases, but that it remains bound by antiquated laws pertaining to the substantive and procedural aspects governing the investigation and prosecution of rape. The political investment in specialised courts also means that concomitant changes are required.
within the public health system to ensure that medical and forensic evidence is relevant and adequately testified to in court. There does not yet seem to be much evidence to suggest that the criminal justice and public health systems have developed integrated policies and practices for dealing with sexual offences, despite the prevalence of hopeful rhetoric.

**DOCUMENTING SEXUAL VIOLENCE**

The most direct intersection between health and justice responses to gender-based violence is the J88 form, on which health care workers are required to provide details of unlawfully inflicted injuries suffered by their patients, whether they arise from domestic abuse or sexual violence. For many health care workers the importance of fully and accurately documenting injuries for the purpose of police investigation or future prosecution is not always apparent. While doctors may therefore ensure excellent medical management of victims presenting to them, the J88 is too often an afterthought that is completed shoddily. Research conducted by the Gender, Health & Justice Research Unit, based in the Faculty of Health Sciences at UCT, has shown that these critical forms are often incomplete, or that they reflect disjunctures between the findings recorded in the examination and the conclusion reached by the practitioner (ongoing). A J88 may record, for example, that all aspects of the gynaecological examination are “normal” while concluding that a patient “has probably been raped” or, conversely, indicate the presence of tears and bleeding in and around the vagina while cryptically concluding that “it is not possible to exclude the possibility of rape”. Ironically, this latter example reflects exactly the same institutionalised scepticism to complaints of rape that is seen in the attitudes of police officers, whose primary role seems to be to disprove the victim’s allegation of rape. While doctors are certainly not required to “confirm” that a rape has occurred, they are required to put consistent and credible information before the court to support their clinical conclusion as to whether a patient has been sexually assaulted. In the context of a crime where there may be very little other corroborating information available, this documentation is of critical importance. The *National Management Guidelines for Sexual Assault Care* (hereafter *National Management Guidelines*) (DoH 2004) also specifically caution practitioners against writing the conclusion that there is “no evidence of abuse” purely on the basis that no physical injuries are observed.

The *National Management Guidelines* require health care practitioners to retain detailed case notes for further medical management of the victim. The Sexual Assault Examination Form (SAEF) has been developed to guide the medical examination and to ensure proper documentation. Although experts generally consider these forms (including the Sexual Assault Protocol used
in Western Cape) to be more fully and accurately completed than the J88, medical practitioners must take care to complete both. Precisely because the SAEF contains so much more detail than the J88 its use in court (where the J88 is incomplete or unintelligible) poses the risk of a potential invasion of the victim’s privacy. Everything that is medically relevant may not be legally relevant and it is therefore important that victims are not exposed to the trauma of having defence attorneys trawl through records that document their medical and psychological histories where this is not strictly relevant to the offence being tried.

**UPDATE ON NATIONAL MANAGEMENT GUIDELINES FOR SEXUAL ASSAULT**

Following the *National Management Guidelines*, the Department of Health (DoH) published its *National Sexual Assault Policy* in January 2005. Both documents recognise that public health responses to victims of sexual violence have been inadequate and that the process of seeking health care has often exposed victims to further trauma. Emphasis is placed on managing the long-term medical and social consequences of sexual assault in addition to providing effective primary intervention, and on the victim’s health and welfare. As a guiding principle the *National Management Guidelines* recommend that services, including post-exposure prophylaxis, should be available 24 hours a day and that the examination of sexual assault victims should be prioritised. Additionally, the *National Management Guidelines* deal with key issues, including:

- consent (with particular reference to unconscious patients, children under 14 years of age, patients who are temporarily mentally incapacitated as a result of drug or alcohol use, and mentally incompetent patients)
- patients who do not wish to report the matter to the police (these patients should be encouraged to nonetheless allow collection of evidence for possible later use)
- counselling and psychological support, with specific reference to HIV counselling.

Detailed instructions are given for the examination and treatment of the victim in relation to evidence collection, injuries, and prophylaxis for HIV, tetanus, STIs, and pregnancy.

The three key strategies contained in the National Sexual Assault Policy, which should serve as a benchmark for monitoring the performance of the DoH in relation to sexual assault victims, are to establish:

- an integrated institutional framework with the DoH to guide
internal collaboration and cooperation

- “designated, specialised, accessible, 24-hour health care services for the holistic management of patients to improve health status after sexual assault”
- links with both the community and other government stakeholders.

Meeting these policy objectives is critical to achieving better service provision for victims. Given that the rhetoric of integration, holistic care, and inter-sectoral cooperation has been thrown about freely in the past with few tangible shifts in service provision, it will be important to monitor the implementation of this commitment. To date the record has been less than impressive. The coordination of services between the police, justice and health sectors has been particularly problematic, even where this has been part of a publicly acknowledged inter-sectoral strategy. Of particular concern has been the lack of readily available trained health personnel and emergency services to transport victims between police stations and health facilities. The accreditation of sexual assault nurse examiners – which would provide greatly improved access to health services for victims of sexual assault by providing specialised, highly skilled, and dedicated nursing personnel for medico-legal examinations – has also been caught up in bureaucratic red tape. It is to be hoped that now, with the publication of these guidelines and the formulation of a detailed policy, there will be sufficient institutional commitment to build the capacity for improved delivery.

FEMICIDE

Femicide (female homicide) represents the most extreme form of violence against women. The World Health Organization (WHO) has estimated that between 40 to 70% of all women killed are murdered by an intimate partner (Dahlberg & Krug 2002). Most research into femicide has been conducted in developed countries and there is currently no database of homicides in South Africa that would provide ready access to information on the number of women killed in the country by an intimate partner. In 1996, a small pilot study conducted in Gauteng found that a woman was murdered every six days by an intimate partner (Vetten 1996), and Matthews et al. (2004) completed a national study of female homicide.³

This study collected data retrospectively of all women over the age of 13 years killed in 1999, from a representative sample of medico-legal laboratories (MLL) in South Africa. Information garnered from the death registers at the MLL was used to obtain copies of post mortem reports, and

³ This study was conducted during 2002-2003, by researchers from the Medical Research Council, the Division of Forensic Medicine & Toxicology of the University of Cape Town and the Centre for the Study of Violence and Reconciliation.
followed up with interviews of police officers who had investigated those cases. Information obtained from both the police dockets and investigating officers was used to classify cases as intimate or non-intimate.\(^4\) Other data collected included demographic information on the victims and perpetrators, the nature of their relationship, previous incidents of violence, whether protection orders had been sought in terms of the DVA, and the pathology noted at autopsy in the post mortem reports, as well as the sufficiency of the report.

Complete data were obtained for 86.7\% of the women murdered ($n = 3\,296$). In 6.4\% of cases the dockets were missing and in 6.9\% no police case could be traced as having been opened. Of those cases where a relationship between the victim and perpetrator could be ascertained it was estimated that 1\,349 women were killed in 1999 in South Africa by an intimate partner. This represents an overall prevalence rate of 8.8 per 100\,000 women aged 14 and older, or one woman every six hours.

PROBLEMS WITH DATA COLLECTION

In addition to its substantive findings, this study pointed to problems with record keeping and the coherency of state-held data. The findings enumerated by Matthews,\(^5\) a co-investigator on the project, regarding constraints on data collection have implications that go beyond this particular study, highlighting both the difficulties of doing research into gender-based violence and the innovative methodologies that this requires. Some examples of the difficulties experienced in this study included:

- Death registers were incomplete at a number of police stations and at three mortuaries they were completely absent. This meant that researchers were forced to use alternative sources, including the district surgeon’s diary and police crime records. The problem was compounded by the use of private mortuaries and private medical practitioners to perform autopsies.
- Police case numbers were not always entered into death registers, which meant that more reliance had to be placed on the cooperation of investigating officers and station commissioners.
- Some 6.4\% of the dockets were missing, having been lost, misfiled, or possibly not returned from court.
- In 18.4\% of cases the researchers were unable to categorise the homicide because there was insufficient information. Docket

\(^4\) Intimate femicide was defined as “The killing of a female person by an intimate partner i.e. her current or ex-husband or boyfriend or same sex partner, or a rejected would be lover”. Non-intimate femicide was defined as “The killing of a woman by someone other than an intimate partner” (Matthews et al. 2004).

