SEARCHWISE SOLUTIONS

THE ASSESSMENT OF ROAD SAFETY MEASURES AND STRATEGIES REQUIRED TO ADDRESS ACCIDENTS AND FATALITIES WITHIN GAUTENG

March 2013

Alheit du Toit and Enency Mbatha
EXECUTIVE SUMMARY

This study was undertaken amongst households within the Gauteng province. The study goal was to determine the perceptions and first hand experiences on the nature and extent of road safety problems, focusing on fatal road accidents, as well as the most suitable ways to reduce such accidents in future.

In total 2100 households and respondents were randomly selected, based on the 2001 population census. These households were stratified according to the Johannesburg, Tshwane, Sedibeng, West Rand and Ekurhuleni municipal areas. A structured questionnaire, as well as a focus group discussion guide was developed. The household survey was executed during June to September 2012.

The findings of the survey and focus groups indicate that:

- Households in the Gauteng province make use of four transport modes. The most common is “Walking/by foot”, followed by the use of: mini-bus taxis, a motor car and bus services.
- A fair percentage of pedestrians, passengers, drivers and other road users find themselves at risk daily due to a variety of improper driving and pedestrian behaviours.
- About half of the households received traffic fines, mostly for speeding, parking, not using seatbelts, using mobile phones, driving without a licence and not stopping at a robot. Very few were fined for drunk-driving.
- Fatal road accidents still occur despite interventions by the Gauteng Government. Actual fatal road accidents are related to: specific vehicle types; driver and pedestrian behaviour mostly taking place on freeways and city centres; mostly over weekends and early morning/late afternoon to midnight and whilst visiting friends/family, the workplace, holiday and doing shopping.
- There are aspects of current road safety which elicited negative opinions. The most negative opinions were expressed with regard to mini-bus taxi/motor car/bus/truck driver behaviour, road conditions, pedestrian behaviour and traffic law enforcement.
- Observation results of households surveyed suggest that the road environment nearby the living areas of households do pose a road safety problem, especially in view of the risky driver and pedestrian behaviour:
  - No traffic calming measures nearby
  - Poor road markings and signs
  - No pedestrian pavements or walkways
  - Traffic lights not working
  - Uneven road surfaces and potholes
  - Narrow roads
  - Damaged road signs.
The observations furthermore suggest that the vehicle drivers making use of the roads nearby the living areas of households do pose a road safety problem, as many drivers are:

- Not using child restraints
- Not using front seatbelts
- Not using indicators
- Driving recklessly
- Driving vehicles that are in a poor condition
- Speeding
- Not using helmets (motor cyclists and cyclists)
- Overloading vehicles.

Observations also indicate that Law enforcement tends to be non-visible and school patrols might be lacking in some areas.

- Mixed feelings exist on whether road users feel safe on the roads in Gauteng. Drivers of motor cars/mini-bus taxis and busses feel safer as compared to pedestrians, passengers of vehicles, and especially drivers of motor cycles and bicycles. The focus groups indicated that all road user groups, except the mini-bus taxi owners/drivers felt that the roads in Gauteng are unsafe.

- Households indicated that all main factors researched, contribute in one or the other (directly or indirectly) to fatal road accidents in Gauteng. Four variables contribute the most to fatal road accidents, namely:
  - Behaviour specifically of drivers
  - Traffic Law enforcement
  - Behaviour of road users in general
  - Behaviour specifically of pedestrians.

Households in Gauteng generally feel that all road aspects contribute in one way or the other to fatal road accidents. However, the road conditions that contribute the most to fatal road accidents are potholes, traffic lights not working and the lack of traffic calming measures.

Households in Gauteng generally feel that all vehicle aspects contribute in one way or the other to fatal road accidents. However, the vehicle conditions that contribute the most to fatal road accidents include:

- Overloaded vehicles
- Mini-bus taxis in general
- Un-road worthy and un-licensed vehicles.
Households in Gauteng generally feel that all traffic law aspects contribute in one way or the other to fatal road accidents.

Households in Gauteng generally feel that one weather condition, namely rain and hail contributes the most to fatal accidents.

All aspects of road behaviour contribute in one way or the other to fatal road accidents. The critical aspects include drivers:

- Speeding excessively
- Driving whilst intoxicated
- Using mobile phones
- Skipping red robots and stop streets
- Driving recklessly.

Finally, the findings suggest that a large percentage of households in Gauteng believe that fatal road deaths can be reduced. All four main aspects researched have been viewed as important in reducing road deaths. The highest rated is vehicle conditions, followed by law enforcement; road user behaviour and road conditions.

Households in Gauteng generally feel that all road aspects could contribute in one way or the other to reduce fatal road accidents. However, the road conditions that could contribute the most in reducing fatal road accidents in future are:

- Upgrading and improving street lighting
- Ensuring that traffic lights are working
- Building traffic calming measures
- Improving the maintenance of road surfaces and potholes
- Building of pedestrian off-loading areas
- Repairing road signs.

Households think that all aspects of road user behaviour should be addressed. However, the most critical interventions should focus on:

- Stricter law enforcement on usage of mobile phones
- Reducing reckless driving
- More frequent roadblocks for drunk driving/drug usage
- More speed cameras, no street racing and skipping red robots
- More law enforcement staff focusing on road rage and aggressive drivers
- Identification and re-testing of high risk drivers
- Checking of motor lights and indicators
- Law enforcement of pedestrian drunk-walking
- Driver skills education
- Roadblock checks of learners and drivers licences.

According to these households, all aspects of vehicle conditions should be addressed. However, the most appropriate initiatives include stricter laws and removal of overloaded vehicles, followed by:

- More frequent roadblocks for checking un-road worthy vehicles
- Fixed period vehicle road worthiness re-checks
- More frequent roadblocks to check for un-licenced vehicles.

Households believe that all aspects of law enforcement should be addressed, and should include at least the following interventions:

- Eradication of fraud and corruption of drivers paying bribes
- Running awareness programmes on laws and consequences of trespassing
- Eradication of fraud and corruption by law enforcement staff
- Instituting harsher penalties for speeding, seatbelt non-usage, mobile phone usage and drunk-driving
- Eradication of fraud and corruption at Licence Testing Centres
- More frequent road blocks checking drivers, passengers and vehicle conditions
- Consistent traffic fine application
- Eradication of fraud and corruption at driving schools.

The focus group discussions largely confirm the survey findings, indicating that a holistic approach is required to reduce fatal road accidents. The perceptions mainly focused on:

- Better law enforcement
- Improved educational activities
- Increased school patrols
- Improved road infrastructure
- Improved vehicle conditions.
A range of recommendations was made, based on the findings:

- All interventions should take cognizance of the influence of autonomous factors, including the developmental phase of the province. Proper town planning is of utmost importance.

- In terms of household transport mode, attempts should be made to ensure that households make use of the safest transport modes possible, including public transport.

- Households with motor vehicles should be encouraged to licence their motor vehicles and to service them regularly. It is suggested, that trustworthy accredited community service centres be established.

- The risky driver and pedestrian behaviour that exists among a large group of households needs to be addressed urgently. This should be done through proper communication; road safety awareness campaigns and educational workshops.

- It is suggested, that applicable punitive measures should be put in place, and that systems should be put in place to make sure that bribery is eradicated. The Demerit system is one such system that should be considered. A Zero tolerance approach is needed in terms of speeding, reckless and drunken-driving. It is suggested that speed limits should be reduced where needed.

- A better understanding is required of the nature of fatal road accidents. A range of initiatives could assist in this regard, including Geo-referencing of fatal road accident sites; Technical research with a view of reducing fatal road accidents; Social research is also needed to determine the underlying reasons for risky driver and pedestrian behaviour, and appropriate and standardized Monitoring and evaluation systems.

- In terms of involving key-stakeholders, all spheres of government, National, Provincial, and Local, should participate in the development of strategies and action plans (including different departments as well) and the implementation thereof. Apart from government, the private sector could play a much more prominent role in road safety, as well as the public themselves.

- Action plans need to be developed that will address the What, Who, When and How questions, as well as the Outcomes thereof. The “What” component should at least focus on the:
  - Behaviour of all road user groups
  - Road environment
  - Vehicle environment
  - Law enforcement.

A range of interventions have been suggested on each of these components.
# CONTENTS

<table>
<thead>
<tr>
<th>EXECUTIVE SUMMARY</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 BACKGROUND</td>
<td>8</td>
</tr>
<tr>
<td>2 AIM OF STUDY</td>
<td>9</td>
</tr>
<tr>
<td>3 LITERATURE REVIEW</td>
<td>9</td>
</tr>
<tr>
<td>3.1 Current perspective</td>
<td>10</td>
</tr>
<tr>
<td>3.2 Road User Groups at risk</td>
<td>12</td>
</tr>
<tr>
<td>3.3 Factors contributing to fatal road accidents</td>
<td>19</td>
</tr>
<tr>
<td>3.3.1 Developmental impact</td>
<td>19</td>
</tr>
<tr>
<td>3.3.2 Road and environmental factors</td>
<td>20</td>
</tr>
<tr>
<td>3.3.3 Vehicle conditions</td>
<td>22</td>
</tr>
<tr>
<td>3.3.4 Human factors</td>
<td>23</td>
</tr>
<tr>
<td>3.3.4.1 Pedestrian behaviour</td>
<td>23</td>
</tr>
<tr>
<td>3.3.4.2 Driver behaviour</td>
<td>24</td>
</tr>
<tr>
<td>3.4 Future perspective</td>
<td>29</td>
</tr>
<tr>
<td>3.5 Interventions to reduce fatal road accidents</td>
<td>30</td>
</tr>
<tr>
<td>3.6 Best practices</td>
<td>32</td>
</tr>
<tr>
<td>3.7 Current and proposed interventions</td>
<td>45</td>
</tr>
<tr>
<td>3.7.1 Traffic Law Enforcement</td>
<td>48</td>
</tr>
<tr>
<td>3.7.2 Human Behaviour</td>
<td>49</td>
</tr>
<tr>
<td>3.7.3 Integrated Transport and Town Planning</td>
<td>50</td>
</tr>
<tr>
<td>3.7.4 Road Environment</td>
<td>50</td>
</tr>
<tr>
<td>3.7.5 Data Management and Research</td>
<td>51</td>
</tr>
<tr>
<td>4 RESEARCH METHODOLOGY</td>
<td>52</td>
</tr>
<tr>
<td>4.1 Sampling and Fieldwork</td>
<td>52</td>
</tr>
<tr>
<td>4.2 Questionnaire and Focus Group Discussion Guide</td>
<td>54</td>
</tr>
<tr>
<td>4.3 Data analysis</td>
<td>56</td>
</tr>
<tr>
<td>5 FINDINGS</td>
<td>57</td>
</tr>
<tr>
<td>5.1 Demographics</td>
<td>57</td>
</tr>
<tr>
<td>5.2 Household Transport Mode</td>
<td>64</td>
</tr>
<tr>
<td>5.3 Household Road Behaviour</td>
<td>71</td>
</tr>
<tr>
<td>5.4 Household Fatal Road Accident Involvement</td>
<td>95</td>
</tr>
<tr>
<td>5.5 Opinions on status quo on Road Safety in Gauteng</td>
<td>110</td>
</tr>
<tr>
<td>5.6 Perceptions on Road Safety and Road Deaths in Gauteng</td>
<td>161</td>
</tr>
<tr>
<td>5.6.1 Perceptions on using roads in Gauteng</td>
<td>161</td>
</tr>
</tbody>
</table>
5.6.2  Perceptions on reasons for fatal road accidents in Gauteng  169
5.6.3  Opinions on how to reduce road deaths in Gauteng  194

6  CONCLUSIONS  213

7  RECOMMENDATIONS  221

APPENDIX A: SELECTION GRID  225
APPENDIX B: QUESTIONNAIRE  226
APPENDIX C: SHOWCARD  233
APPENDIX D: FOCUS GROUP DISCUSSION GUIDE  234
APPENDIX E: LITERATURE REFERENCES  235
1. BACKGROUND

According to the World Health Organisation about 1.3 million people die annually on the roads throughout the world. The situation in Africa is even worse as it constitutes about one fifth of all the road deaths per year worldwide, even though it has only 2% of the world’s vehicles. Road traffic deaths are one of the leading causes of death in the world and in Africa. South Africa, according to StatsSA, has a huge road traffic problem, with road traffic death rates in 2006 already varying between 9.9 and 11.8 per 100 000 population.

The plight of different road user groups in the world and South Africa has been highlighted by numerous research studies, specifically that of pedestrians. Numerous studies focused on the underlying reasons for fatal road accidents, investigating a range of aspects such as driver and pedestrian behaviour as well as road and vehicles conditions. Various possible solutions have been researched and tested worldwide to reduce the high levels of road traffic fatalities.

The Terms of Reference provided by the Gauteng Department of Community Safety also highlights the fact that road traffic accidents are one of the leading causes of death amongst road users in Gauteng, as it recorded the highest number of road accidents and fatalities during 2004 to 2009 compared with the remaining provinces. It has also been stated that Gauteng has the highest number of licenses issued annually, and it appears that during the years when Gauteng registered a high number of licenses, the number of accidents appeared high as well.

The fact that accidents and fatal crashes continue to take lives is a major concern for the Department of Community Safety, as the main aim of the Gauteng Road Safety Strategy is to realize the reduction of road accidents and fatalities by ensuring that the provincial roads are safe to all road users. It became imperative to undertake a study so as to determine the state and underlying dynamics of road safety in Gauteng.

To this end, the Policy and Research Unit of the Gauteng Department of Community Safety commissioned a household survey on “The assessment of road safety measures and strategies put in place to address accidents and fatalities in Gauteng”. This study aims to provide insight, from a road user perspective, to assist with the development of new or improved road safety interventions and evaluation of education initiatives in Gauteng in terms of aspects such as driver’s skills and pedestrian knowledge.
This survey could assist in the department’s plan of reducing future road fatalities. Hence, the impact of the current road safety strategies and measures needed to be assessed and reviewed if necessary.

2. AIM OF STUDY

The aim of the study was to determine among households within the Gauteng province, perceptions and first hand experiences on the:

- Nature and extent of road safety problems, focusing on fatal road accidents
- Effectiveness of the current road safety measures put in place in the province
- Most suitable ways to reduce fatal road accidents in future.

Apart from the household survey, some qualitative data was obtained from different road user groups and law enforcement staff via focus group discussions in order to supplement the quantitative data.

The household survey was supplemented by a literature review, focusing on the underlying causes and the methods/policies to reduce road accidents and fatalities. This included an exercise of comparing Gauteng with other provinces with high volumes of vehicles and low accident rates, as well as comparing Gauteng with other African and developed countries.

This study furthermore attempted to determine the underlying social and demographic dynamics of fatal road accidents and perceptions on the causes as well as ways in which to reduce such tragic situations in Gauteng.

3. LITERATURE REVIEW

The first section of this review focuses on the status quo of road safety throughout the world, with emphasis on Africa, South Africa and the Gauteng province. This section of the review is then followed by a short review of the road user groups most at risk, the underlying factors contributing to fatal road deaths, road safety best practices and the most appropriate ways/strategies of reducing fatal accidents in future.
3.1 CURRENT PERSPECTIVES

All countries throughout the world have been affected by the problem of road traffic safety; which has manifest as one of the leading causes of death and furthermore places an unprecedented burden on healthcare and the economy. Apart from this, it also negatively affected Quality of Life domains, such as social and financial concerns of households and communities. During 2004, an estimated 1.27 million people worldwide died in road accidents, thus manifesting itself as the ninth leading cause of global deaths. Thus, about 2.2% of all deaths in the world can be attributed to road accidents (WHO, 2009a).

Various authors and researchers have highlighted development as a major contributing factor to the road safety problem in the world. According to Ribbens (2002) over 80% of road casualties occur annually in developing and emerging countries. The cost of road accidents amount to between 1%- 1.5% of GDP (Gross Domestic Product) in developing and emerging countries. For example, road deaths in these countries have been increasing rapidly for the period 1980-1995, with a 70% increase within Asian countries, 40% within Latin America, and 25% within Sub-Saharan Africa. Naci et al (2009) suggested that about 45% of road traffic fatalities in low-income countries occur among pedestrians, in middle income 29% and only 18% in high-income countries among pedestrians. The burden of road traffic accidents also differs considerably between varied income levels. Only 34% of road traffic fatalities are due to motorized four wheelers in low-income countries, 40% in middle and 60% in high-income countries. According to Esbaugh et al (2012), the UN Secretary General declared the period 2011-2020 as the “Decade for Road Safety”, with the focus of considering developmental issues. As in the case of HIV/Aids, over the past 20 years, road traffic accidents may be viewed as a developmental issue that affects low-income countries disproportionately. Countries with the lowest road fatality statistics in the world are almost all high-income countries, such as the Netherlands, Sweden, United Kingdom (WHO, 2009a).

This developmental approach to road safety is based on the understanding that as the GDP of countries increase, households will earn higher disposable incomes. This will cause a dramatic increase in the number of vehicles on the road (Esbaugh et al, 2012). The increased number of vehicles is usually not matched by comparative improvements in infrastructure and road safety legislation. Usually there is a resulting delay between the public’s expenditure on vehicles and expenditure on road infrastructure to accommodate the increased motorization. This delay results in situations where countries will experience large increases in road traffic injuries and deaths. Thus, road traffic fatalities will grow rapidly during a country’s middle-income developmental stage. However, thereafter, countries will experience a significant decrease in injuries and fatal road accidents as road infrastructure improves to accommodate the increased motorization. In this period, the norm of road rule adherence usually becomes more embedded among road users, resulting in a decrease in poorly maintained vehicles in operation.
A wide range of risk factors play a role during the development phase of countries, such as vehicle and road densities, speed limits, alcohol use, public transportation and healthcare systems. Developing countries usually have poor road infrastructure; minimal regulation, inadequate oversight, absence of public transport; over-reliance on unregulated taxis and busses, underserviced vehicles and poor road networks with no dedicated space for pedestrians and non-motorised vehicles.

All these factors contribute to increased risk of serious road traffic accidents and fatalities within **developing** countries. These circumstances apply to the situation in Gauteng province, where road usage has changed dramatically since the end of Apartheid in 1994, with a typical lag in the improvement of road networks/infrastructure and implementation of appropriate public transport systems. In Gauteng these systems have only recently seen a major improvement through the introduction of the Gautrain (train service) and the Rea Vaya (bus service), while on the other hand the highways in the province have only recently been improved to a world-class standard. It is nonetheless worth pointing out that not all the serious or fatal road accidents take place on highways. The condition of roads in residential areas, especially in the previously disadvantaged communities, most probably exacerbate the risks of serious and fatal road accidents.

According to the World Health Organisation (WHO, 2009b), **Africa** as a continent has experienced the *highest rate* of road deaths per 100 000 population annually, on a global basis. With less than 2% of the world’s registered vehicles, the region accounts for a fifth of all road traffic deaths in the world. This clearly indicates the severity of the road traffic problems facing the continent. Within Africa, approximately 10% of the countries contribute to 70% of all road deaths in the region, with South Africa ranking 14th.

Vanderschuren & Irven (2002) indicated that **South Africa** has a huge road safety problem. In comparison: South African cities are 1 to 2 times more unsafe than American cities and 2 to 3 times more unsafe when compared to European and Australian cities. Although the amount of cars and the amount of kilometres driven per year are nearly the same as those of the Netherlands, the number of road fatalities in South Africa is about ten times higher.

Sukhai et al (2009) researched the fatality rates due to road accidents in South Africa, using the 2002-2006 data of 53 District Councils from 1030 police stations (based on 50 205 recorded fatalities). The findings showed that the national fatality rate is 22.4 deaths per 100 000 population. Another study in South Africa (StatsSA, 2009) utilising their recorded causes of death database notification system from the Department of Home Affairs, examined the trends and variations of road traffic accident deaths in South Africa. The highest accident rates were found in the province of Limpopo followed by Eastern Cape and Northern Cape, with between 14 and 21 deaths per 100 000
population. Gauteng had the lowest death rate of 5.5 followed by Western Cape (7.7 per 100 000 population).

According to a study by the Medical Research Council during 2000, road traffic accidents ranked fifth as a leading cause of deaths in Gauteng, after HIV/Aids, heart disease, homicide/violence and strokes. About 3.7% of all deaths in Gauteng were attributed to road accidents (Bradshaw et al, 2000). This is much higher than 2.2% on a global level, where it ranks ninth.

3.2 ROAD USER GROUPS AT RISK

Of major importance to this study are the road user groups at the greatest risk of getting involved in fatal road accidents. Any strategy for the reduction of road fatalities should take cognizance of this and should incorporate it into action plans.

The Status Report on Road Safety in the World (WHO, 2009a) indicated that road accident deaths impact globally on specific segments of people, based on variables such as age, gender, economic background, road users groups, etc. This report suggests that road traffic accidents are one of the main global causes of death of people aged between 5 and 44 years. It is the:

- 14th leading cause of death for persons 4 years and younger
- 2nd leading cause for children aged 5-14
- 1st leading cause amongst the population aged 15-29
- 3rd leading cause amongst the population aged 30-44
- 8th leading cause amongst the population aged 45-69

In terms of gender, about 75% of deaths due to road accidents globally are among men, suggesting than men are more prone than women are. The report also suggests that people from lower economic backgrounds are disproportionally affected by road traffic injuries.

“Vulnerable road users” comprise nearly half of the deaths on the roads of the world (46%). This group of road users includes: pedestrians, cyclists, or users of motorized two-wheeler vehicles. The proportion of vulnerable road users that die in road accidents is lower in high-income countries, once again suggesting the impact of social and economic development on road fatalities.
Research in **Africa** has shown that all road users tend to be at risk of being involved in road traffic accidents (WHO, 2009b). The findings for all road traffic deaths suggest that:

- **Drivers and passengers** of motor cars contribute to about 48%,
- Pedestrians (35%)
- Cyclists (8%)
- Motor-cyclists (5%).

According to Pelzer (2008), studies in **Africa** suggest that:

- Pedestrians are the most frequently injured road users - more than 40%
- Passengers are the second most vulnerable (more than 30%)
- Drivers account for less than 10%. However in Botswana, South Africa and Zimbabwe, research has shown that driver deaths account for 20% or more of road deaths
- Pedestrians are often doubly at risk because they are more likely to use certain forms of transport that are more prone to be involved in road accidents such as busses, mini-busses, and trucks.

In terms of **age and gender** profiles, young males between the ages of 5 and 44 years in **Africa**, tend to be most at risk of being injured or killed on the roads. This encompasses the economically active group of people and has devastating impact on the Quality of Life of individuals and households (WHO, 2009b). With reference to the same, Pelzer (2008) indicated that 75% of road casualties in Africa involve people in the 16 to 65 age bracket. A very important aspect on gender in developing countries indicates that males account for more than 67% of road fatalities. However, **female pedestrians** are very predominant.

In **South Africa** StatsSA (2009) confirmed that during 2001-2006 land transport contributed to the majority of all transport accidents (99.8%) when compared to water and air transport modes. Crude road traffic accident death rates varied from 9.9 per 100000 population in 2001 to 11.8 per 100000 population in 2006. The report also highlighted some interesting facts on the **months** when these accidents occurred, as well as the age and gender of people killed. The month of December, (part of the summer festive season) had on average the highest number of road traffic deaths, while January and February had the lowest. However, results also showed variations in the number of road traffic deaths, by month and year. The December peak was clearly evident from 2002 to 2005, whilst in the year 2001, the peak was in March, and in 2006, the peak was in April (both forming part of the Easter holidays). The research furthermore indicated that most fatal accidents take place in the province of residence.
Gender differences results suggested that most of the road traffic deaths occurred among males (73%). Crude road traffic accident death rate for males was 15.7 per 100 000 compared with 5.5 per 100 000 females, in line with global trends (StatsSA, 2009). The difference between male and female average ‘Road traffic accident death rates’ were consistent across all provinces, with male death rates consistently higher than female deaths rates.

*Source: Stats SA, 2009

Road traffic accident death rates were the highest in the age group 35-49, followed by age group 25-34 years. In contrast, the death rates were the lowest among children 0-14 years and 15-24 years. These findings are in sharp contrast with the findings in some developed countries, where accident death rates are the highest among the youth.

*Source: Stats SA, 2009*
Numerous studies and authors focused on profiling the different road user groups at risk in South Africa. According to the WHO (2009b), road deaths in South Africa are the most predominant among pedestrians (35%), followed by passengers (32%), drivers (25%), cyclists (2%) and two wheeled vehicles (2%).

Various studies in South Africa have focused specifically on pedestrians and profiling the circumstances in terms of fatal road accidents. Ribbens (1997) stated that pedestrian fatalities and injuries constitute a major road safety problem in South Africa. On an annual basis, pedestrian fatalities represented nearly 50% of all road fatalities.

The plight of pedestrians has also been highlighted by Macomsa and Ribbens (2004), suggesting that annually more than 5 000 pedestrians are killed and another 30 000 injured (of which about 10 000 sustain serious injuries).

Ribbens (1997) also focused on profiling pedestrians involved in fatal road accidents. A large proportion was found to be adults, between 20-45 years old, with the highest incidence of pedestrian accidents occurring in late afternoons and early evening. Most of these pedestrian accidents occurred on Saturdays (20%) followed by Fridays (18%) and Sundays (14%).

Ribbens and Raborifi (2002) indicated that road fatalities take place on national, provincial and local roads in both metropolitan and local municipal areas. In 1998, pedestrian fatalities recorded in the Ethekwini Metropolitan Municipal area amounted to 267; which constituted 41% of all pedestrian deaths in the Kwazulu-Natal province. Likewise, areas in the City of Johannesburg Metropolitan Municipality accounted for 31% of Gauteng’s pedestrian fatalities in the same year. This report made a very important deduction (as road accidents occur on the entire road network) that all spheres of government should take part in finding a solution to this challenge.
The research by Sukhai et al (2009) found that the **pedestrian** user group accounted for 42.4% of all road deaths at a rate of 9.5 per 100 000 population. Among pedestrians, males accounted for 76.4% of all these deaths, black and coloured people for 96.9% and the age group 25-59 years about 57.5%. This study furthermore suggested that in general, the highest traffic fatality rate per 100 000 population was among whites (28.7) also having the highest driver fatality rate (15.7). The highest fatality rate for passengers was among Asians followed by coloureds (9.4 and 8.3 respectively).