\(^5\) This section derives from a presentation made by Shanaaz Matthews at a conference entitled “A New Decade of Criminal Justice in South Africa — Consolidating Transformation” held from 7-8 February 2005. The presentation, titled “Challenges and Barriers to Data Collection: Experiences from a National Female Homicide Study” is available on: http://www.csvr.org.za/cjspeak.htm.
entries were often illegible.

- In two thirds of the identified intimate femicide cases a previous history of violence within the relationship was not referenced.

These difficulties mirror many of those experienced by other researchers involved in similar research. In 2001, for example, researchers based at the Institute of Criminology at UCT set out, in partnership with the Salt River MLL, to determine whether women killed by intimate partners during the preceding year had obtained domestic violence protection orders, but this proved impossible to ascertain. Unless, by fluke, the police docket contains a copy of the protection order there is currently no feasible way of ascertaining whether a victim has previously sought protection from the justice system against an intimate partner. Indeed, as this study showed, it is often difficult to even ascertain whether the perpetrator was in fact an intimate partner. Unfortunately this holds equally true for less lethal but far more prevalent offences such as assault and rape. It is impossible, at present, to construct an accurate picture of a victim’s interaction over time with the criminal justice, public health, or welfare sectors in her pursuit of safety.

A number of useful recommendations come out of this study, which if implemented, may go some way to remedying the lack of coherency as far as murders go, including: establishing a national homicide database; providing specialised training to police officers on the investigation of female murders; and establishing guidelines to deal with such cases. It is clear, however, that far more consultation is required between researchers and government agencies to ensure that useful and accurate data are collected that will allow them to both assess the current position and changes over time in relation to victims of gender-based violence.

JUDICIAL RESPONSES TO VIOLENCE AGAINST WOMEN

BACKGROUND: CONSTITUTIONAL PROVISIONS

The Constitution of the Republic of South Africa, Act No. 108 of 1996 is the most powerful instrument in South Africa for ensuring that the rights of victims of violence are upheld, in that it both guides the development of legislation aimed at addressing violence and can be used to “test” the constitutionality of rights and obligations contained within it. The Constitution entrenches a number of rights that are directly relevant to the context of gender-based violence. Principal among these is the right to freedom from violence, which is formulated as follows in section 12(1)(c), which provides that: “Every person has the right to freedom from all forms of violence from either public or private sources”.

The inclusion of the phrase “from either public and private sources” is
especially significant when we consider that acts of gender-based violence (such as domestic violence or sexual assault) are predominantly committed in contexts, spaces, and relationships that are traditionally viewed as “private”.

Furthermore, the Constitution also guarantees the right to:
- bodily and psychological integrity (section 12(2))
- dignity (section 10)
- life (section 11)
- equality (section 9)
- access to health care services (section 27(1)).

Since the introduction of the Constitution in 1997, South African courts have increasingly acknowledged the extent to which gender-based violence constitutes a violation of women's rights. In *S v Chapman* 1997 (3) SA 341 (SCA), the Supreme Court of Appeal emphasised the seriousness of the offence of rape, which represents a “humiliating, degrading and brutal invasion of the privacy, the dignity and the person of the victim”. It was stressed that in order to protect the equality, dignity and freedom of all women, the courts will “show no mercy to those who seek to invade those rights”.

In order to appreciate fully the practical implications of the constitutional entrenchment of these rights, the above provisions should be read with section 7(2) of the Constitution, which requires the State to “respect, protect, promote and fulfil” the rights contained in the Bill of Rights. This implies that there are certain positive duties resting on the State to ensure that these rights are fully realised. In relation to the right to freedom from violence, this means that the State has an obligation to take proactive steps to prevent gender-based violence as well as to respond to such violence.

**STATE LIABILITY FOR ACTS OF GENDER-BASED VIOLENCE**

South African courts have in recent years confirmed in a number of cases that the State bears obligations to address gender-based violence. The most prominent of these cases has been *Carmichele v Minister of Safety and Security and Another* 2001 (4) SA 938 (CC), which arose from a vicious assault on Alix Carmichele by a man who had a charge of rape pending against him at the time of the assault. Although the police were aware of the fact that the perpetrator had previously been convicted of indecent assault, he was released on his own recognizance in the rape case. Carmichele brought a claim against the Minister of Safety and Security and the Minister of Justice, alleging that the State (as represented by the police and prosecutors who handled the rape case) had been negligent in failing to take
steps to protect potential victims against further violent acts committed by this perpetrator by ensuring that he was kept in custody in the rape matter.

The claim was initially turned down in the Cape High Court and the Supreme Court of Appeal. The Constitutional Court, however, found that the State and its organs (such as the police) had a legal duty, arising from the Constitution, to provide appropriate protection to everyone through laws and structures designed to afford such protection. It made the following important statement:

The police is [sic] one of the primary agencies of the state responsible for the protection of the public in general and women and children in particular against the invasion of their fundamental rights by perpetrators of violent crime. [Par 62]

This interpretation by the Constitutional Court led to the case being returned to the Cape High Court for the hearing of further evidence. The eventual outcome was a finding in Carmichele's favour, which was finally endorsed by the Supreme Court of Appeal in November 2003.6

Following the Constitutional Court's judgment in the Carmichele case, the Supreme Court of Appeal confirmed in three subsequent cases that SAPS members have a legal duty to take steps to prevent acts of violence by persons who represent a clearly identifiable threat to others (Minister of Safety and Security v Van Duivenboden 2002 (6) SA 431 (SCA), Van Eeden v Minister of Safety and Security 2002 (4) AllSA 346 (SCA) and Minister of Safety and Security v Hamilton 2004 (2) SA 216 (SCA)).

The emerging principles of the State's liability for failure to prevent acts of gender-based violence were recently taken one step further by the Constitutional Court in K v Minister of Safety and Security (Case Number CCT 52/94 13 June 2005, unreported judgment). Ms K, the plaintiff, found herself stranded at a petrol station in the early hours of the morning and three on-duty policemen offered to give her a lift home, which she accepted. Instead of taking her home, the three men abducted and forcibly raped her. The perpetrators were subsequently convicted of rape and kidnapping. Because the three policemen were on duty at the time of the incident, Ms K brought a claim against the Minister of Safety and Security on the basis that the Minister was vicariously liable for the conduct of the rapists. The Constitutional Court ruled that in the light of the statutory and constitutional duty resting on the police to prevent crime and protect members of the 

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1 Carmichele v Minister of Safety and Security 2004 (3) SA 305 (SCA).
public, each of the three police officials had failed in their duty towards the victim by not intervening when she was raped by the other two co-rapists. For this reason, the court ruled that the Minister of Safety and Security was liable for the acts of the three SAPS members.

The judgments set out above are of importance most notably because they place the issue of gender-based violence within a human rights framework, emphasising that such violence amounts to a serious violation of constitutionally protected rights. Moreover, the judgments make it clear that the State, as represented by organs such as SAPS or prosecuting authority (and arguably also therefore the health and welfare sectors), has to take proactive steps under certain circumstances to prevent acts of gender-based violence and to protect potential victims. Where state agents fail to do so, the State may be held responsible. These principles are in line with progressive jurisprudence in other jurisdictions (such as Canada) as well as the decisions of international and regional human rights tribunals.

ABUSED WOMEN WHO KILL THEIR VIOLENT PARTNERS
The position of abused women who kill their violent partners has received attention from South African courts in two recent judgments. The accused in *S v Ferreira* 2004 (2) SACR 454 (SCA) had been convicted of murder for hiring two men to kill her abusive partner. Legislation prescribes a minimum sentence of life imprisonment for premeditated murder unless there are “substantial and compelling circumstances” justifying a deviation from this sentence. In this instance, the Supreme Court of Appeal found that the history of unremitting abuse that the deceased had inflicted on the accused constituted such substantial and compelling circumstances.

The importance of this judgment lies not only in the acceptance by the court of the consequences of extensive domestic violence on women (and that the accused’s actions fitted a well-known pattern of responsive behaviour in abused women), but also in its recognition of the value and importance of expert evidence in these cases. The court phrased this reliance as follows:

> Her decision to kill and to hire others for that purpose … has to be judicially evaluated not from a male perspective or an objective perspective but by the court’s placing itself as far as it can in the position of the woman concerned, with a fully detailed account of the abusive relationship and the assistance of expert evidence such as that given here. [Par 40]

A second case, *S v Engelbrecht* 2005 (2) SACR 41 (WLD), presented a set of facts similar to those in the *Ferreira* matter. The accused, who had been subjected to long-standing domestic violence, murdered her husband (who
was either asleep or unconscious at the time and therefore did not present an immediate threat) under circumstances that indicated premeditation. The accused here was eventually found guilty of murder, but received a notably light sentence: she was sentenced to be detained until the rising of the court.

This judgment presented a detailed and insightful analysis of domestic violence, including an examination of the concept of “domestic violence”, the prevalence of domestic violence in South Africa and the *sequelae* of prolonged abuse. It further analysed the gendered nature of key legal principles relating to self-defence. Significantly, Judge Satchwell acknowledged the importance of expert evidence in assisting the court in understanding the effects of domestic violence on the psyche of an abused woman who kills. Cases such as *S v Ferreira* and *S v Engelbrecht* represent promising steps towards a better understanding of gender-based violence among judges and magistrates.

**REDEFINING RAPE**

While Parliament has been dragging its feet on the Sexual Offences Bill, the courts have pre-empted one of the more important reforms and begun to redefine the legal meaning of “rape”. In May 2007 the Constitutional Court confirmed in the case of *Masiya v the DPP* CCT 2006/54 that the definition of rape as pertaining only to vaginal penetration with a penis was unconstitutional. It extended this definition to include penetration of a woman’s anus using a penis. While this is an important extension of the common law, the Constitutional Court has been criticised for not further extending the definition to include the anal penetration of men. This is most notably set out in a dissenting judgment written by the Chief Justice, in which he eloquently sets out the basis for extending the crime of “rape” to include men.

**PRESCRIPTION**

Although the State’s right to institute a prosecution for the crime of rape never prescribes or lapses, this is generally not true of a rape victim’s right to institute a civil claim for damages against the perpetrator. It is also not true of sexual offences which fall outside of the current definition of rape as set out above. This latter problem will presumably be remedied once the broadened definition of rape, as defined in the Sexual Offences Bill, comes into effect. The question of whether adult victims of child sexual abuse should in all cases be bound by the general rule that a plaintiff’s claim for civil compensation prescribes three years after she attains the age of majority, has recently received attention in the case of *Van Zijl v Hoogenhout* 2005 (2) SA 93 (SCA).
The Supreme Court of Appeal recognised that child sexual abuse has effects on the victim that differ markedly from those suffered by the usual plaintiff in a civil claim. One of the known psychological consequences of such abuse includes the victim transferring responsibility for the abuse on to him/herself. In this instance, the court therefore ruled that, contrary to the general rule, prescription only started to run when the plaintiff realised (in this case at the age of approximately 45 years) that it was not she, but the perpetrator, who was responsible for the abuse that she had experienced. This meant that her claim still fell within the permitted three years.

The increased use and recognition of expert testimony that explains the physical and psychological impact of violence has been an important outcome of these cases. They have simultaneously set the standard for what qualifies in court as relevant evidence and opened the door for public health and mental health practitioners to assist the court in understanding the nature, complexity and impact of violence and violence-related injuries. At the same time, these judgments have begun to challenge the social and legal understanding of women’s experiences with violence and to act to ensure that these experiences are increasingly embodied within the law and criminal justice practice. As such, they have provided an important symbolic message to public officials, including those in the criminal justice and public health sectors, about how domestic violence and rape cases should be treated.

FROM DATA TO ACTION

It is readily apparent, when reading the discussion above, that more applied and concrete developments in services to victims of gender-based violence have been relatively ad hoc. This is not to say that the institutions charged with addressing these issues have been stagnant in their attempts to address the critical challenges in providing an effective service to victims of gender-based violence. In many instances, government departments have used the results of research to improve the implementation of legislation and to develop broad integrated guidelines for best practices in both criminal justice and public health settings. The National Management Guidelines, the improvement of certain aspects of the Sexual Offences Courts, and the development of guidelines for magistrates for implementing the DVA are just a few examples of putting “data into action”.

Research into victims’ experiences with violence and service provision; compliance with legislation and service protocols; the attrition or management of cases; and the application of service provision models has increasingly become a vital tool in the development policies, legislation and programmes in relation to violence against women and in monitoring.
Health and Justice Responses to Gender-based Violence

their implementation. More attention is being paid to research that provides a substantive contribution to the more pragmatic, and sometimes more nuanced, issues of implementation and service provision. These research contributions range from longitudinal clinical studies on the effects of post-exposure prophylaxis on rape victims to technical legal research and opinions on the application of the law. For instance, during September 2003, researchers and legal experts in the violence against women sector focused their energy on using the empirical knowledge that had been accumulated in preceding years to lobby for specific provisions in the Sexual Offences Bill and to provide Parliament with a broader understanding of the complexities of sexual offences. Key examples of these submissions based on research, include those conducted by Barday and Combrinck (2002) into the application of bail legislation in rape cases, Artz, Smythe and Leggett (2004) into integrated rape case management (commissioned by the Sexual Offences and Community Affairs Unit of the NPA), Denny’s work on post-exposure prophylaxis following sexual assault, IDASA’s research into gender-responsive budget allocations, and the Women’s Legal Centre’s submission into aspects of evidence and procedure in rape trials, based on their work at the Women’s Legal Centre.7

The increase of interest in and use of research aimed at improving criminal justice and health practices in relation to violence against women has, however, also had some unexpected consequences. We are seeing fewer state-civil society partnerships as well as a tendency towards more competitive tendering practices by the State for research into violence, its prevention and treatment. The concomitant effect of this practice is that research historically conducted by experts in the field is being put into direct competition with larger, better-resourced research companies or institutions that do not necessarily have the same depth of knowledge about violence against women as those organisations working directly with the issue. Not only do the non-governmental and academic sectors not have the same bargaining power and financial resources to compete fairly in these processes, but they are systematically being forced to achieve their research objectives outside of the formal government systems. This means that information collected and managed by the State becomes more difficult to access and therefore scrutinise. Although the emphasis on formal contracts with the State does ensure the accountability of researchers, it can also affect the nature of the research question and ultimately the results and outcomes.

State-driven research does not necessarily want to investigate the same questions or have the same research objectives as those working on the outside.

The question of state-civil society partnerships in addressing violence against women will no doubt raise some questions and debates in the near future about our objectives, findings and use of research. It will test the balance between research in pursuit of improved service delivery, access to information and the need for objective analysis. In the meantime, we need to focus on developing methods and practices that ensure that our research, theory and recommendations for improving service conditions are responsive to inter-disciplinary measures necessary to address violence against women.
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PRIORITIES AND PREVENTION POSSIBILITIES FOR REDUCING SUICIDAL BEHAVIOUR

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ABSTRACT
Suicidal behaviour is a major public health problem both internationally and in South Africa. National prevention programmes and strategies have been developed in some countries, but in South Africa this is clearly still needed. This chapter discusses a recommended preliminary framework for a national suicide prevention programme, building on the knowledge and experience gained from other national programmes and taking into account South African research data. From an overview of suicidal behaviour in South Africa, gaps in current knowledge and prevention needs are identified. Based on these, a suggested overall vision for the programme, goals, guiding principles and strategies to achieve specific objectives are discussed. The programme is concerned with suicidal behaviour at all levels of the population, but with a particular focus on high-risk groups. Strategies are aimed at individual/family, community and societal levels, as well as at educational institutions, in an attempt to bring about: 1) a lasting reduction in suicidal behaviour across the life span; 2) to eliminate, as far as possible, circumstances conducive to suicidal behaviour; 3) to enhance early detection and treatment of vulnerable individuals and groups; 4) to promote public knowledge of suicidal behaviour; and 5) to offer support to suicidal individuals and those affected by suicide.

Key-words: suicidal behaviour, prevention programme

INTRODUCTION
The primary aim of this chapter is to identify priorities and prevention possibilities for reducing suicidal behaviour in South Africa. To achieve this aim, it is first necessary to provide an overview of suicidal behaviour and current prevention initiatives in the country. Information was gathered from journal articles (identified in the National Library of Medicine’s database Medline), internet site searches, research reports of relevant organisations, and contacts with stakeholders at various levels.