<table>
<thead>
<tr>
<th></th>
<th>Drivers</th>
<th>Passengers</th>
<th>Pedestrians</th>
<th>Bicycle/Motor cycle rider</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian/Indian</td>
<td>10</td>
<td>9.4</td>
<td>3.9</td>
<td>.41</td>
<td>23.8</td>
</tr>
<tr>
<td>Black African</td>
<td>3.6</td>
<td>6.4</td>
<td>10.1</td>
<td>.56</td>
<td>20.7</td>
</tr>
<tr>
<td>Coloured</td>
<td>5.3</td>
<td>8.3</td>
<td>11.9</td>
<td>1.1</td>
<td>26.5</td>
</tr>
<tr>
<td>White</td>
<td>15.7</td>
<td>7.6</td>
<td>2</td>
<td>3.3</td>
<td>28.7</td>
</tr>
<tr>
<td>Total</td>
<td>5.1</td>
<td>6.9</td>
<td>9.5</td>
<td>0.9</td>
<td>22.4</td>
</tr>
</tbody>
</table>

*Source: Sukhai et al. (2009)*

The pedestrian fatality rate per 100 000 population per District Council is depicted below.

The above map suggests that the Boland (in the Western Cape) parts of the North West province, Gauteng, Eastern Cape and KwaZulu-Natal have the highest **pedestrian** fatality rate.

Jansen van Vuuren (2002) also confirmed that between 37% and 45% of all road fatalities in the country involves **pedestrians**, and this requires special attention. Up to 40% of pedestrian deaths occur on rural roads. Pedestrian fatalities for 1997 suggest that those between the ages of 25-39 years are the most vulnerable, followed by the age category 40-59. Pedestrian casualties for 1997
were the highest in Gauteng, KwaZulu-Natal, and the Western Cape, with the leading share in Gauteng. These findings clearly indicate the severity of fatal road accidents on all road user groups, especially on pedestrians in South Africa. It is clear that these fatal accidents are more prone to occur over holidays in general, among males, the younger age groups and young adults, over weekends, late afternoons, with some provincial variances.

In **Gauteng specifically**, there are developed profiles of road user groups at risk of fatal road accidents and contributing factors. The Department of Transport (2003) found that in Gauteng, 33% of households have access to cars and that private car ownership continues to grow rapidly. About 31.8% of respondents surveyed were using mini-bus taxis as travelling mode, followed by cars (25%), busses (3.7%), and trains (5.7%). The Gauteng Road Safety Strategy (2010) suggested that:

- The main mode of transport in Gauteng is by foot (at least 34% travelling to work or school), while 21% travel by mini-bus taxi.
- About 2.8 Million registered vehicles in Gauteng, of which 71% are motorcars and 4% mini-bus taxis.

The Gauteng Road Safety Strategy (2010) indicated that in 2004 pedestrians comprised 34% of all road fatalities. In terms of age, the highest fatality rate is the 26-40 age group, followed by the 41-74 age group. Most fatal accidents occur on Fridays and Saturdays, and early evenings (7 pm to 9 pm).

Research by Bradshaw et al (2000) indicated major gender and age differences. Among men, fatal road accidents are the 4th ranked cause of deaths in Gauteng, much more pronounced than among females.

![Graph showing fatal causes of deaths in Gauteng](image)


The study furthermore found that fatal road accidents in Gauteng are the leading cause of deaths amongst **children**, and that for the age groups:

- 0-4 years - ranked 7th among males (2%) and for females it ranked 10th (1.7%)
• 5-14 years - ranked 1st among males (18.8%) and 2nd among females (12.6%).

In terms of adults, road accidents rank for age groups:
• 15-44 years: ranks 3rd for males and females. Respectively 7.3% and 2.9% as leading causes of death
• 45-59 years: ranks 6th among males at 4.2% but does not fall within the top ten causes among the females
• 60 years and older: traffic fatalities do not form part of the top ten causes of death in Gauteng (Bradshaw et al, 2000).

An informative Johannesburg study focused on a metropolitan perspective to fatal road accidents. The City of Johannesburg Metropolitan Municipality used statistics derived from data captured from Johannesburg, Midrand, Randburg, Roodepoort and Sandton, indicative of 111 019 accidents that occurred during 2005 (which included 662 fatalities and 3 750 serious injuries). In total, 41% of all the fatalities involved pedestrians. In total, 188 023 vehicles were involved, of which 68% were passenger cars. The fatality rate per 10 000 registered vehicles compared favourably with other South African urban areas, as well as with other African countries, as indicated by the study undertaken by the City of Johannesburg Road Traffic Accident (2007).

Though the lowest number of accidents in Johannesburg was recorded in December, the highest daily fatality rate was recorded in that month and the lowest fatality rate date during January. On average, 1.8 people died per day during 2005. This study furthermore clearly indicated the underlying dynamics of road deaths, as they concluded that in Johannesburg:
• The largest number of fatalities occurred on Saturdays, followed by Fridays and Sundays
• The majority of pedestrian fatalities occurred on Saturdays and Fridays.
• They were most at risk at night: midnight to 3:59 and also from 20:00 to 23:59
• About 12% of pedestrians were killed by mini-bus taxis, 5% by trucks, and 56% by passenger cars
• Most people injured in road traffic accidents were between the ages of 20-39 years
• About 61% of passenger cars were involved in fatal accidents
• About 10% of accidents involved mini-bus taxis (though they only constitute about 4% of the total vehicle population in the province
• Trucks are over-represented in fatal accidents.

The findings generally suggest the severity of incidences of fatal road accidents, on all road user groups, across South Africa and Gauteng, and furthermore highlights the gender and age differences and some of the underlying conditions.
3.3 FACTORS CONTRIBUTING TO FATAL ROAD ACCIDENTS

From the discussion thus far, it has become clear that there might be very specific underlying dynamics that contribute to fatal road accidents. Naci et al (2009) suggested that an understanding of the existing burden of road traffic deaths is necessary to be able to develop effective strategies. It has also been argued that the distribution of road traffic accidents varies dramatically across different parts of the world and across different income groups, and that context-appropriate prevention strategies (that protect particular road user groups at risk) should be developed.

The literature generally indicated that a wide range of factors contribute to fatal road accidents, of which country development played a major underlying dynamic.

3.3.1 DEVELOPMENTAL IMPACT

Numerous authors referred, directly and indirectly, to the possible role of different developmental phases of countries as linked to the related incidences of fatal road accidents. This included increased road traffic, lack of road infrastructure and poor road user behaviour. In this regard, Vanderschuren & Irven (2002) mentioned the role of autonomous factors, as independent aspects influencing traffic safety. These factors include aspects such as population growth, coupled with adult literacy levels, life expectancy, vehicle ownership, and Gross Domestic Product (GDP) per capita. A study by Synovate (2006) indicated that drivers in Gauteng believe there are too many cars and not enough roads in Gauteng (96%). According to the study, Mini-bus taxis (83%) and poor road infrastructure also contribute to severe traffic congestions, as well as badly behaving pedestrians (53%), lack of public transport (53%), in-sufficient traffic policing (57%), selfish and uneducated divers (79%).

This situation is exacerbated by the in-migration of people into Gauteng, placing pressure on the supply of adequate infrastructure (Gauteng Road Safety Strategy, 2010). Negative lifestyles also contribute in this regard. According to the WHO (2009b) report, about 60% of all road deaths in South Africa involve alcohol usage. The Gauteng Road Safety Strategy (2010) suggested that about 46.5% of all drivers that are fatally injured in road accidents have an alcohol level exceeding 0.05g/ml, while approximately 57.1% of pedestrians who are fatally injured are under the influence of alcohol. Most of the issues researched were, in one way or the other, influenced by the developmental phase of countries and communities.

Apart from country developmental phases various other aspects have been highlighted, According to Pelzer (2008), most road accidents in Africa are due to four main factors, namely:

- **Human error by drivers**, including speeding, dangerous overtaking, alcohol and drug abuse, poor driving standards, driver distraction (such as mobile phone usage)
- **Vehicle overloading** and poor maintenance
- **Bad roads** and terrain
- **Pedestrian** negligent behaviour.
In South Africa, Gqaji (2011) expressed the opinion that although government endeavours to provide safe transport systems and infrastructure, the majority of accidents are caused by **three factors**, namely human error (83%), followed by road factors (10%) and vehicle factors (7%). According to Vanderschuren & Irven (2002) three groups of variables play a role in road traffic accidents, namely human factor (75%), vehicle factor (17%), and autonomous and road design factors. A relatively similar profile has been expressed by the Gauteng Road Safety Strategy (2010) based on SAPS 2003-2005 road accident records in Gauteng. Pedestrians and driver behaviour account for 89% of all fatal crashes; 6% by road and environmental factors and 5% by vehicle factors. Most authors and researchers concluded that fatal road accidents usually consist of a combination of the above factors, although the percentages differ.

### 3.3.2 ROAD AND ENVIRONMENTAL FACTORS

With regard to **road and environmental factors** the legacy of Apartheid in South Africa, continues to impact in many instances on road safety (Ribbens, Everitt and Noah, 2004). Township areas, which constitute large geographical areas, were developed prior to the mid-nineties adjacent to cities and towns, as dormitory areas. In most of these areas limited paved road infrastructure was provided. Despite recent infrastructural upgrading in these disadvantaged municipal areas, many of these townships still lack:

- Proper road and pedestrian infrastructure
- Street lighting
- Road systems with the necessary storm-water drainage. During rainy seasons, the poor drainage and lack of paved pedestrian pathways pose major problems to pedestrians.

The situation in townships has been negatively influenced and further exacerbated by the influx of many rural residents to the bigger towns and cities and the establishment of formal and informal settlements. Generally, these new areas were established close to road networks in order to provide easy access to the major transport modes. No amenities were provided in many of these areas for the non-motorised transport user group. One such area is the 22 km stretch of the Golden Highway in Gauteng, where informal settlements and township development have impacted negatively on road safety of road users. De Beer (2002) found that the densely populated residential areas on both sides of the highway generated large volumes of pedestrians throughout the day (crossing and walking alongside the road). There were also many pedestrians going to and from the schools located opposite the informal settlements, and within the formal townships. Pedestrians cross the highway along the entire length of the section due to the lack of proper channelisation. Though twenty-seven access roads have been provided over this 22 km section of the highway and three of these are stop sign controlled intersections, none made provision for pedestrian facilities at any of these intersections. Furthermore, no paved sidewalks leading to the taxi bays have been provided, with mini-bus taxis stopping anywhere alongside the road. Street lighting is also absent.
Moeketsi (2002) also referred to poor land use planning; the unsafe layout/designs of roads and street systems as inhibiting road safety. In many instances, the construction of national roads arose long after communities had established themselves in areas. On the other hand, human settlements (formal and informal) have grown adjacent to existing national roads, creating road safety problems. Needs assessment among communities living adjacent to national roads indicated a range of road safety problems (combination of road, vehicle, and behaviour):

- Very high vehicle speeds and lack of discipline among drivers
- Regular crossing of national highways by pedestrians
- Poor sight distances for pedestrians
- Intoxicated pedestrians
- Inadequate pedestrian facilities
- Lack of facilities for informal traders along national highways
- Inadequate road maintenance
- Ineffective control of road traffic or lack of law enforcement
- Traffic behaviour bad, with an increase in traffic volume
- Lack of coordinated land use and transport planning
- Inadequate vehicle safety standards.

Jansen Van Vuuren (2002) mentioned a range of studies that were done to identify pedestrian hazardous locations in Gauteng. These hazardous locations were mainly found on freeways near developing areas, or shopping centres or on rural roads in informal and developing areas. The road safety problem has been aggrevated by illegal mini-bus taxi operators, inadequate facilities for pedestrians; lack of public transport and speeding. Due to poor planning and development people have to cross busy roads to reach their destinations. Most of these sites were on high speed roads, suggesting that existing pedestrian crossings are not practical enough to address the safety of pedestrians.

Alberts et al (2010) indicated that pedestrians, about 60% of the population, are among the most vulnerable road users in South Africa. They concluded that the roadside environment might be a very important factor influencing the nature and frequency of pedestrian fatalities. They suggested that the lack of pavements, pedestrian crossings, and pedestrian lighting are factors that could increase pedestrian vulnerability. According to this study a number of factors influence the pedestrian environment in South Africa:

- Infrastructure (Pavements, deficient street design, construction backlog and road condition)
- Street fittings (Pedestrian lighting and signage)
- Roads and road construction, traffic calming features.
According to the Department of Transport (2003) road safety of pedestrians and cyclists is compromised by the following road and environmental factors:

- Hawkers on 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
- Mini-bus taxis which use sidewalks as stops, ranking areas and repair and washing bays
- Boulders placed on the walkway to protect properties against traffic
- Lack of drainage or poorly maintained drainage systems, forcing pedestrians onto the roads during rainy seasons
- Non-existent or poorly maintained street lighting; which is a very important amenity for pedestrians who often have to leave early in the morning or arrive home late in the evenings.

A major proportion of pedestrian casualties in South Africa are recorded at night.

In the case of mini-bus taxis (Gauteng Road Safety Strategy, 2010) the road environment is the third most important reason for fatal road accidents. This includes sharp bends, poor road conditions, and slippery roads. Speeding vehicles on these conditions obviously worsen the fatal accident incidents.

### 3.3.3 VEHICLE CONDITIONS

The other main contributing factor is that of vehicle fitness. Taking into account country developmental aspects it is clear that un-roadworthy vehicles pose a major threat to fatal road accidents. This becomes even more prominent in view of certain road conditions and risky behaviours of drivers and pedestrians. Vanderschuren & Irven (2002) indicated that The Arrive Alive surveys have shown that 17% of fatal road accidents are caused by vehicle factors, mostly due to poor tyres and braking systems. The following vehicle factors play a role:

- Worn or smooth tyres, under inflated tyres, with resultant tyre bursts
- Poor brakes
- Faulty steering
- Poor lights and visibility
- Poor vehicle maintenance.

These vehicle factors apply to all vehicle types, though most reference was made concerning mini-bus taxis and busses. Lötter (2000) believes that mini-bus taxis generally tend to be un-roadworthy, unlawfully driven and overloaded. On the other hand, busses tend to speed, drive recklessly, have defective brakes and lights, burst tyres, and tend to be overloaded. In the case of mini-bus taxis, vehicle condition is the second most important reason for fatal road accidents (Gauteng Road Safety Strategy, 2010). This includes the general roadworthiness of vehicles (burst tires 63.8% and faulty brakes 24.3%).
3.3.4 HUMAN FACTORS

As already discussed, the Human factor has been identified as the main cause of fatal road accidents throughout the world. Such human factors include behaviour, personality, attitude, beliefs, and lifestyle. The human factor influences all road user groups (drivers, passengers, and pedestrians) in different ways.

3.3.4.1 PEDESTRIAN BEHAVIOUR

A number of researchers have focused on specifically pedestrian behaviour. Ribbens (2010) in this regard indicated that South Africa has experienced major increases in vehicular traffic over the last decade, and that it became more difficult for non-motorised transport users to share road space with motorised traffic. Human behaviour worsens this situation, as people try to cross the road, often away from the crossings or just by walking in the road. The lack of non-motorised transport infrastructure, poor integration of transport and land use planning, poor public transport planning further aggravates the situation. Macomsa and Ribbens (2004) indicated that: human behaviour by means of undisciplined behaviour of both pedestrians and drivers; lack of effective traffic law enforcement and inadequate road environment are the main contributing factors. Alberts et al (2010) indicated that pedestrians, about 60% of the population, are among the most vulnerable road users in South Africa. They concluded that alcohol abuse is one of the major contributing factors, and this is further impacted on by roadside environment. Another social or human factor is that of crime, where hotspot vehicle hi-jacking areas could pose a road safety problem to road users. Jansen Van Vuuren (2002) came to the conclusion that a couple of prominent causes of pedestrian fatalities exist, due to human behaviour:

- Alcohol abuse: The probability that a drunk road user should become involved in a fatal collision is six times higher than for sober road users
- Visibility: A large number of pedestrians prefer to wear dark clothes, to protect them from social violence, but with negative consequences for road safety
- Crossing roads diagonally: This has a negative impact on the judgement of speed and distance of vehicles, and the judgement of drivers on pedestrian positions and actions. Jay-walking while crossing highways
- Young pedestrians of up to 8 years are unable to judge speed and distances of oncoming vehicles, whilst those between 9-13 years still struggle with this judgement.
- Pedestrians ignoring the rules of the road, by crossing illegally and unsafely
- Pedestrian attitudes: Some pedestrians claim they have the right of way. It is thus the responsibility of the drivers to anticipate any driver/pedestrian conflicts
- Some pedestrians are uneducated, while others have bad habits or just negative attitudes towards road safety
- Adults or parents setting poor examples on road usage behaviour to youngsters.
3.3.4.2 DRIVER BEHAVIOUR

A wide range of articles has focused on driver behaviour as cause of fatal road traffic accidents. The 2011 South African Tom Tom Traffic Survey revealed that compared to nine European countries, South Africa has the most frustrated drivers. About 28% of those stuck in traffic experience “hatred”, 14% tend to be “irritated and frustrated” and 13% experience “tension/stress” (Jonckie, 2011). According to a recent HSRC publication in South Africa, personality plays a role in influencing risky driving practices of young people (Bacho, 2010). In the 1940s, authors Tillman and Hobbs claimed that a “man drives as he lives”. Some of the most prevalent personality factors among young drivers are anger, sensation seeking, and impulsivity. Regarding gender differences, males display more risky driving practices, and females a greater amount of impulsivity. This study demonstrated that drivers with higher levels of anger, sensation seeking, and impulsivity in their daily activities reported a significantly greater amount of risky driving behaviours, and traffic rule violations, speeding and reckless driving, non-usage of seatbelts and drunk driving. This study showed that driver attitudes towards risky driving behaviour predict the way they drive. This study also indicated that young children’s behaviour need to be changed, especially, those displaying anger, sensation seeking and impulsive behaviour. This study also concluded that life skills in high school and similar curricula at tertiary educational level should encompass a more holistic approach to risky behaviours. This study strengthened the attitude-behaviour hypothesis.

A study by Lefutso (2005) in Kagiso, has found that 12.5% of drivers, drive without drivers licenses, whilst being the normal drivers of those vehicles,. This indicates the severity of unlawful driving behaviour.

Pelzer (2008) concluded that human error factors play a critical role in road fatalities. Human errors in Africa include a range of factors:

- **Risk perception**: Cultural influences can play a role, such as fatalistic beliefs. The basis of these beliefs, lie in the presumption that all events, such as fatal road accidents, are predetermined and unalterable, that people are powerless to change events. A South African study found that 16% of blacks and 21% whites have such fatalistic beliefs. It appears that the South African taxi drivers are high on fatalistic attitudes and display high degrees on risk-taking. Other factors, such as witchcraft, have also been mentioned.
- **Excessive speeding**: accounts for about 50% of accidents, which is similar to high-income countries.
- **Alcohol and drug use**: drivers have used alcohol in 33-69% of fatal accidents in Africa.
- **Lack of information/training/licenses**: In South Africa, about 16.5% of truck, bus, and minibus taxi drivers have no valid driver’s licenses.
- **Driver fatigue, stress and aggression**: Commercial and public road transport drivers in Africa often work long hours. 24% of accidents have been attributed to falling asleep while driving.
- **Lack of seatbelt and helmet usage**.
In line with the previous authors, Vanderschuren & Irven (2002) mentioned a wide range of human driving factors that impacts on the severity of accidents, namely:

- Speeding
- Alcohol and drug abuse
- Attitude and judgment: which may be culturally influenced
- Impairment and vision
- Unskilled drivers: due to fake or invalidly issued licenses
- Disobedience of existing traffic regulations
- Failure to use safety measures
- Insufficient headway
- Overtaking
- Cargo and passenger overloading
- Red-light/stop sign violations
- Fatigue-related violations.

In the case of mini-bus taxis, fatal accidents are principally related to driver factors such as **behaviour, attitude, knowledge, and skills** (Gauteng Road Safety Strategy, 2010). A recent study among mini-bus taxi commuters and drivers in Port Elizabeth (Ferreira, 2010) suggested that though drivers are trained, risky behaviours are displayed in an effort of increase income:

- About 59% of these drivers were experienced drivers, should therefore be very knowledgeable of road rules, and should thus prioritize adherence to road safety at all times.
- The majority of mini-bus taxi drivers indicated that driving of minibus taxis is their only income and that they work on a commission basis for the owner of the minibus taxi. This results in overloading and speeding to increase income.
- 75% felt that overloading of vehicles contributed to more income.
- 58% felt that exceeding the speed limit would generate more income.
- 57% of respondents indicated that road safety regulations were too stringent.
- 64% of commuters indicated that the mini-bus taxi drivers did not adhere to speed limits.

As has been seen, fatal road crashes are attributed to certain driving violations and behaviours, which are being willingly committed, such as speeding, drunk-driving, non-usage of seatbelts. One theoretical model to predict such violation behaviour is the Theory of Planned Behaviour and its predecessor, the Theory of Reasoned Action. A wide range of studies have been done specifically on speeding. Elliot and Thomson (2010) undertook a study on speeding behaviour using an extended theory of planned behaviour, inclusive of attitude, norms, self-efficacy, perceived control, moral norm, anticipated regret, self-identity, and past speeding behaviour. They found that the extended theory accounted for 68% of the variation in Intention. **Intention** was best predicted by **attitude, self-efficacy, moral norm**, anticipated regret and **past behaviour**.
A study by Conner et al (2003) using the theory of Planned Behaviour predicted about 45% of the intention to speed. All variables of the theory plus moral norms and past behaviour were significant. Gender played an important role as males compared with females reported greater normative pressure from society to speed, and less personal control over not speeding. Normative pressure was also a stronger predictor of intentions for men than compared with woman. This was especially the case when, driving alone or when a passenger was male. Another study by Paris and Van den Broucke (2008) concluded that speeding intentions were strongly predicted by explicit social norms and negative attitude towards respecting speed limits.

Another study focused on road violations (Forward, 2009) for speeding in an urban area and dangerous overtaking among 275 people with drivers licenses. The study was based on an expanded theory which encompassed past behaviour. Results suggested that both past behaviour and descriptive norms made a unique contribution towards the prediction of the intention to violate. It was also found that the effect of descriptive norms were greater in “risky situations”; that young drivers and those who use cars more regularly were more likely to speed. In another study by Forward (2006) it was found that speeding was generally acceptable. However, it was also context related. Speeding on a major road was more acceptable than speeding on a minor road. In terms of perceived behavioural control it was found that those who expressed high degrees of control view themselves to be superior to others in terms of their driving skills. The study also found that a low degree of perceived control was used for justification for carrying out an act of violation, though only in perceived low risk situations. It was also found that habit, or rather past behaviour influences future behaviour.

Fleiter et al (2010) suggested that the singular use of legal sanctions to manage speed at which people drive, ignores the potential benefits of harnessing social factors. In an Australian study, using Akers’ social learning theory, researchers concluded that there are two groups of influential “others”, namely: People known to the driver (passengers/parents) and those Unknown to the driver. They found that passengers generally have a slowing influence on drivers: with responsibility and comfort of others being the key themes. The study by Paris and Van den Broucke (2008) concluded that intentions and perceived internal control predicted self-reported speeding. In contrast, intentions and perceived control did not significantly predict actual speeding behaviour. Actual speeding behaviour was only partially predicted by these concepts. These studies on speeding behaviour suggest that intentions of speeding and speeding behaviour tend to be related to social/moral norms, attitudes, past-behaviour, habit, self-control, and efficacy.
A study on risky driving behaviour suggests that behavioural control best predicts drunken-driving. Li-wei et al (2010) worked on prediction of drunk driving in Beijing using the theory of planned behaviour. Perceived behavioural control appears to be the best direct predictor of self-reported drunken-driving behaviour, with subjective norms and intentions having weaker direct links with such behaviour. Past drunken driving experience is the obvious factor that greatly affects attitudes, subjective norms, perceived control, and intentions of drunken-driving.

Morowatisharifabad (2009) conducted a study in Iran using the Health Belief Model as predictors of risky driving behaviour. The purpose of their study was to utilize components of the Health Belief Model to predict risky driving behaviours among a sample of 300 drivers. The most reported risky driving behaviour was speaking with others and using a cell phone, both while driving. There was a negative statistically significant association between risky driving behaviours and age. The occurrence of risky driving behaviours was higher among males as well as single drivers and inversely related to education. A positive statistically significant correlation possibly exists between risky driving behaviours and road traffic accidents and the number of traffic fines. Risky driving behaviours were significantly related to perceived severity, susceptibility, barriers, threat, and net benefits.

A couple of studies have been done on the prediction of seatbelt-use. The study by Calisir and Lehtu (2002) suggests that most research on seatbelt-use focused on demographics. The current study focused on situational factors, demographics, and constructs elicited from drivers. Perceived risk was related to road type, perceived consequences of an accident, perceived usefulness of safety belts, self-responsibility, dangerous behaviour, and gender. Risk perception however was not a good predictor of seatbelt-use. Gender, grade point average, and age influenced seatbelt-use. Perceived usefulness was amongst other factors impacting on safety belt use.

Simsekoglu and Lajunen (2008a) suggested that despite the proven effectiveness of seatbelt use in reducing the injury severity in road traffic accidents, a large number of car occupants do not use seatbelts in Turkey. They tested the basic and extended theory of planned behaviour (including habit, moral norm, and anticipated regret) and Health Belief model in predicting seat belt-use. They concluded that the basic theory of planned behaviour, and not the Health Belief model, best fits the data. Attitudes and subjective norms have a positive relationship to seatbelt-use intention on both urban and rural roads, which has direct implications for seatbelt-use campaigns and traffic safety in general.
Another study by Simsekoglu and Lajunen (2008b) on why Turks do not wear seatbelts indicated that the following reasons exist for using seatbelts:

- Travelling conditions
- Safety
- Situational conditions
- Habit
- Avoiding punishment.

On the other hand, the following reasons were given for not wearing seatbelts:

- Situational conditions
- Not being effective
- Discomfort
- Having no habit.

Safety was the strongest predictor or seatbelt use in both low and high risk travelling conditions. They concluded that seatbelt campaigns should emphasize seat belt safety impact and aim at habit formation (Simsekoglu and Lajunen, 2008b).

Chliaoutakis et al (2000) indicated that road traffic accidents are one of the major problems for public health and is the leading cause of death in Greece among the age group 18-24 years. They concluded that discomfort and mileage was negatively associated with seatbelt-use, while positive relations were found on:

- Imitation
- Self-protection
- Legality.

It is clear that a wide range of aspects contribute to fatal road accidents, ranging from autonomous factors, to human behavioural-related, to environmental, road engineering, vehicle conditions, and application of law enforcement, etc.
3.4 FUTURE PERSPECTIVE

Motorization had been projected to increase dramatically in the developing world. The Energy Information Administration (EIA) estimates that the road vehicle population will grow from 170 million vehicles in 1996 to 454 million in 2020 (Gauteng Road Safety Strategy, 2010). This growth could have devastating consequences on developing countries.