1 To whom correspondence should be addressed.
Based on this information, gaps in the authors’ knowledge and prevention priorities are identified. These priorities are used, in conjunction with the knowledge and experience gained from other national programmes worldwide, to inform a preliminary framework for a national suicide prevention programme.

Although there has been much debate regarding the terminology to describe suicidal behaviour in its various forms (Schlebusch 2005a), space does not allow the issue to be discussed here. Hence, acts that do not result in death, have been termed “non-fatal suicidal behaviour”. Such acts are frequently referred to as “attempted suicide”, “parasuicide” or “deliberate self-harm”.

**INTERNATIONAL CONTEXT**

Suicidal behaviour is a major public health problem worldwide. According to the *World Report on Violence and Health* (WHO 2002a), almost one million people worldwide died from suicide in 2000, representing one death every 40 seconds. Suicide is the thirteenth leading cause of death worldwide, but among 15-44 year-olds, it is the fourth leading cause of death and sixth leading cause of ill-health and disability (WHO 2002a).

The available statistics are only the tip of the iceberg, with estimates for non-fatal suicidal behaviours ranging between 10 and 40 times higher than fatal ones (WHO 1999a). Furthermore, such figures do not begin to describe the emotional, social and economic impact that these deaths and attempts have on the family and friends left behind. In addition, enormous economic costs are associated with suicidal behaviour (WHO 2002a).

Given these statistics and their devastating consequences, prevention efforts are essential. A number of countries have developed national programmes and strategies, e.g. Australia, New Zealand, Sweden, Norway, Finland, Britain, the United States, France and Estonia (Taylor, Kingdon & Jenkins 1997). Although South Africa does have some regional prevention activities, a national programme has yet to be developed. Consequently, the specific objectives of the current chapter are, namely: 1) to provide an overview of suicidal behaviour in the South African context, paying particular attention to sociodemographic differences, the methods used and known underlying factors; 2) to give a brief description of existing strategies for preventing suicidal behaviour; and 3) to put forward a framework for a future national prevention programme, including an outline of goals, guiding principles and possible strategies.
OVERVIEW OF SUICIDAL BEHAVIOUR IN THE SOUTH AFRICAN CONTEXT

Due to a lack of reliable data, the full extent of the burden of suicidal behaviour in South Africa has not been well understood. Nationally, mortality statistics did not adequately cover all groups and all regions during apartheid. Following a 1992 change to the Births and Deaths Registration Act inhibiting the specification of the manner of injury deaths (i.e. whether suicide, homicide, accident or undetermined), suicide-specific data are unavailable in the post-apartheid era. National figures for non-fatal suicidal behaviour have never been collected. Consequently, information regarding suicidal behaviour in South Africa typically comes from small-scale ad hoc studies (Schlebusch 2004). These cover different groups of the population, different time periods and different regions, making comparisons across studies difficult.

Two research-based efforts have provided a broader picture of suicidal behaviour. The first is a multi-centre research-based intervention programme targeting non-fatal suicides known as the Durban Parasuicide Study (DPS) (Schlebusch 2004). It will be described in greater detail when existing prevention strategies are discussed. The DPS research group has generated considerable data on both fatal and non-fatal suicidal behaviour.

The second research-based effort, focused on fatal suicidal behaviour, began more recently with the development in 1999 of the National Injury Mortality Surveillance System (NIMSS) (Burrows et al. 2001, 2003; Butchart 2000; Butchart et al. 2001; Matzopoulos 2002, 2004; Matzopoulos, Cassim & Seedat 2003). Information for this system is collated from existing investigative procedures at mortuaries and state forensic laboratories, as part of a collaborative effort between different research groups and government bodies in South Africa. Demographic variables of the deceased, spatial and temporal details of the injury event, the manner and external cause of death, and the involvement of alcohol are recorded. Although the system does not yet have national coverage, with each successive year more mortuaries have been included. It currently has full coverage of the following municipalities: Buffalo City, Cape Town, eThekwini, Johannesburg, Nelson Mandela and Pretoria/Tshwane. This makes it possible, for the first time, to compare all sociodemographic groups for the same time period and geographical level.

Data from the DPS, NIMSS and other individual studies provide a disturbing profile of suicidal behaviour in South Africa. Prevalence rates for suicidal behaviour based on apartheid-era data are considered an under-representation since research among the majority Black population...
was largely neglected. The national annual number of injury deaths was estimated at 68 930 in 2000 (Bradshaw et al. 2003), although indications are that this figure has been decreasing since 1996 (Bah 2004). The WHO (1999b) reported that in 1990 suicide accounted for about 8% of all non-natural deaths, whereas the NIMSS figures for 2003 showed that suicide accounted for about 11% of all non-natural deaths in South Africa (Matzopoulos 2004). This shows a slight increase from the 10% of previous years (Matzopoulos 2002; Matzopoulos, Cassim & Seedat 2003). If it is considered that 8-11% of all non-natural deaths in South Africa are due to suicides, and that for every fatal suicide there are at least 20 non-fatal suicides (Schlebusch 2004), it can then be estimated that between 5 514 and 7 582 South Africans die of suicide annually, and that between 110 280 and 151 646 or more engage in non-fatal suicidal behaviour annually. This represents up to: 1) 632 deaths by suicide every month, 146 per week, 21 every day and almost 1 every hour; and 2) 12 637 non-fatal suicides every month, 2 916 per week, 415 every day and 17 per hour in South Africa (Schlebusch 2004). Although such figures affect the community at large, not all groups in the population are similarly at risk of suicidal behaviour. Such differences are important when targeting prevention efforts, and are discussed below.

SOCIO-DEMOGRAPHIC DIFFERENCES

There is a great deal of uncertainty about the relative importance of suicidal behaviour in the different sociodemographic groups. Since ethnicity has been one of the major bases of division of South African life, it has frequently been considered as an important sociodemographic variable, and studies almost invariably examine the suicide outcome in ethnic-specific groups. Although there are dangers in presenting the data according to ethnic groups that have no anthropological or scientific validity (Bourne 1989; West & Boonzaier 1989), there remain important differences between ethnically defined groups in the share of ill-health, mediated by social and economic factors. Statistics South Africa (Stats SA) continues to classify people into ethnic groups (based on self-classification, rather than legal definition) since moving away from apartheid-based discrimination, and monitoring progress in development over time involves measuring differences in life circumstances by ethnicity (Stats SA 1996). The use of ethnic categories in this chapter is based on the same reasoning, recognising that these ethnic categories are a social construction that serves certain political purposes and gives no indication of intra-group diversity. The categories used include Black, White, Coloured and Asian.

Schlebusch (2004) has provided an extensive review of contemporary South African research on suicidal behaviour. In summary, studies included in the
review and others (Flisher & Parry 1994; Flisher et al. 2004; Levin 1988, 1992; Wassenaar & Naidoo 1995) have shown that:

- Suicide is higher among males than females.
- Non-fatal suicidal behaviour is typically higher among females than males.
- As a proportion of all injury deaths or as rates, suicide is typically higher among Whites and Asians compared to Blacks or Coloureds.
- For Black males and females, younger age groups (usually 15-24, 25-34 years) have proportionally higher suicides and higher rates, after which suicide generally decreases with increasing age.
- Suicides among Coloureds tend to be highest in middle age (25-54 years), although 15-24 year-old females also have high numbers. They typically decrease substantially after age 54 years for males.
- Suicides among Whites tend to peak in older age groups, particularly for males.
- Suicides among Asian females are highest in the 15-24 years age group, often substantially so, with very few recorded among the elderly. Results for males vary across studies with some reporting higher levels among 15-44 year-olds and others reporting higher levels among those older than 54 years.
- Non-fatal suicidal behaviour tends to peak in the second decade of life.
- Up to about one third of all non-fatal suicidal behaviours involve children and adolescents.

It is important to monitor these patterns on an ongoing basis as evidence shows that suicidal behaviour in different groups changes across time. A study concerned with trends in suicide from 1968-1990 (Flisher et al. 2004) found an increase in the young, particularly for Whites, and an increase in Whites older than 64 years. These changes were more marked in males. A study covering a more recent period showed that non-fatal suicidal behaviour among Black South Africans had increased by up to 58% over a 10-year period in some centres (Schlebusch, Vawda & Bosch 2003). It has also been argued that this increase should be viewed as a genuine escalation of the problem, rather than simply as a reflection of improved recording practices over recent years in post-apartheid South Africa (Mkize 1992; Schlebusch & Bosch 2000; Schlebusch et al. 2003).

**METHODS USED IN SUICIDAL BEHAVIOUR**

A number of factors influence the choice of method used in suicidal behaviour, such as: (a) accessibility; (b) knowledge or lack thereof; (c)
experience and familiarity; (d) meaning, symbolism and cultural influence; and (e) the suicidal person's state of mind and level of intent (Schlebusch 2004). All these factors need to be considered when designing prevention programmes.

With regard to the methods used for fatal suicides, hanging is usually reported to be most common (typically accounting for between 34-43% of suicides), followed by firearms (29-35%), poison ingestion (9-14%), gassing (6-7%) and burning (2-4%) or jumping (2-4%) (Burrows & Laflamme 2006; Burrows et al. 2001; Butchart 2000; Matzopoulos 2002, 2004; WHO 1999b). However, where examined, these methods typically differ substantially across sociodemographic groups. Annual reports for NIMSS (Burrows et al. 2001; Butchart 2000; Matzopoulos 2002, 2004) have shown that while the above pattern is typical of male suicides, poison ingestion predominates among female suicides, followed by firearms or hanging. Across age groups, hanging predominates until middle age, after which firearms become the leading method. Blacks and Coloureds use hanging considerably more frequently than any other method. The results for Asians are mixed depending on which year of NIMSS data is examined, with similar numbers of suicides by firearms and hanging for 1999 and 2000, but more than double the number for hanging than firearms in 2001. Whites most often use firearms as the method of choice and are the only ethnic group for whom gassing suicides are noteworthy (accounting for approximately 15% of White suicides).

A number of studies covering different regions have examined methods across ethnic groups for males and females separately (Breetze 1988; Burrows, Vaez & Laflamme 2007; Flisher & Parry 1994; Lerer, Knobel & Matzopoulos 1995; Wassenaar & Naidoo 1995). With few exceptions these studies found that the leading method was the same for both males and females for Blacks (i.e. hanging), Asians (i.e. hanging) and Whites (i.e. firearms). For Coloured males the leading method was typically hanging, while the most common method for Coloured females was poison ingestion.

One study using NIMSS data (Burrows et al. 2007) also examined sex-specific distributions across age groups. For males of all ages, except those aged 45+ years, hanging suicides are significantly higher than firearm suicides, both of which are significantly higher than any other methods for all ages. In contrast, although there is a tendency for females to frequently use poison ingestion as a method, in no age group is it significantly higher than all other methods. Hanging is also a common method, particularly in the younger age groups, and firearm use is common in the older age groups.
For non-fatal suicides, collectively the DPS research shows that the overall choice of method in 90% of non-fatal suicidal behaviour is overdose. A wide variety of substances are ingested, but over-the-counter analgesics (painkillers), prescription only benzodiazipines (tranquillisers) and anti-depressants are most commonly used (Schlebusch 2004). Other reported methods, especially amongst Blacks, include self-poisoning by household utility liquids, such as paraffin, and various poisons, hanging and throat lacerations (Schlebusch et al. 2003).

UNDERLYING FACTORS
Although there are ongoing deliberations regarding the relative importance of various risk and protective factors in suicidal behaviour, it is likely that a range of factors are associated with increased suicide risk for an individual (LIFE 2000). Recognition of risk factors at all levels - societal, community and individual/family - is an essential feature in planning intervention and prevention programmes. Although many South African studies have examined risk factors on each of these levels, in-depth research on the causes of extended suicidal behaviour is lacking.

At the societal level
Chronic and acute stress (Pretorius & Roos 1995; Schlebusch 1995b) are critical co-morbid aetiological considerations in suicidal behaviour, and are of particular importance in South African society. Decades of discriminatory apartheid policies have not only severely traumatised citizens through gross human rights violations (Pillay & Schlebusch 1997), but have left a heritage of stress-related psychological problems (Schlebusch & Bosch 2002) with potential suicidal implications. Extremely high prevalence rates of violence and trauma (McKendrick & Hoffman 1990; Schlebusch & Bosch 2002); first world influences on an internationally, less isolated post-apartheid South Africa; high expectations which are not always realised following political and other transformation; acculturation; socioeconomic difficulties including high unemployment levels; and economic pressures (if not timeously addressed) all combine to further produce a breeding ground for potential suicidality (Schlebusch et al. 2003).

At the community level
Durkheim (1951) first noted the importance of moral and religious attitudes in influencing suicidal behaviour, finding that suicide rates in countries adhering to orthodox teachings tended to be low. In South Africa, Flisher et al. (2004) have suggested that compared to Whites, the suicide rate may be lower among Asians and Coloureds because they tend to adhere to religions proscribing suicide; and lower among Blacks because, in addition
to close family ties, they have cultural taboos against suicide. However, the importance of these protective effects across time in transitional South African society remains to be seen. People from traditional backgrounds are having to cope with new roles and a more western-orientated culture, frequently giving rise to conflicts in social roles (Wassenaar et al. 2000).

A community’s perception of suicidal behaviour can play an important role in the likelihood of suicide being chosen as an outcome or the degree to which an individual attempts to disguise the suicide. Through the Werther or copy-cat effect and dramatisation of the suicidal act, the media can strongly influence these perceptions and there is evidence to suggest that media presentations of suicide can increase suicide rates (Etzerdorfer, Sonneck & Nagel-Keuss 1992; Martin 1998, Schmitke & Hafner 1988; Schmitke, Schaller & Wasserman 2001; Wasserman, 1984). Similar trends have been noted in South Africa (Schlebusch 2004, 2005a).

Reviews of studies (Pickett & Pearl 2001; Robert 1999; Yen & Syme 1999) demonstrate that community characteristics both impact on population health and have effects independent of individual characteristics. Although ecological studies addressing contextual determinants of suicide show mixed results, most often people living in low socioeconomic status areas have an increased risk of suicide (Bartlett et al. 1995; Burnley 1995; Cantor, Slater & Najman 1995; Cubbin, LeClere & Smith 2000; Gunnell et al. 1995; Hasselback et al. 1991; Kennedy, Iveson & Hill 1999; McLoone 1996; McLoone & Boddy 1994; Young 1990).

In recent years, there has been an increased focus on social support and community connectedness, and in fact, social fragmentation has been more strongly associated with suicide than has deprivation (Davey Smith et al. 2001; Whitley et al. 1999). To the best of our knowledge only one South African study has examined contextual effects on the suicide outcome (Burrows & Laflamme 2005), and in fitting with other international studies (Cantor et al. 1995; Kennedy et al. 1999), in areas with lower than expected suicide rates, given their high deprivation levels, some kind of social cohesion has been proposed as a protective factor.

**At the individual/family level**

A number of studies have highlighted the role that family problems and interpersonal conflicts play in suicidal behaviour (Cassimjee & Pillay 2000; Pillay 1995a; Pillay & Wassenaar 1997a, 1997b; Schlebusch & Bosch 2000). This is so particularly if there are problems relating to finances, stress, school or university (Cassimjee & Pillay 2000; Noor Mahomed,

Various authors have noted that suicidal people are often poor at solving interpersonal problems (Schlebusch 1992, 1995a; Williams & Pollock 1993). In this context, suicidal behaviour has been viewed as an inappropriate method of communication or problem solving technique when people (especially young people) feel unable to express their distress in a conventional manner or if other attempts to deal with their problems have been unsuccessful. Research data from the DPS group (Schlebusch & Bosch 2000; Schlebusch et al. 2003) would suggest that non-fatal (low intent) suicidal behaviour is increasingly being employed as a first-line, crisis management strategy by people (especially young people) who would not always be considered to have particularly overt psychological morbidity. As children grow up, the prevalence of suicidal behaviour and other self-destructive behaviour can increase dramatically during adolescence and early adulthood if risk factors are not timeously identified and addressed (Schlebusch 1988, 1992, 1995a; Schlebusch & Bosch 2000).