Of concern are the viewpoints and research indicating that road traffic accidents and fatalities will increase dramatically in future with devastating consequences. In this regard Esbaugh et al (2012) indicated that by 2050, according to the International Futures (IFS) forecasting model, global traffic deaths will surpass 3 million per year. Africa will be the hardest hit, and will account for 1 million of these deaths or 35% of global deaths. In this regard Gqaji (2011) referred to the launch of the Decade of Action for Road safety 2011-2020. Transport Minister Sibusiso Ndebele that stated that current road deaths already have a massive financial burden on society with costs at about R60 billion per annum in South Africa.

The increase in road accidents will have a vast detrimental impact on society. The WHO (2009b) concluded that if the African region does nothing to address the situation, the road safety challenge will increase and the poverty alleviation and development efforts within the countries will be slowed down. Piece meal interventions however will not produce tangible benefits, some rapid gains could be made by interventions that have proven to be working in other countries.

Esbaugh et al (2012) believe that should policy interventions be taken in Africa, then 4.2 million road deaths can be prevented. This clearly suggests that interventions are needed to address the reduction of serious and fatal road accidents. Various interventions have been implemented in the world with mixed outcomes over the years.
3.5 INTERVENTIONS TO REDUCE FATAL ROAD ACCIDENTS

The adoption and enforcement of traffic laws seems to be inadequate in a number of countries in the world (WHO, 2009a). This includes the enforcement of laws on drunken-driving, excessive speeding, the use of helmets, seatbelts, and child restraints:

- Less than half of the countries in the world have laws which address all these issues.
- Only 57% of countries require seatbelts use by passengers in both front and rear seats.
- In terms of speeding, research on effective speed management indicated that speed limits on urban roads should not exceed 50km/h. However, the urban speed limit is poorly managed in many countries.
- Just less than 50% of countries in the world have a Blood Alcohol Concentration (BAC) limit of 0.05g/dl as recommended in the World report. Young and novice drivers are most at risk of having road traffic accidents when under the influence of alcohol. However, only 13.9% of countries worldwide have a lower BAC for young and novice drivers, and most of these countries are from Europe.
- Only 40% of countries in the world have comprehensive helmet laws and require helmet structures to meet specific standards.
- While more than 90% of high-income countries have national legislation on child restraints, only 20% in low-income countries have such legislation.
- Although all countries reported national or sub-national legislation related to at least one of the five key risk factors (speed, drink-driving, helmets, seatbelts, child-restraints), less than half have national or sub-national laws relating to all five risk factors.
- A major problem is also that though these risk factors exist, regulations to combat them are often inadequately enforced; especially in low and middle-income countries.

Though Institutional frameworks (addressing the problems of road safety) have been recognized in many African countries, these frameworks tend to be insufficiently developed and under-resourced. Only 24% of African countries have government-endorsed strategies with targets and funding made available (WHO, 2009b).
With regard to road safety laws, most African countries do not have comprehensive laws that address the main risk factors (speed, drunk-driving, seatbelts, child-restraints and helmets). Furthermore, among countries that have such laws the laws are not adequately enforced. The following statistics indicate the severity (WHO, 2009b) in this regard:

- Only 22.9% of African countries have set their urban speed limits to 50km or less per hour, or local authorities to adapt to local situations.
- Though 93% of countries have drinking-driving laws, only 31% have BAC levels set at 0.05g/dl or less.
- Though 85% of countries have laws on helmets, 50% do not stipulate standards in this regard. Slightly fewer countries (80%) have laws on seatbelt usage; while only 50% apply it to the usage by front seat passengers. Only one in ten countries has child restraint laws.
- There are significant gaps in the emergency trauma care for injured road users. The chain of health care is weak or lacking, including emergency rescue, first aid, appropriate transport to health facilities and trauma care.

Vanderschuren & Irven (2002) compiled a list of strengths and weaknesses on road safety within South Africa. The weaknesses include:

- Poor pedestrian infrastructure provision
- Existing legislation on seatbelts, speed limits and alcohol blood concentration sampling
- Low detection of traffic violations
- High numbers of un-roadworthy and unlicensed vehicles on the roads
- High rate of unskilled drivers
- High levels of vehicle overloading
- High speeding
- Poor road maintenance
- Poor use of safety features
- Poor incident management
- SAPS staff members’ workload.
The threats to road safety in South Africa according to Vanderschuren & Irven (2002) include:

- Lack of resources
- Fraud and corruption
- Unreliable road safety data
- Low alcohol and drug abuse detection due to poor testing methods
- Poor traffic enforcement
- South African road-user attitude
- Road safety audits are not compulsory, with resulting lack of qualified staff to do audits
- High pedestrian mobility; lack of knowledge of their movements on freeways.

Traffic law interventions in the world and South Africa are lacking. However, various countries have initiated and implemented interventions successfully. The next section will focus on some of these best practices in the world.

### 3.6 BEST PRACTICES

The World Health Organisation has shown that death rates have been declining in some high income countries over the past 40 to 50 years (WHO, 2009a)

*Source: WHO: 2009*

The above graph shows major decreases in death rates due to fatal road accidents for France, Canada, and Australia. No reasons were provided, but secondary research is needed in this regard.
Various best practices have been applied throughout the world. This section focuses on best practices and consequences where measurable.

- **AFRICAN PERSPECTIVE**

Esbaugh et al (2012) referred to some best practice examples in Nigeria, Ghana, Kenya, and Tanzania. In Nigeria road traffic fatalities peaked in 1981 showing a 400% increase for the period 1971-1981. Road traffic accidents however dropped, after increased safety awareness and slowed motorization due to an economic downturn. As the economy recovered, the fatality rate increased again. Government then introduced a *bus rapid transit system* to limit vehicles on roads.

In Ghana, traffic accident mortality rates doubled between 1994 and 2004. Structural and behavioural plans were implemented, such as building speed humps, rumble strips, TV advertisements, and education of citizens about drunk-driving and speeding in order to curb this trend. The initial assessment showed a 35% reduction of crashes and 55% in fatalities (Esbaugh et al, 2012).

The WHO (2010) referred to the establishment of a nation-wide ambulance service in Ghana. Until the early 2000’s, emergency trauma care in Ghana was informal and extremely limited. Most patients injured in a road crash were taken to a health facility by their relatives where they would receive limited first aid. In 2001, efforts to address emergency trauma care gained political support. During 2004, the government established a nationwide ambulance service and a dedicated hotline. In less than four years:

- The number of cases handled by the national ambulance system rose from 2005 in 2004 to 82550 in 2008
- The average response time for ambulances decreased from 17 minutes in 2006 to 13 minutes in 2008
- The average time spent at the scene decreased from 19 minutes in 2006 to 14 minutes in 2008.

During 2002 in Kenya road safety was put on the national agenda, and this culminated in the inception of a *National Transport Policy* document with a law on mandatory use of seatbelts and speed governors in public service vehicles. Road accidents in the first two months recorded a 35% drop (Esbaugh et al, 2012).

Tanzania reported an increase in road traffic deaths during the period 2000-2005. In response to this increase in road deaths, a trauma-training programme was introduced to help nurses and physicians to assess and assist crash victims. This led to improved response capabilities (Esbaugh et al, 2012).
Some African countries with low accidents rates tried various initiatives:

**Mauritius**: Focused on Engineering, Education, and Publicity campaigns. They have lowered the blood alcohol level from 80 to 50 mg per 100 ml blood; introduction of breathalyzer tests; tougher fines coupled with imprisonment for drunken driving; mandatory seatbelts in front and back seats; mobile telephone use not permitted when driving; speed limit set for 40km/h in rural and urban areas.

**Zambia**: Focused on: Engineering; Law enforcement; Traffic regulations; Vehicle safety; Driver training and testing; Road safety education for children and Road safety publicity; Emergency medical services. They further rolled out a tyre safety awareness campaign.

**Malawi**: The AA is active with driving tips (two-second rule, concentrate and anticipate, speed kills, traffic lights and crossings, drink and drive, safe overtaking, indicate intentions, talk and drive, buckle up, courtesy costs nothing). They also have cycling campaigns, active youth participation in road safety activities, road safety school clubs, life testimony of victims reaching out to 2400 primary school children in one district. Private sector involvement in school patrols. They too rolled out a tyre safety awareness campaign. They also introduced a new national traffic information system, named MAITIS. Action plans include upgrading of major road networks, vigorous enforcement of laws, private sector involvement in maintenance, parking control in urban areas.

In **South Africa** on a provincial level, various initiatives have been initiated to reduce road fatalities. In the **Western Cape**, the following is in place:

- Establish a provincial traffic safety regulatory framework
- Facilitation of road safety education and awareness focusing on change of behaviour and attitudes
- Professionalism of Traffic and Municipal policing agencies (uniform standards)
- Safe road environment (consolidated, effective, integrated, and aligned quality traffic policing services).

The **KwaZulu-Natal** Department of Transport (2011) focused strongly on:

- Improved administration
- Transport Infrastructure. Construct, re-construct, upgrade and rehabilitate road and transport infrastructure. Effectively maintain road and transport infrastructure; providing infrastructure planning for all modes of transport including the movement of goods and passengers to integrate transport and spatial planning. Integrated, modal transport facilities and systems inclusive of non-motorized transport. Facilitation of road safety audits on all transport modes of movement and provision of data collection services. Research to provide management information systems for the provincial road network (e.g. road condition, traffic counts and accident data); provide design of road and transport infrastructure including all necessary
support functions such as Environmental Impact Assessments, Traffic Impact Assessments, survey, expropriation, material investigations and testing).

- **Transport Operations**: Manage/co-ordinate and facilitate the transport safety and compliance in all transport modes with related legislation, regulations, and policies through pro-active and reactive tactics and strategies. This included the monitoring of public transport operators in terms of national and provincial legislation to ensure safety of commuters. This also included safety education, awareness, training and development of operators to enable them to provide the required level of service delivery; manage and operate public transport systems and the support services required such as; Mass movement systems, Intelligent traffic systems, Fare management systems, Integrated ticketing system, Electronic traffic signs, etc.

- **Transport Regulation**: Monitor and control the registration and licensing of all motor vehicles. Render services regarding the administration of applications in terms of legislation; Implementation of laws and regulations relating to vehicle registration and licensing, vehicle fitness testing and driver fitness testing. The management, approval and control of registering of transport operators and the issuing of all licences and permits required in terms of legislation. The management and control of registering of transport operators and the issuing of all licenses and permits required in terms of legislation. To maintain law and order for all modes of transport by providing quality traffic policing services as stipulated by relevant legislation. This also includes overloading controls along the road network.

- **Community Based Programmes**: The management and co-ordination of the Expanded Public Works Programmes. Development of strategies to advance Broad Based Black Economic Empowerment programmes.

- **Develop programmes to bring about the development and empowerment of impoverished communities.**
AUSTRALIAN PERSPECTIVE

WHO (2011) discusses the impact of drinking and driving initiatives in Australia. According to this report, drinking and driving law enforcement could reduce road fatalities by 20%. Random breath testing is the primary drinking and driving law enforcement tool in Australia. Highly visible “booze busses” are used to conduct testing while media campaigns support enforcement. The evaluation showed a long-term reduction in drunken-driving related crashes with a decrease from 45% to about 30%.

MALAYSIAN PERSPECTIVE

Separation of different types of vehicles, for example, two and three wheeled vehicles from four or more wheeled vehicles is a proven intervention to reduce road traffic accidents. Exclusive motorcycle lanes are a means to do so. These dedicated lanes are solely for use by vehicles such as motorcycles, scooters, and bicycles. They are becoming common in a number of Asian cities, where they have proven to reduce collisions and injuries dramatically by creating safer driving environments. For example, evaluation of the Federal Highway Route 2 in Malaysia, which includes an exclusive motorcycle lane, revealed that crashes were reduced by 39% after this lane was built (WHO, 2009a).

VIETNAMESE PERSPECTIVE

Research has shown that wearing a motorcycle helmet can cut the risk of death by 40% and reduce the risk of serious head injuries by 70%. In 2007, the Government of Vietnam passed a law requiring all motorcycle drivers and passengers to wear helmets. Strict enforcement of this law by police around the country led to a tripling in helmet wearing rates, reaching over 90% among both drivers and passengers. Within a year of the Government’s decision, police had intensified their enforcement and the fines for not wearing a helmet had increased substantially, while hospitals reported a 16% reduction in the risk of a head injury compared to the previous year. Police reports
showed that over 1500 lives were saved and over 2500 serious injuries prevented in the year after the helmet law was passed (WHO, 2009a).

- **NEW ZEALAND PERSPECTIVE**

Keall et al (2001) investigated the effectiveness of hidden speed cameras in New Zealand. Overtly operated mobile speed cameras have been used in New Zealand since late 1993. A trial of hidden speed cameras began in mid-1997 in 100km/h areas in New Zealand. The results suggest that the hidden speed cameras and the related publicity were associated with net reduction in speed, accidents, and casualties. However, the attitudes of the public reverted to pre-trial levels after a while. They concluded that hidden cameras just had a more general effect on all roads.

- **COLUMBIAN PERSPECTIVE**

Bogota, the Capital of Colombia, implemented land-use planning and transport measures simultaneously in order to meet the needs of non-motorised road users. These measures included exclusive routes for cyclists and pedestrian, exclusion of cars from city centre at peak times, introduction of a car free route, and a high capacity bus system. These interventions reduced road fatalities from 1387 in 1995 to 697 in 2002, which constitutes a 50% reduction of fatalities.

- **SOUTH AMERICAN PERSPECTIVE**

The Gauteng Road Safety Strategy (2010) alludes to Brazil where enforcing traffic codes have been seen to have a major impact on reducing road accidents. Since 1998, the Brazilian traffic code considers the non-use of a helmet, driving without a license, driving under the influence of alcohol (BAC of 0.06%) and non-use of a safety belt to be serious offences. According to this traffic code, a motor cycle rider without safety helmet will not only incur a fine, but will also be forbidden to drive for some time and thus have his driving license suspended for some time. Alcohol abuse faces the same code but the license is withdrawn and the offender arrested. If these drivers are involved in accidents, there are also criminal legal implications.

In an effort to deal with relationship between alcohol, violence, and traffic accidents, one town Diadema, implemented Semi-dry laws (restricting sale of liquor after specific hours) in 120 municipalities in Brazil. The number of road accidents fell by 30% just by restricting the sale of liquor between 11pm and 6 am (WHO, 2009a).

- **USA PERSPECTIVE**

Wearing a seatbelt reduces the risk of losing lives, ejection from a vehicle during impact and suffering serious or fatal injury by between 40% and 65 %. “Click It or Ticket” proved the most successful seat-belt enforcement campaign ever conducted in the country. The cornerstone of the “Click it or Ticket” campaign, is the national May Mobilization during which law enforcement agencies join forces across the country.
National and local media campaigns supported this campaign. From 2000–2009 over 140 000 American’s lives were saved by using seatbelts (WHO, 2010).

- **EUROPEAN PERSPECTIVE**

WHO (2010) discusses the impact of road safety measures on road deaths in *France* for the period 1970-2009 where various initiatives were implemented. Since the early 1970s, France has made great strides in reducing fatalities. This has been the result of a myriad of factors, including adoption and enforcement of legislation on speeding, seatbelts and drinking and driving.

Since 2002, a combination of factors accelerated the decrease in annual fatalities including: a stated commitment from the highest level of government, stricter enforcement of legislation especially...
using speed cameras, and media campaigns explaining the traffic rules and risks. From the early 1970s to 2009 in France, deaths have declined from more than 16 000 annually to just over 4 000. The Impact of the Demerit Point System (DPS) which was introduced in 2006 in Spain concerning the road traffic accident mortality rate was assessed (Pulido et al, 2010) using a methodology that controls the seasonal variation and trend in the data series. Time-series analysis were done using ARIMA models of 29 113 fatalities in road traffic accidents between January 2000 and December 2007. The model permitted estimation of an intervention parameter, together with its 95% CI, to calculate the number of fatalities, which would have occurred if the DPS had not been implemented, after controlling for the effect of other measures introduced in 2004. The results suggested that in the 18 months after implementation of the DPS, an estimated 618 persons would have died in traffic accidents had it not been in effect, which represents a reduction of 14.5% (95% CI 6.1% to 23.0%) from a total 4 252 deaths. They concluded that the implementation of the DPS in Spain has led to a significant reduction in the number of traffic accident deaths in the context of a downward trend in accidents after the implementation of the 2004 measures.

A similar study on the use of seatbelts and the number of road traffic deaths and injuries of the Demerit point system was conducted in Italy, where the system was introduced in 2003. Pre-post intervention of seatbelt regulation and national time-series analysis of road traffic deaths and injuries between 1999 and 2004 was assessed. The demerit point system was found to have increased seatbelt usage by 51.8% among drivers; 42.3% amongst front passengers and 120.7% amongst rear passengers. It was estimated that 1545 deaths were prevented in the 18 months after the introduction of the demerit system, which is an 18% reduction in deaths and 19% in injuries. They concluded that the demerit system is effective at encouraging both drivers and passengers to adhere to the law, and demonstrated a definite impact on health outcomes (Zambon et al, 2007).

A Finnish study by Dunbar et al (1987) found that the introduction of random breath testing in 1977 reduced drinking and driving by 58%. There was an appreciable reduction in the death and injury rates from road accidents associated with drinking, despite an increase in traffic and vehicle numbers. By analysis, the drunken drivers were found to be divorced men, older people, and people from higher social classes, more heavy goods, and public service vehicle drivers. Most drunken drivers were detected during early mornings, when vulnerable users such as school children were on the roads. It was concluded that the next step towards controlling drunken drivers was to possibly introduce the development of treatment programmes. Once identified, problem drinkers should be required to convince the court that their driving no longer presents a danger to road users, before their driver’s licenses are restored.
De Brabander et al (2005) studied the road safety of 95 roundabouts in Flanders, which had been built between 1994 and 1999. The study showed a positive impact, though roundabouts were proven to be the most effective on intersections of main roads with high speeds (90km/h) and adjacent roads with lower speed limits (50 or 70km/h). A 34% reduction of fatal accidents on average, and 38% reduction for serious injuries. However, in another study in Flanders, by Daniels et al (2008), researchers concluded that roundabouts resulted in a 27% increase in the number of accidents involving bicycles on or nearby roundabouts. It was even higher for fatal or serious accidents (41%-46%). It also appeared to depend on whether these were inside or outside built-up areas. Accidents and serious injuries/fatalities increased by 77% inside built-up areas.

Best Practices in Road safety (2007) discusses the best practices in road safety in 27 member states of the European Union (including Switzerland and Norway). The intention was to reduce road fatalities by 50% between the period 2007 and 2010, based on nine strategic measures:

- Institutional organisation of road safety
- Road infrastructure
- Vehicle and safety devices
- Road safety education and campaigns, and Driver training
- Traffic law enforcement
- Rehabilitation and diagnostics
- Post-accident care and road safety data and data collection

The following Tables indicate the interventions and the quantification of outcomes:

<table>
<thead>
<tr>
<th>INSTITUTIONAL ORGANISATION (road safety visions, targets, strategies, financial resources, tools and strategies for road safety measure selection)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sustainable Safety In Netherlands (Road Safety Vision)</strong></td>
</tr>
<tr>
<td>Sustainable safe road systems aim to prevent crashes or to minimise their consequences. 5 main principles: functionality, homogeneity, predictability, forgiveness, and state awareness). One action was that motorized traffic and vulnerable road users can only interact if speeds are lowered and if not separate facilities for vulnerable road users. Measures was increasing the number 30km/h zones in built-up areas; introduction of 60km/h zones outside built-up areas and speed reduction at intersections</td>
</tr>
<tr>
<td><strong>OUTCOMES:</strong></td>
</tr>
<tr>
<td>Reduced the number of fatalities and in-patients by 6%.</td>
</tr>
<tr>
<td><strong>Vision Zero in Sweden (Road Safety Vision)</strong></td>
</tr>
<tr>
<td>1997 Sweden parliament adopted Vision Zero, based on 4 principles:</td>
</tr>
<tr>
<td>1. Ethics: human life and health are paramount, and take priority over mobility and other objectives of the road transport system</td>
</tr>
<tr>
<td>2. Responsible chain: The providers, professionals are responsible for the safety of the system, while the users have responsibility to follow rules and regulations.</td>
</tr>
<tr>
<td>3. Safety philosophy: humans make errors, road transport systems should minimise the opportunity for error</td>
</tr>
<tr>
<td>4. Driving mechanisms for change: providers and enforcers of road transport system must try utmost to guarantee safety of all citizens</td>
</tr>
<tr>
<td><strong>OUTCOMES:</strong></td>
</tr>
<tr>
<td>Estimated to achieve a possible reduction in the number of deaths by a 25%-33% over ten year period</td>
</tr>
</tbody>
</table>

*Source Best Practices in Road safety (2007)*
### ROAD INFRASTRUCTURE

**Low speed zones in residential areas**  
*(Reconstruction and design)*  
For safety, low speeds are essential when vehicles use the same space as pedestrians and cyclists. Lows peed zones (30km/h and 10-15km/h) in residential areas, near schools and shopping areas; together with physical measures such as road narrowing, speed humps, curves.  

**OUTCOMES:**  
A study in the UK showed that low speed zones of 30km/h zones reduced accidents by 27%, crashes causing injury by 61% and serious crashes by 70%.

---

**Roundabouts**  
*(Reconstruction and design)*  
Since 1986, about 2000 roundabouts have been built in the Netherlands; Sweden had 150 in 1980’s and now 2000 also. They aim to reduce speed at junctions, and removing right angle and head-on collisions, and reduce crash severity.  

**OUTCOMES:**  
Converting an ordinary junction to a roundabout decreases injury crashes by 32% for 3-legged junction and 41% for 4-leg junctions. Corresponding of 11% and 17% when converting a signalized junction to a roundabout.

---

**Rumble strips in Sweden**  
*(Signing and marking)*  
Rumble strips are milled into the asphalt surface of a road shoulder or between lanes in opposite directions. They vibrate and make a noise when vehicle passes over them, alerting drivers of potential crash danger.  

**OUTCOMES:**  
Research have shown that the number of injury crashes can be reduced by over 30% by shoulder rumble strips and 10% by centreline rumble strips.

---

**Winter speed in Finland**  
*(Maintenance)*  
Lower the speed limit in winter time on rural roads to 20km/h and winter tyres.  

**OUTCOMES:**  
Reduced speed limits in winter time reduced injury crashes by 28% and fatal crashes by 49%.

---

*Source Best Practices in Road safety (2007)*

### VEHICLES AND SAFETY

**EuroNCAP**  
*(Safe car design)*  
EuroNCAP performs crash tests of the most popular cars sold in Europe.  

**OUTCOMES:**  
The risk of severe and fatal injuries is reduced by around 12% for each extra EuroNCAP star rating. No differences in lighter injuries.

---

**Daytime running of lights**  
*(Vehicles and safety devices)*  
Legal obligation for all motorists to drive with low beam headlights regardless of time of day. Improves visibility for other road users  

**OUTCOMES:**  
Mandatory DRL will reduce the number of daytime multipart crashes with motor vehicles by 5-15%. The effects are greater for fatalities than for injury.

---

**Bicycle side reflection**  
*(Vehicles and safety devices)*  
Rear and front wheels of bicycles are equipped with reflective material to increase visibility at night and twilight time.  

**OUTCOMES:**  
In the Netherlands, the introduction of bicycle side reflection resulted in 4% less bicycle victims during night and twilight time and overall about 1%.

---

**Intelligent Speed Assistance (ISA)**  
*(Vehicles and safety devices- driver support systems)*  
Estimated that excessive speed and inappropriate speeds cause about 33% of all deaths and serious accidents. The system compares the current speed with posted speed limits or recommends speed limits. Give s feedback to the driver or even restricts the vehicle speed.  

**OUTCOMES:**  
It could lead to a fatality reduction between 19.5% and 28.4% in a market driven scenario and 26.3% and 50.2% in an n authority driven scenario.

---

**Alcohol Ignition Interlock**  
*(Vehicles and safety devices- prevention of unsafe traffic behaviour)*  
Alcohol contributes to about 20-25% of serious and fatal accidents. An electronic device prevents the vehicle being started if the driver had drunk too much. Consist of a breathalyser  

**OUTCOMES:**  
The risk of injury in vehicles that are equipped with this device is reduced by about 50%.

---

**Event data recorders (Black boxes)**  
*(Vehicles and safety devices- prevention of unsafe traffic behaviour)*  
It monitor a number of variables related to driving behaviour, such as...  

**OUTCOMES:**  
It appears that he EDR has a
speed, acceleration, deceleration, use of lights, gears, seatbelts. There are two types a Crash Data recorder and a Journey data recorder. Mostly used in trucks, vans, and company cars. preventative effect. In trucks and vans, it reduces on average 20% crashes, 5.5% fatalities and 3.5% sever injuries.

<table>
<thead>
<tr>
<th>ROAD SAFETY EDUCATION AND CAMPAIGNS</th>
<th>OUTCOMES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Promote knowledge and understanding of traffic rules, improve skills, change in attitude towards risk awareness, personal safety and that of other road users. Education directed at school children. Road safety campaigns to change behaviour and attitude on particular road behaviour, e.g. drunk driving)</td>
<td></td>
</tr>
<tr>
<td>A limited evaluation study indicated a small positive effect on traffic behaviour.</td>
<td></td>
</tr>
</tbody>
</table>

Zebra Seef in the Netherlands
(Road safety Education)
The label is directed at primary schools, while similar approach for secondary schools etc., being developed. Schools earn certificates and the label by working on one of the 4 main topics (Integrating road safety education in school programme, Stimulating a safe and healthy school transport environment, involving parents, and practical training and projects.)

OUTCOMES:
A limited evaluation study indicated a small positive effect on traffic behaviour.

The BOB-Campaign from Belgium
(Road safety campaigns)
It has been in Belgium since 1995. Bob is a person who does not drink when driving. Aim to make drink driving socially unacceptable, and being supported by the alcohol industry. It has permanent elements (bob website, bob van, leaflets, key hangers, t-shirts) and periodic elements (roadside billboards and TV Radio ads).

OUTCOMES:
The bob campaign is highly appreciated. 35% said they have been BOB and 2/3 knows someone that acts like BOB. During the campaign, the drunk drivers drop from 9% to 4%.

The Goochem, the armadillo, in the Netherlands
(Road safety campaign)
This awareness campaign campaigns on the use of seatbelts and child restraints. Uses TV radio, billboards, and websites to convey messages, and educational package developed for schools.

OUTCOMES:
Share of children being transported with protective device increased from 75% in 2004 to 82% in 2005 and 90% in 2006. The use of child restraints increased from 25% in 2004 to 56% in 2006.

The Sign of Light from Latvia
(Road safety campaign)
Is a national campaign focusing on pedestrians’ visibility and safety in the dark. Done in months when daytime is the shortest. Slogan “A pedestrian without a reflector is a dead body’ Waistcoats with reflectors also given to school children, and jackets were donated by the public, with reflectors also, for low-income families)

OUTCOMES:
After two campaigns, the average rate of pedestrians wearing reflectors in the dark increased from 4% to 20%.