Both international (Hawton & Van Heeringen 2000; Wasserman 2001) and local (Schlebusch 1992, 1995a, 2005b; Schlebusch & Bosch 2000; Schlebusch et al. 2003) research has clearly identified various, often comorbid, psychopathological conditions (in particular mood disorders) as critical factors in the aetiology of suicidal behaviour. In a study examining the prevalence of depression amongst Black adolescents (Mayekiso 1995), up to 38% of the sample was diagnosed as mildly depressed, 20% as moderately depressed and 13% as severely depressed. Schlebusch et al.’s study (2003) reported that mood disorder was the most common diagnosis, being present in nearly two-thirds (64%) of non-fatal suicidal Black patients, with substance abuse, schizophrenia and substance-induced psychosis also recorded. Contemporary research has shown similar outcomes for all cultural and ethnic groups presenting with suicidal behaviour in the South African context (Schlebusch 2005b).

In addition, alcohol and drug abuse and dependence characterise a high proportion of people who take their own lives (Wasserman 2001). Suicide risk may not necessarily occur as a result of severe dependence, but rather on occasions of high consumption when impulsivity increases and the capacity for constructive thought decreases. According to the WHO (1999b), 45% of fatal suicide victims had high levels of blood alcohol concentration (BAC) (0.16 g/100 ml), with 15% of the cases having a BAC level of more than 0.19 g/100 ml. The NIMSS figures (Matzopoulos 2004) have shown
that alcohol was a factor in about one-third of all suicides: of those tested, 35% had positive BAC levels, with a mean BAC level of 0.15 g/100 ml (std dev. 0.10 g/100 ml).

South Africa is experiencing the quadruple burden of disease from pre-transitional diseases (including communicable diseases, maternal causes, perinatal conditions and nutritional deficiencies), emerging chronic diseases, injuries and HIV/AIDS (Bradshaw et al. 2003). Research has found that suicidal behaviour in patients with a life-threatening disease, such as cancer, is a significant but poorly researched area in South Africa (Noor Mahomed, Schlebusch & Bosch 2003). Feelings of helplessness and hopelessness are two signs of depression that occur in people with life-threatening illnesses (Meel 2003). This is an important consideration, given the fact that one in four South Africans will develop cancer and one in two is likely to know someone who has cancer (Schlebusch 1999). A substantially increased likelihood of suicidal behaviour in HIV/AIDS patients compared to the general population has been found (Noor Mahomed & Karim 2000; Van Dyk 2001), with even a correlation between HIV testing and suicidal ideation before the test results are known being reported (Van Dyk 2001). Evidence from a study examining mortality from 1996-2000 in a general hospital in Transkei (Meel 2003) has suggested that suicide rates have risen parallel to the rise in mortality due to HIV/AIDS. Critical psychosocial stressors of HIV/AIDS include social stigma, discrimination, isolation, lack of support from family and friends, and social devaluation, all of which contribute to an increased risk of suicidal behaviour.

EXISTING STRATEGIES FOR THE PREVENTION OF SUICIDAL BEHAVIOUR IN THE SOUTH AFRICA

GOVERNMENT STRATEGIES
In 2000, the Department of Health’s (DoH) Directorate for Health Systems Research, Research Co-ordination and Epidemiology reported on a set of preventive strategies formulated for the better management and co-ordination of suicide data in South Africa, and the reduction of suicide rates (DoH 2000). These strategies include broadening the public’s awareness of suicide and its risk factors, enhancing population-based and clinical care services and programmes, and advancing the science of suicide prevention through effective monitoring systems and research. The current status of and progress towards achieving these strategies is unclear.

In 2002, the mental health legislation was amended by enacting the Mental Health Care Act. The Act provides for the care, treatment and rehabilitation
of persons who are mentally ill, and ensures the dignity and rights of
the mentally ill (DoH 2003). The passing of the Act was important in
highlighting the needs of the mentally ill, and the notion that mental illness
can indeed be treated.

In 2003, the DoH allocated over R1 million of funding to NGOs for the
development of care, treatment and rehabilitation for mentally ill individuals
in community settings (DoH 2003). This included initial financial support
for the toll-free helpline run by the South African Depression and Anxiety
Group (SADAG). Other initiatives included the launching of policy guidelines
on child and youth mental health, the Health Promoting Schools Initiative,
Life Skill programmes, and a school-based suicide prevention programme
in the Free State. These initiatives are intended to draw together other
departments, such as Education and Social Development, as well as to
equip children and youth to deal with life's challenges (DoH 2003).

Other strategies by government departments are ad-hoc regional prevention
efforts. For example, the KwaZulu-Natal Department of Education, together
with that province's Psychological Guidance and Special Education Services,
has developed a suicide brochure that provides brief statistics of the suicidal
behaviour problem locally, an overview of what leads to suicidal behaviour,
and where help can be obtained. This forms part of their envisaged suicide
prevention programmes in schools.

At the 23rd World Congress of International Association for Suicide
Prevention, held in Durban, South Africa from 13 to 16 September 2005, a
statement of intent to develop a national suicide prevention programme was
obtained from relevant South African suicidologists attending the conference
and from the DoH delegates. The second author of this chapter, Lourens
Schlebusch, was the congress president and both authors were on the
organising committee.

SOUTH AFRICAN POLICE SERVICE (SAPS)
SAPS has the only national suicide prevention programme in place at
present. It was launched nationally and provincially in 1998 to prevent
suicide among its members (SAPS 2001). A suicide prevention awareness
curriculum was drafted in 1999 and finalised in 2000 to be used in
workshops nationally. The workshops were largely focused on management
initially, and later on specific groups identified through research. The Suicide
Prevention Awareness Programme presents possible warning signs of suicidal
behaviour and provides the crisis line number. This is a 24-hour anonymous
helpline for SAPS members and their families. This helpline also acts as a
referred system for police officials who need to refer a member of the public or a member of SAPS for either internal or external counselling and support (SAPS 2005).

Kgalema (2000) has reported that police officers work in difficult circumstances and are exposed to repeated trauma. Alcohol and substance abuse is used as a coping mechanism and the suicide rate among SAPS members is exceptionally high. The study, using focus group discussions with SAPS members in a number of municipalities, also found that many officers were unaware of any trauma counselling services within their departments or municipalities, and some believed those services did not exist in their metros. This perceived absence of support services in police departments increases the stress experienced by officers.

DURBAN PARASUICIDE STUDY (DPS)
The DPS originated in 1978 under the leadership of Schlebusch, and involved the Department of Behavioural Medicine, the Nelson R Mandela School of Medicine, the University of KwaZulu-Natal, Durban, and its affiliated teaching hospitals, and community clinics (Schlebusch 2004). The initial impetus for the service came from a growing awareness that only medical stabilisation was being provided to patients admitted because of some form of suicidal behaviour. Consequently, a referral protocol was established, allowing all patients admitted for medical treatment after suicidal behaviour to be comprehensively assessed by a clinical psychologist. It is now routine hospital policy in teaching hospitals that all patients admitted with suicidal behaviour are seen by a mental health care professional once medically stable, usually within 24-48 hours after admission, and prior to discharge. As a result, patients and their families can be psychologically managed more effectively and a substantial data base for research purposes is created, designed for seeking solutions that will prevent suicidal behaviour in the first place.

The establishment of the DPS has resulted in many publications across the years and has drawn its work and the work of other researchers on suicidal behaviour in Southern Africa together through convening several conferences on suicidology (Schlebusch 1988, 1992, 1995a; Schlebusch & Bosch 2000).

THE SOUTH AFRICAN DEPRESSION AND ANXIETY GROUP (SADAG)
SADAG was founded in September 1995 to serve as an advocacy and support network for those suffering from depression, bipolar mood disorder, panic disorder, post traumatic stress disorder, social anxiety disorder, obsessive compulsive disorder and generalised anxiety disorder. It is a non-
profit organisation with a board of psychiatrists, psychologists and general practitioners (SADAG 2005).

Free telephonic counselling is a main focus, with a referral service to experts and free medical treatment where appropriate, but specific attention is also being directed at a massive media campaign to de-stigmatisate mental illness and to encourage people to come forward for treatment (SADAG 2005). SADAG presents workshops and educational programmes countrywide, and provides educational material including videos, audiotapes and publications on the various illnesses and a newsletter.

SADAG has worked in many schools with a teen suicide prevention programme – “Suicide shouldn't be a secret”. Teen suicide prevention week was initiated by SADAG in February 2004 as an annual event to highlight the problem in South Africa and the need for vigilance. It has been hugely successful, with the present Minister of Health endorsing it with her own media adverts. SADAG has monitored and evaluated the effectiveness of its teenage suicide intervention, establishing pre- and post-intervention measures, thereby providing scientific indicators of the programme’s success (Zane Wilson, SADAG founder, personal communication).