Speak Out! From Norway
(Road safety campaign)
Target is young 16-19 year age group who are travelling a car as a passenger in the evening, night, and weekends. It encourages them to speak out if the driver is not driving safely (too fast or under influence). Often they do not speak out due to peer pressure. Videos, T-shirts, and visible control posts by police officer.

OUTCOMES:
The number of killed or injured car passengers in the 16-19 years group was reduced by 27% in the 1st year, 31% in the 2nd year and 36% in the 3rd year.

*Source Best Practices in Road safety (2007)

**DRIVER TRAINING** (Important tool for preparing people to drive safely and raising awareness of the risks of driving motorized vehicles)

Training in Driving Schools
(DRIVING schools)
Since 1986 in Denmark, system-prescribing series of steps in training process which must be respected by the driver instructor, including theory and practice. It also focused on defensive driving and hazard perception.

OUTCOMES:
A crash risk reduction of 7% during first year of driving, though disappearing thereafter.

More experience for learner drivers
(DRIVING schools-accompanied driving)
Lowering the age from 17.5 years to 16 years to start learning to drive, though 18 remains for licensing.

OUTCOMES:
A crash risk reduction of 46%.

*Source Best Practices in Road safety (2007)
<table>
<thead>
<tr>
<th><strong>TRAFFIC LAW ENFORCEMENT</strong> (Enhanced enforcement especially when targeting speeding, drink driving and non-use of seatbelts leading to 10-25% reduction in crash reductions)</th>
</tr>
</thead>
</table>
| **The safety camera programme in UK** *(Speed enforcement)*  
Cameras are clearly marked so that motorists can see them. Strict guidelines where to place cameras, based on crash numbers and speeding. | **OUTCOMES:**  
A speed reduction of 70% at the sites, 6% in general and 10-40% drop in crashes near sites. |
| **Automatic speed enforcement in France** *(Speed enforcement)*  
Started in 2003 and 1000 fixed and 500 mobile speed cameras installed. | **OUTCOMES:**  
Average speed dropped by 6%, and number of fatalities dropped by over 30%. 75% of these attributed to new speed camera system. |
| **Section controls in the Netherlands** *(Speed enforcement)*  
Currently 14 road sections where section control is applied. Working 24/7. | **OUTCOMES:**  
Speed limit compliance is 98%. Number of crashes in these sections reduced by 47%. O roads further away from sections, crashes reduced by 10%. |
| **Random Breath testing** *(Drink driving)*  
Finland has the highest RBT in Europe with a number of tests per population of 34% and Sweden with 17%. | **OUTCOMES:**  
Proportion of car injury crashes involving drunk drivers, reduced from 14% to 9% in Sweden after introduction in 1970s.  
In Denmark alcohol related crashes reduced by 25%. |
| **Targeted seatbelt enforcement in Denmark** *(Seat belts and child restraints)*  
Police controls checking usage and standards. In 5 years the seatbelt usage went up by about 7% (80-87%) | **OUTCOMES:**  
Studies have shown that fatal injuries reduced by 40% by usage of front seat seatbelts, 30% in seatbelts in rear seats, and 50% of child restraint devices |
| **Penalty Points in Latvia** *(Penalty point system)*  
In 2004, Latvia introduced system. Aim is separate regular violators from those that generally comply. 1-8 points assigned, depending the severity of the problem. Points valid for 2 years (5 years for drink driving offences). Drivers exceeding 16 points twice in ten years are disqualified for 5 years. Drivers exceeding 8 points have to attend driver improvement course. Applies to all vehicles except mopeds and bicycles. | **OUTCOMES:**  
In the year after the introduction injury crashes dropped by 7.25 and number of fatalities by 11.4%. Meta-analysis shows an average of 5% reduction of all crashes due to penalty point system. |

*Source Best Practices in Road safety (2007)*
REHABILITATION (This refers to measures that restore fitness to drive after offences. It is complementary to other behavioural measures such as campaigns, education police controls. Diagnostic measures refer to the measures to identify people at risk)

- Completion of rehabilitation programme conditional for re-licensing
- Both educational and therapeutic elements

<table>
<thead>
<tr>
<th>REHABILITATION: Mandatory driver improvement in Australia (Rehabilitation of severe violators)</th>
<th>OUTCOMES: Within a timeframe of 2.5 years, 30.6% of drunk-driving offenders who did not participate had a relapse, compared with 15.8% of those attending the rehabilitation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target group is drivers with severe violations such as drunk driving and speeding. The course focus on relationship between violations and personal attitudes, knowledge gaps, and behavioural patterns are developed. 22 days</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REHABILITATION: Traffic-psychological assessment of drunk drivers in Australia (Diagnostic assessment)</th>
<th>OUTCOMES: Since inception in Australia drunk driving dropped from 2860 to 2746 between 1991 and 2005.</th>
</tr>
</thead>
<tbody>
<tr>
<td>If driver is detected to driving with high BAC or refuses to do a breath test, he is by law required to undergo TPA. If the overall assessment is negative, the license remains revoked until sufficient driving capability is obtained</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POST ACCIDENT CARE: First Aid Course integrated with Driver training (First Aid)</th>
<th>OUTCOMES: Not tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>A number of countries First Aid are obligatory part of formal drier education.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POST ACCIDENT CARE: Promoting of implementation of eCall Systems in Finland (Emergency calls)</th>
<th>OUTCOMES: Finish study estimates that the system will reduce 5-10% of motor vehicle fatalities and 4-8% of all road fatalities.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is an automatic in-vehicle emergency call service. Sensors detecting a crash. It activates a GPS, and voice connection between crash vehicle and emergency services.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POST ACCIDENT CARE: Transport of victims by Helicopter in Netherland (First Treatment and transportation)</th>
<th>OUTCOMES: Dutch study calculated that the mortality would have been 11-17% higher if victims were transported by helicopter instead of ambulance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trauma helicopters are in operation.</td>
<td></td>
</tr>
</tbody>
</table>

*Source Best Practices in Road safety (2007)

It is clear that fatal road accidents have been successfully reduced, by means of various interventions, focusing on a range of institutional arrangements, vehicle and road conditions/designs, traffic-law enforcement, emergency care, marketing / media, educational campaigns, and training initiatives.
3.7 CURRENT AND PROPOSED INTERVENTIONS

On a global level, the road safety situation clearly suggests that major interventions are required in order to curb the high levels of deaths due to road traffic accidents. Furthermore, these interventions or strategies should focus on the plight of road users regarded as more prone in becoming part of the fatality statistics such as age, gender, economic and income, vulnerable road users, etc. The Status Report on Road Safety in the World (WHO, 2009a) indicates that:

- Governments need to take into consideration the needs of all road users when making policy decisions that impact on road safety, and that enough is done to address the needs of vulnerable groups. As speed is the main risk factor for injury and death among pedestrians and cyclists, just less than a third of countries meet basic criteria for speed reduction in urbanized areas, while only one in ten countries rate their speed enforcement laws as effective. Other implementation strategies were those of effective traffic calming measures, proper road-infrastructure, appropriate public transport, and land-use planning.

- Governments need to enact comprehensive laws that require all road users to be protected. The enforcement of comprehensive and clear legislation with appropriate penalties, accompanied by public awareness campaigns is a critical factor in reducing road traffic injuries and deaths.

- Addressing road safety in a holistic manner requires the involvement of multiple sectors, such as health, transport, and police. Institutions should foster multi spectral collaboration and have the necessary human and financial resources.

- Reliable data on road traffic injuries is lacking. Renewed effort is required to encourage collaboration between different sectors in collecting and reporting data on traffic injuries.

Another very important initiative is the UN Global Plan (2010) proclaimed in 2010, to stabilize and then to reduce the forecasted level of global road fatalities. This is to be achieved by increasing activities at national, regional, and global levels. It is aimed at national and local governments, civil society and private companies, including sectors such as transport, health, police, justice, urban planning. Road traffic injuries can be prevented by means of an adequate funded lead agency. Effective interventions include land-use, urban planning and transport planning, designing safer roads, improving safety features of vehicles, promoting public transport, effective speed management by police and traffic calming measures, internationally harmonized seat-belt laws, helmets and child restraints, setting and enforcing blood alcohol concentration levels, and improving post-crash care for victims. Public awareness campaigns by increasing awareness of risks and the penalties of breaking the laws. The National Road Safety strategies should be based on five pillars:

- Road safety management
- Safer roads and mobility
- Safer vehicles
- Safer road users and post-crash response.
The WHO (2011) suggested that road safety plans of the Decade of Action for Road Safety (2011-2020) should incorporate:

- Policy-makers
- Non-governmental organizations
- Private companies
- Young people
- Victims and survivors
- Media.

Esbaugh et al (2012) referred to the Haddon Matrix that suggests that policies to reduce road accidents and deaths should focus on three periods (Pre-crash, Crash, Post-Crash), against four types of factors (human, vehicle, environment and social). The Haddon matrix is as below. The Global Plan for Decade of Action for Road Safety promotes this integrated approach.

<table>
<thead>
<tr>
<th></th>
<th>Pre-crash</th>
<th>Crash</th>
<th>Post- crash</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human factors</td>
<td>Licensing, training, driver attitude, impairment and distractions</td>
<td>Personal protective equipment</td>
<td>Crash research, education/training and evaluation</td>
</tr>
<tr>
<td>Vehicle factors</td>
<td>Braking, vehicle design, maintenance, passengers/loads, safety equipment</td>
<td>Vehicle safety equipment, personal safety equipment (Seatbelt use)</td>
<td>Automatic collision notification systems, crash research</td>
</tr>
<tr>
<td>Environmental factors</td>
<td>Regulation, enforcement, hazards, natural hazards, driver distraction, built environment, road design/maintenance</td>
<td>Other vehicle design, road furniture</td>
<td>Emergency medical service response, health infrastructure</td>
</tr>
<tr>
<td>Social factors</td>
<td>Enforcement, awareness, insurance incentives, rider peer pressure</td>
<td>Safety community attitude/involvement, medical community attitude and involvement, political will</td>
<td></td>
</tr>
</tbody>
</table>

Pelzer (2008) concluded that the following must be done to reduce fatal road accidents in Africa:

- Wider public education
- Strict speed limit enforcement
- Traffic calming strategies: speed bumps; speed strips
- Enforcing legal blood alcohol limits
- Minimum drinking age laws
- Use alcohol checkpoints, and running mass media campaigns
- Mandatory seatbelt, public education on its benefits, as well as use of helmets
- Bicycle lanes, safety programmes, skills training and visibility enhancement for cyclists
- Provision of walkways, safe pedestrian crossings, and traffic calming measures
- Passenger safety can be further protected by labour rights of bus and minibus drivers and regulation their working hours. Speed governors should check speed.
In Gauteng the Strategic Plan of the Gauteng Department of Roads and Transport for 2009-2014 (Gauteng Road Safety Strategy, 2010) focuses on the provision of an environmentally sustainable road infrastructure and integrated transport systems and services that are reliable, accessible, safe, and affordable which promotes socio-economic development. The Strategy suggests a multi-disciplinary collaboration and partnerships. The strategy focuses on the Five E’s “Engineering, Enforcement, Education, Emergency Services, Evaluation”. Nine strategic objectives were set, with the first four on the road network and the remaining on cross-cutting issues.

- **Road Environment** which encompasses road safety, focusing on road traffic signs, markings, infrastructure, and land-use

- **Road User** which encompasses increasing adherence to road rules, becoming more defensive in attitude, behaviour, knowledge, and skills

- **Vehicle** conditions, focusing on all vehicle types by raising vehicle fitness issues such as overloading, tire, steering and braking system failures; more vehicles being declared roadworthy

- **Institutional Arrangements** establishing horizontal and vertical integration between governmental and non-governmental organisations; consolidating current activities in national, provincial and local government and non-governmental organisational strategies; regulating driving schools, eliminating fraud at DLTCs, ensuring efficient and effective Emergency Services

- **Law enforcement and Adjudication**, introducing various interventions including development and implementation of law enforcement policies, procedures and systems; enhancing drunk driving deterrence; rehabilitation programmes to change behaviour of repeat offenders; conducting interagency law enforcement, cooperative planning group meetings addressing hazardous locations

- **Eliminating Fraud and Corruption**: law enforcement efforts are undermined by the perception and reality of fraud and corruption in law enforcement agencies. Interventions include the development of a Provincial Strategy for Prevention of Corruption and Fraud; Technology to eliminate fraud and corruption at DLTCs and VTs; internal case management training of staff

- **Verified Information and Intelligence** to develop and implement an Integrated Information management system that ensures evaluation of data, collated and reworked into intelligence

- **Improved Qualitative Internal and External Communication**, fragmented and inconsistent communication between agencies and within communities and stakeholders is to be addressed. Focus on improving the link between the needs/expectations of the public and law enforcement agencies

- **Public Education**, focusing on public attitudes and awareness of safety issues in influencing the risk of road accidents, via training for road users and communities.
These strategic objectives are important in view of the fact that even though objectives have been set, fatal road accidents are still taking place in Gauteng, suggesting that the implementation might not be as effective as proposed.

### 3.7.1 TRAFFIC LAW ENFORCEMENT

The WHO (2009b) suggested that the enforcement of traffic laws in South Africa tends to be rather low, as rated by a group of professionals in road safety management. A rating of 3 out of 10 for speed limit enforcements, 2 out of 10 for drunken-driving, 2 out of 10 for seatbelt enforcement and child restraints enforcement and 6 out of 10 for motor cycle helmet enforcement.