Partnerships with the public, schools, universities, churches, youth groups, prisons, corporations and government are key to SADAG’s goals (SADAG 2005). Since 1997, SADAG has initiated outreach projects in rural areas where there are no mental health care services available. These programmes have been recognised and endorsed by the World Federation for Mental Health and the WHO. Support groups created in these areas form part of a network of 150 such groups countrywide.

**LIFELINE SOUTHERN AFRICA**

LifeLine Southern Africa is affiliated to LifeLine International which has over 200 centres in 12 different countries. The first South African LifeLine centre was opened in Cape Town in 1968, and there are now 18 centres and 20 outreach programmes throughout the country (LifeLine Southern Africa 2005). LifeLine Southern Africa provides a free 24-hour crisis intervention service available to all sectors of the community regardless of ethnicity, religion or social standing. The service is primarily based on a telephone counselling service because of its immediacy and anonymity, but also because it is a very intimate means of communication. A wide range of other services are offered by the various centres throughout Southern Africa, depending on the needs of the communities they serve. For example, there are national HIV/AIDS workplace programmes and a Toll Free Aids Helpline,
Van Stadens Bridge Crisis Line, crisis and rape response teams, counselling for teenagers (TeenLine) and for abused women (Stop Women Abuse Helpline, House of Safety for Women), face-to-face counselling, trauma debriefing, support groups, outreach programmes and training courses in communication, basic counselling and life skills. In each centre, counsellors can speak a range of different languages. Typical areas that need to be discussed are depression, loneliness, stress, intimate relationships, family and violence issues.

SAMARITANS (UK AND ROI)/BEFRIENDERS WORLDWIDE
In 2003, the Samaritans (UK and ROI) took over the former Befrienders International (now called Befrienders Worldwide) network of centres in 38 countries (Samaritans/Befrienders Worldwide 2005). There are four centres in South Africa (Bloemfontein, Setshabelo, Mitchell’s Plain, Umkomaas), helping people in need of emotional support, enabling them to explore their feelings in a confidential and non-judgemental manner, in order to reduce the number of people who die by suicide. The Global Linking project of the Samaritans (UK and ROI) aims to facilitate the exchange of knowledge and experience from around the world through its work with rural communities, prisons, “at-risk” groups, in wider emotional health projects and telephonic, face-to-face, email and text messaging services. Based on these services, the project helps to increase awareness around issues of emotional health and suicidal behaviour among governments, relevant international and national organisations, and the general public.

INTERNATIONAL ASSOCIATION FOR SUICIDE PREVENTION (IASP)
The IASP is represented in South Africa and forms an important link between local and international initiatives. Schlebusch is currently the third Vice President. The Organisation aims:

- To raise awareness of the problem of suicidal behaviour at a global level.
- To bring together the available knowledge and expertise from the many professions engaged in suicide prevention and crisis intervention so effective action can be taken.
- To promote the establishment of national organisations for suicide prevention, facilitate the wider dissemination of the fundamentals of effective suicide prevention to professional groups and to the general public.
- To arrange for specialised training of selected persons in suicide prevention in selected training centres.
- To carry out programmes of research, especially those that can be pursued through international joint cooperation (IASP 2005).
MENTAL HEALTH INFORMATION CENTRE OF SOUTH AFRICA
The Mental Health Information Centre has been in operation since 1995, based at the Department of Psychiatry at the University of Stellenbosch (Mental Health Information Centre of South Africa 2005). It forms part of the Medical Research Council’s (MRC) Unit on Anxiety and Stress Disorders. The centre aims to provide the public with information about the symptoms of, and treatments for, common psychiatric disorders, so as to create awareness of, and knowledge about them in addition to helping to destigmatise psychiatric disorders amongst the public and encouraging people and their families to seek treatment. These goals are achieved by:

- providing a telephone information service to the public
- providing the media, medical and other professions with facts about mental disorders
- distributing the Mental Health Resource Guide (a comprehensive list of mental health professional and consumer organisations and institutions offering mental health services) and other mental health publications
- conducting and collaborating research efforts on consumer related mental health issues
- creating projects, such as clinical services, open to the public.

WORLD HEALTH ORGANIZATION (WHO): SUPRE-MISS PROJECT
The WHO has drafted strategy proposals for suicide preventive work and published a series of documents on how to prevent suicide in psychiatric and general practice settings, in schools, prisons and in survivors of suicide, and how to report suicide in the media (WHO 2000), all of which can be applied to the South African setting.

The WHO worldwide initiative for the prevention of suicide, Suicide Prevention – Multisite Intervention Study on Suicidal Behaviours (SUPRE-MISS), was launched in 2000 with the overall goal of addressing the public health problem of attempted suicide and to reduce mortality and morbidity associated with suicidal behaviours. The SUPRE-MISS includes the evaluation of treatment strategies for suicide attempters, a community survey of suicidal ideation and behaviour, and a community description aimed at assessing basic sociocultural indices (WHO 2002b). Its objectives are:

- To increase awareness regarding suicidal behaviours.
- To identify reliable and valid variables for determining suicidal behaviour risk factors.
- To describe patterns of suicidal behaviour.
- To identify variables that determine the presentation or not at health facilities following non-fatal suicidal behaviour.
To improve the efficiency of general health services through the identification of specific interventions effective for the reduction of suicidal behaviour (WHO 2002b).

Under the leadership of Schlebusch, the Department of Behavioural Medicine, Nelson R Mandela School of Medicine, University of KwaZulu-Natal, South Africa is one of the SUPRE-MISS study sites. Participating sites representing all six WHO regions (Brazil, India, Sri Lanka, South Africa, Viet Nam, Iran, Estonia, Australia, Sweden and China), have shown that the prevalence of suicidal ideation, suicide plans and suicide attempts varied across the samples, but that most of the results were within the ranges of previously published community surveys. The exception was Durban (South Africa) which had a higher rate of lifetime suicidal thoughts (25.4%), with Hanoi (Viet Nam) having a particularly low rate of lifetime suicide attempts (0.4%) (Bertolote et al. 2005). Self-poisoning was the main method of attempting suicide at the SUPRE-MISS sites in the eight developing countries surveyed, and more females than males presented with suicide attempts in emergency care departments, the range being from 51.3% (Chennai, India) to 71.2% (Durban, South Africa) (Fleischmann et al. 2005).

**OTHER INITIATIVES**

Other professional associations and support groups include the Survivors of Loved Ones of Suicide (SOLOS) in Durban, committed to the care and support of people who have lost loved ones to suicide, and the South African Federation for Mental Health which acts as an information and resource centre.

The groups and organisations discussed above are valuable partners as part of prevention and treatment strategies and should be supported. The strategies and programmes have covered many aspects of the prevention of suicidal behaviour and have been fairly widespread in their efforts. However, evaluation of the effectiveness of the strategies is lacking. Although there are some indications of greater collaboration between the different groups working towards the prevention of suicidal behaviour (e.g. links between the DoH and SADAG), there is a need for a fully integrated national strategy.

**FRAMEWORK FOR A FUTURE NATIONAL PROGRAMME**

A national programme for suicide prevention should provide a strategic framework for action at all levels – national, provincial and local – to prevent suicidal behaviour and promote mental health among all South Africans. It needs to be concerned with suicidal behaviour in all groups of the population, with a particular focus on high-risk groups, as identified by
research. A suggested overarching vision for the programme is: To promote the mental health of all South Africans.

GOALS OF A NATIONAL PROGRAMME
The goals of a national programme to prevent suicidal behaviour should be:
• To reduce suicide deaths and non-fatal suicidal behaviour.
• To reduce risk factors and promote protective factors.
• To promote the early detection of new trends and a reversal of emerging problem areas.
• To promote public awareness of suicidal behaviour, its causes and possibilities for prevention.
• To increase support available to individuals, families and communities affected by suicidal behaviour.

A comprehensive approach to suicide prevention requires a framework based on a set of guiding principles and a range of strategies to achieve specific objectives. Strategies can be pursued through health-care services or directed at the general population. Various psychiatric treatments have had the best-documented effects on suicide prevention, but there is a need to shift the focus to an earlier stage of the suicidal process. Thus, it is recommended that the health-care approach and the public health perspective be used together for maximum overall impact (Wasserman 2001).

PRINCIPLES OF A NATIONAL PROGRAMME
Existing initiatives for suicide prevention in Australia (LIFE 2000), Sweden (National Council for Suicide Prevention 1996) and Scotland (NHS Scotland 2002) form the basis of much of the following discussion regarding guiding principles and specific objectives. Important principles are:
• To create partnerships and alliances with the community, professional groups, NGOs and government sectors.
• To use a diversity of approaches, targeting the whole population, specific population subgroups and individuals at risk.
• To develop an evidence-based and outcome-focused programme, with evaluation as an integral part.
• To develop activities that are appropriate and responsive to the social and cultural needs of the groups or populations they serve.
• To develop a rights-based approach as people have a right to be involved in determining their future.
• To build on strengths, capacities and capabilities of individuals, families and communities.
SPECIFIC OBJECTIVES OF A NATIONAL PROGRAMME

**Improve national data collection systems**

Ongoing and accurate information on suicidal behaviour is of critical importance in identifying high-risk individuals, groups and places, and in monitoring trends so that adequate interventions can be timeously established and evaluated. The issue of the reliability and validity of suicide data has been raised repeatedly in both international and local research. It is particularly pertinent for South Africa given its poor historical record for keeping statistics, at least for some population groups. NIMSS, as the only source of continuous epidemiological information on suicide mortality, has greatly enhanced our understanding of the suicide profile across various groups of the population. However, NIMSS is limited in its lack of full coverage, particularly of rural areas. A study examining the accuracy of NIMSS data for one city, Tshwane, found that the sensitivity, specificity and predictive values were generally high, and varied only slightly across sociodemographic groups (Burrows & Laflamme 2007). Yet, data validity has not been checked in other cities and possibly varies across regions.

As suicide mortality represents only a small proportion of all instances of suicidal behaviour, and is the endpoint of a process of suffering, the need for a similar surveillance system for non-fatal cases, with the possibility of intervening earlier in the process, cannot be overstressed. Also important would be a system for monitoring the prevalence of mental illnesses in the population. These systems need to be interlinked to provide accurate statistics keeping.

**[C]Address social attitudes by increasing knowledge of suicidal behaviour to reduce stigma and discrimination**

Wasserman (2001) has pointed out that programmes which increase knowledge of mental illness and suicidal behaviour, and of health-promoting measures, try to remove the fears and misunderstandings surrounding suicide. It is extremely important that these efforts provide well-devised information that does not provoke suicidal behaviour among vulnerable individuals.

Part of this process is to promote the activities of World Suicide Prevention Day, held annually on 10 September.

**Control the environment**

Controlling the environment to decrease the incidence of suicidal behaviour has shown clear suicidal preventive effects (Leenaars 2001). This approach includes reducing the availability of and access to means of suicide, through
gun possession control, detoxification of domestic gas, detoxification of car emissions, control of availability of toxic substances including pharmaceutical drugs, fencing high buildings and bridges, as well as toning down reports in the media.

Provide social and medical support and treatment
Support and treatment is important for both suicidal individuals and those who are in regular contact with them, such as relatives, friends and other helpers. Crisis centres, telephone emergency lines, or health and medical services can provide these. Many individuals use health care services and communicate their suicidal intent to staff before committing suicide (Wasserman 2001). Training and promoting skills development is thus an essential part of providing adequate support and treatment. For example, further training of primary-care staff in the early detection and treatment of suicide crises and depression would help in this regard. In addition, general training programmes for any people coming into contact with suicidal individuals can greatly improve the support for those individuals as well as provide the trainees with skills for handling the situation.

The effective treatment of depression with both pharmacological and psychological methods is the primary strategy of suicide prevention for all age groups (Wasserman 2001).

Target specific groups
• Children and young people: Given the high levels of suicidal behaviour among South African youth shown above, it is essential that school children and students be trained to identify and manage conflict, crises, depression and suicide problems. In addition, risk factors and problem signals in families, children and students need to be recognised. Teachers need to be aware of family background factors, relationship patterns, changes in living conditions and potential psychopathology, such as depression and stress, when assessing suicide risk factors in learners. In this regard, Pillay (1995a, 1995b) has recommended closer cooperation between educators and health service providers to achieve more successful prevention of suicidal behaviour in young people. Also, a proposal on child and adolescent mental health policy for South Africans has recommended a multi-level system with the first tier incorporating schools as one of the many service sites at the district level (Dawes et al. 1997).
Yet, teacher-counsellors have been withdrawn from schools as part of the rationalisation process that is taking place in education in South Africa, with only a few periods allowed for “guidance”. This situation has a negative impact on the mental health of school-going children, especially the cohort at risk of suicidal behaviour that uses school support (Schlebusch 2004).

- **Adults and elderly people:** In South Africa, although most suicidal behaviour reportedly occurs among young or middle-aged individuals, high rates among older age groups are recorded for some groups of the population, notably Whites.

Losses inherent to mid and older adult life, including reduced career opportunities, financial difficulties, diminishing physical health, death and marital breakdowns, have been identified as among the most serious risk factors for suicidal behaviour in adults (LIFE 2000). These losses need to be recognised and individuals need to be provided with increased support.

It is a common public perception to view suicidal behaviour among older individuals as rational acts following careful evaluation of old age issues. However, just as for any other age group, suicidal behaviour among the elderly is a response to marked psychological distress, shaped by the presence of psychiatric disorders and poor living conditions, which may render elderly people more vulnerable as a result of physical illness, solitude and feelings of worthlessness (De Leo & Meneghel 2001).

Older people are less likely to have a history of suicidal behaviour or thinking, the act is less impulsive, methods tend to be violent, and there is less opportunity for rescue (LIFE 2000). When suicidal thinking does occur, it typically indicates high risk of suicide. These factors suggest that preventive strategies for older people need to be different from those for younger ages.

De Leo and Meneghel (2001) have suggested a number of approaches. For example, for all elderly people, even those who are currently not feeling suicidal, a focus on their societal quality of life, such as improving their economic status, ensuring that they have an extensive social support network and that their psychophysical health is taken care of, is important to reduce the risk of suicidal behaviour. Given the frequent occurrence of physical illness among suicidal elderly, as part of secondary prevention, both the psychological and physical consequences...
of these illnesses need to be dealt with. Identifying suicidal ideation is essential, and training the health professionals dealing with elderly people is important in this regard.

- **“High-risk” groups**: Increased knowledge of risk groups, such as the mentally ill and substance abusers, and of situations that may precipitate suicidal behaviour, such as losses and violence, is necessary for prevention. An understanding of how conflicts, crises, depression and suicide problems are perceived and coped with by these people, and training in social skills in dealing with such individuals, are important.

- **Alcohol and drug abusers**: Wasserman (2001) has argued that given the link between substance dependence or misuse, and increased risk of suicidal behaviour, it is important that more attention be given to its detection. Treatment should consider the type and degree of misuse, the somatic status, the psychiatric co-morbidity, the level of psychosocial functioning and the areas of life that are affected by the misuse. Treatment can take the form of advice or intervention, psychotherapy, inpatient care and medication of any underlying psychiatric illnesses (Wasserman 2001).

- **Victims of violence**: Violence prevention efforts are challenged by high levels of violence in the context of, amongst others, socioeconomic pressures, high stress levels and poverty (Parker, Dawes & Farr 2004). Victims of violence are at particular risk of psychological problems that may result in suicidal behaviour and timeous psychological assistance and trauma counselling are important preventative strategies.

- **People infected with HIV/AIDS**: Meel (2003) has pointed out that it is essential to screen, identify and treat depression among patients entering the health care system for HIV infection. Encouragement in joining support groups can help in this regard. With increasing numbers and the changing geographic distribution of persons infected with HIV/AIDS, primary care physicians play an increasingly important role in caring for these patients. Yet many of them lack sufficient training to deal with the psychosocial issues and do not feel comfortable in discussing sexual practices with their patients (Meel 2003). Training is essential in this regard.
CONCLUSION
In South Africa, any suicide prevention effort needs to take cognisance of the numerous stresses that a country in transition presents to its citizens. The recommended framework for a national suicide prevention programme is underpinned by research undertaken internationally and locally. Local data collection and research need to be strengthened and sustained to inform prevention efforts on an ongoing basis. While the goals, guiding principles and strategies provide a necessary framework for a prevention programme, specific activities to achieve the goals remain to be planned.
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