A very important aspect is that of Fraud and Corruption impacting on the road deaths. A study was recently executed in Gauteng among driver and learner license applicants. Respectively, 6.4% and 7.9% of the learner and driver license applicants have been asked to pay a bribe. Though the Driving Schools play the predominant role in this regard, the DLTC examiners have asked about nearly a third of applicants for such bribes. Approximately 2.6% of the applicants have paid a bribe, paying on average about R 1962 per bribe. The results suggest the following underlying dynamics as reasons why people are paying bribes:

- They have been asked to pay for a learners and especially a driver’s license
- They believe that the Officials/personnel ask for bribes due to a basic underlying unethical culture in the DLTCs/Driving Schools and not the mere perceived Financial Constraints of these personnel
- They fear they will fail their license if they do not pay the bribe of the Driving School/DLTC
- They feel disempowered in terms of dealing with such unethical circumstances.

The qualitative results suggested that some applicants made it clear that they do not think that Government will succeed easily in catching these people if they do not appoint watchdogs or come up with effective investigation systems. According to them, the methods that are used to collect bribery are not easily detected, as there are syndicates involved. However, it must be noted that, in terms of bribery, driving schools are the most prevalent perpetrators of this alleged criminal act. A third way is that the Driving School Officials collecting money on behalf of examiners, and then sharing it with examiners and they even go to the extent of telling applicants that if they do not bribe examiners through them they will not get licenses (Du Toit and Mutle, 2011).
3.7.2 HUMAN BEHAVIOUR

Gqaji (2011) suggested that in South Africa an urgent mind shift must be made to lower the road accident fatality rate. All road users should be involved, starting right now. By acting responsibly each driver, passenger and pedestrian will assist in getting there. Government should continue with its campaigns, road shows and awareness programmes to educate the public, as human factor remains the number one cause.

Venter (2010) indicated that one area where South Africa has been lacking behind the world is within the field of road and Traffic Psychology. This is despite the fact that about 90% of road and traffic accidents are due to the human factor. Approaches to address road user behaviour in South Africa are seemingly not tailored enough to address the problems on our roads. One reason is the lack of reliable scientific data. A Road user behavioural Index, similar to the DSMIV in psychology is needed for all road user types and behaviours. By assigning a specific value or behavioural attribute to a specific stretch of road, it will become possible to elaborate in a holistic way on the character of the road, not just the engineering, and the environment.

WHO (2009b) concluded that research in the world has shown that for speeds above 50km/hour, every 1km/hour reduction in average speed reduces the number or crashes by 2%. Reducing speed is a protective measure for vehicle occupants and even more for vulnerable road users. The probability of a pedestrian being killed rises by a factor of eight as the impact speed of the car increases from 30km/h to 50km/h.

Gaji (2011) in view of road safety campaigns such as Arrive Alive, asked the question, why road traffic fatalities is still increasing. Are these campaigns not implement soon enough, or not effective enough and who is responsible? He concluded that there is no correlation between the number of vehicles and the number of fatal accidents occurring in each province, suggesting that road safety campaigns might work differently in provinces. The above suggests that campaigns need to aligned and fine-tuned to the needs and circumstances of different road user groups.

Moeketsi (2002) referred to educational efforts in reducing pedestrian fatalities in South Africa. Road safety Education should focus on the ABC of road safety, economic costs of accidents, usage of pedestrian facilities, awareness of substance abuse, exposing children to appropriate road user behaviour, engaging public transport providers in driver education programmes. A culture of safety should be fostered within communities living adjacent to national roads.
3.7.3 INTEGRATED TRANSPORT AND TOWN PLANNING

Macomsa and Ribbens (2004) indicated that South Africa’s socio-political history was such that transport planning was not integrated with land use and development planning. People stay far away from areas of economic and social activity and facilities for non-motorised transport often are inadequate or lacking. Public transport and planning of pedestrian and bicycle facilities needs to be integrated in order to ensure that to avoid an unregulated sprawl of such facilities along major routes. This is especially essential in previously disadvantaged communities, where townships are scattered adjacent to freeways, posing danger to none-motorised road users.

Ribbens, Everitt and Noah (2004) concluded that the following shortcomings still exist in engineering practice and government policies as well as strategies:

- The absence of a comprehensive national non-motorised transport policy in South Africa
- Road authorities should consider developing pedestrian and bicycle master plans for formerly disadvantaged suburbs as part of an Integrated Town Planning in conjunction with the Integrated Development Plans process, the Urban and Rural Planning and the Integrated Sustainable Rural Development Strategies.

3.7.4 ROAD ENVIRONMENT

Alberts et al (2010) developed a tool to measure the South African Pedestrian environment. They assumed that though behavioural factors impact on the number of pedestrian fatalities and injuries significantly, environmental factors are potentially more easily modified than human behaviour. They focused on:

- Intersection safety (Crossings, signage, taxi stops, presence of hawkers and beggars)
- Traffic (Number of lanes, speed limit, number of lanes, calming measures-circle, hump, rumble strip, traffic light and stop street, and slipway)
- Street design (Pavement, obstruction and material use in pavement, Pavement condition, size and space, slope, driveway cuts, trees, public seating, lighting)
- Perceived safety (Surveillance, graffiti, litter, open plots/abandoned buildings)
- Land use (Rural–urban, land use, schools, etc.)
- Road conditions (Human influence, naturally occurring such as potholes, debris)

Moeketsi (2002) referred to Engineering measures such as construction of pedestrian bridges, bus taxi pick up points, formal roadside markets, service roads, reduction of speed limits and traffic calming measures, land use planning linked to the Integrated Development Plans of municipalities.
3.7.5 DATA MANAGEMENT AND RESEARCH

Lötter (2000) suggested that accidents, fatalities, and injuries provide the most direct measurement of road safety. The availability and reliability vary widely. It is especially in developing countries where the most basic data is not available or reliable enough. Greater reliance on indirect measures is necessary. Stats SA (2009) detailed the following recommendations:

- Focused research studies on risk factors of road accident deaths are necessary to provide information for use in planning policies, intervention programmes, and projects to reduce fatalities on the roads

- There is need for effective co-ordination of the different systems of collecting road death information to ensure that data from the different data sources are comparable in terms of quality, standards, and definitions.

- A system, which integrates information from both the Road Transport Management Corporation, and the death notification system would be ideal as both systems cover the whole country and are complementary. The accident report form used by the Road Transport Management Corporation contains a variety of background information about the circumstances of the accident, which is not included on the death notification form, and the death notification form collects information on cause of death, which is not captured by the accident report form.

- Further and more comprehensive analysis needs to be undertaken combining data from Statistics South Africa and from the Road Traffic Management Corporation to take advantage of the complementary nature of these two data sources.

In conclusion, the literature indicates that a range of best practices and interventions can be applied in an attempt to reduce fatal road accidents. It is however, important to remember the influence and indirect impact of country developmental factors and other autonomous factors in this regard. Some of the interventions could yield results within a short time-frame, while others would only yield results over a medium or long-term period. To change risky behaviour, beliefs and habits of road users for example will most probably be a long-term solution which could be addressed by the implementation of training, educational and awareness programmes. Interventions should be logically planned and also take into account the different road users groups and their needs, the local circumstances, institutional capacity and arrangements, involving all sectors and tiers within society. Cognizance should also be taken of the fact that some interventions could focus on the circumstances presented before, during and after road accidents.
4. RESEARCH METHODOLOGY

4.1 Sampling and Fieldwork

A household survey was conducted within the five major municipal areas of Gauteng. This included the Sedibeng, West Rand, Tshwane, Ekurhuleni and Johannesburg municipal areas (in total an estimated 2 790 026 households).

In total 2100 households were selected randomly and stratified according to the above five municipal areas, based on the 2001 census statistics (StatsSA). The estimated margin of error on a 95% confidence level is in the range of about 2.14% using a sample size of 2100, which is within required research norms. The households were stratified per municipal area as follows (Table 1).

### TABLE 1
**POPULATION AND SAMPLE PER MUNICIPAL AREA**

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Population of households</th>
<th>Proposed sample of households</th>
<th>Sample of households realised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ekurhuleni</td>
<td>744 937</td>
<td>561</td>
<td>561</td>
</tr>
<tr>
<td>Johannesburg</td>
<td>1 006 933</td>
<td>758</td>
<td>758</td>
</tr>
<tr>
<td>Tshwane</td>
<td>607 049</td>
<td>457</td>
<td>457</td>
</tr>
<tr>
<td>Sedibeng</td>
<td>225 098</td>
<td>170</td>
<td>170</td>
</tr>
<tr>
<td>West Rand</td>
<td>206 009</td>
<td>154</td>
<td>154</td>
</tr>
<tr>
<td>Total</td>
<td>2 790 026</td>
<td>2 100</td>
<td>2 100</td>
</tr>
</tbody>
</table>

Within each of these five municipal areas, households were selected taking into account the racial composition of heads of households. According to the 2001 StatsSA Census data, the sample of households should at least reflect the following racial composition (Table 2).

### TABLE 2
**PROPOSED AND REALISED RACIAL COMPOSITION OF POPULATION PER MUNICIPALITY**

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Racial group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black</td>
</tr>
<tr>
<td>Ekurhuleni</td>
<td>429 (440)</td>
</tr>
<tr>
<td>Johannesburg</td>
<td>559 (605)</td>
</tr>
<tr>
<td>Tshwane</td>
<td>321 (342)</td>
</tr>
<tr>
<td>Sedibeng</td>
<td>137 (138)</td>
</tr>
<tr>
<td>West Rand</td>
<td>121 (119)</td>
</tr>
<tr>
<td>Total</td>
<td>74.61% (78.3%)</td>
</tr>
<tr>
<td>StatsSA 2011</td>
<td>79%</td>
</tr>
</tbody>
</table>

* Realised sample in brackets

As seen, the realised racial composition is slightly different from the proposed sample. On inspection of the latest StatsSA results of the 2011 census it was concluded that there were considerable population shifts in Gauteng between 2001 and 2011, and that the realised sample to a large extent actually portrays the latest census racial trends. Thus, no weighting was applied to the data.
Within each municipality, sampling controls were put in place for variables such as neighbourhood type (township, inner-cities and suburban areas), race as well as gender and age differences. Within each municipal area, a range of sub-areas were targeted within which households and individuals were randomly selected (Table 3).

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Areas targeted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ekurhuleni</td>
<td>Duduza, Tsakane, Tocoza, Katlehong, Kwa-Thema, Daveyton, Tembisa, Benoni, Alberton, Germiston and Kemptonpark</td>
</tr>
<tr>
<td>Johannesburg</td>
<td>Soweto, Ennerdale, Alexandra, Grassmere, Cosmo-City, Johannesburg City Centre, Eldorado park, Lenasia, Roodepoort, Midrand, Florida and Sandton</td>
</tr>
<tr>
<td>Tshwane</td>
<td>Winterveld, Mabopane, Soshanguve, Akasia, Pretoria Central, Atteridgeville, Mamelodi, Temba, Pretoria North, Centurion, Garsfontein, Hatfield, Bronkhortspruit and Cullinan</td>
</tr>
<tr>
<td>Sedibeng</td>
<td>Sharpville, Sebokeng, Vereeniging, VanderBijl park, Meyerton, Ratanda and Heidelberg</td>
</tr>
<tr>
<td>West Rand</td>
<td>Khutsong, Kokosi, Fochville, Magaliesburg, Kagiso, Krugersdorp, Mohlakeng, Randfontein, Bekkersdal and Westonaria</td>
</tr>
</tbody>
</table>

Within each of these targeted areas cluster sampling was applied, working from identifiable landmarks. The respondents were randomly selected, on stands and within households, using a random household/respondent selection grid, in order to ensure age and gender representation. The interviews were done with 18 year or older people.

In total, 22 fieldworkers facilitated the 2100 interviews, during the period June to September 2012. The fieldworkers were trained, prior to the fieldwork phase, on the objectives of the project as well as the sampling and administration of the questionnaire.
A further seven focus groups were conducted with people representing drivers, passengers, pedestrians and law enforcers in Gauteng.

**TABLE 4**

<table>
<thead>
<tr>
<th>Road User Group</th>
<th>Category</th>
<th>Municipal Area</th>
<th>Focus group size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drivers</td>
<td>General</td>
<td>Johannesburg</td>
<td>6</td>
</tr>
<tr>
<td>Drivers</td>
<td>Taxi owners</td>
<td>Tshwane</td>
<td>5</td>
</tr>
<tr>
<td>Passengers</td>
<td>Adult</td>
<td>Tshwane</td>
<td>6</td>
</tr>
<tr>
<td>Passengers</td>
<td>Adult</td>
<td>East Rand</td>
<td>7</td>
</tr>
<tr>
<td>Pedestrians</td>
<td>Adult</td>
<td>East Rand</td>
<td>6</td>
</tr>
<tr>
<td>Pedestrians</td>
<td>Learners</td>
<td>Johannesburg</td>
<td>6</td>
</tr>
<tr>
<td>Law enforcement</td>
<td>Traffic Officers</td>
<td>Tshwane</td>
<td>5</td>
</tr>
</tbody>
</table>

Thus, during the focus group phase a total 41 people were interviewed.

### 4.2 Questionnaire and Focus Group Discussion Guide

An eight page questionnaire was constructed, to gather relevant information from the households sampled. The questionnaire (Appendix B) consisted of an:

- Introduction
- Personal and household demographic information
- Household travel and road behaviour in Gauteng
- Household’s involvement in fatal road accidents in Gauteng
- Opinions on road safety and reasons for fatal road accidents in Gauteng
- Opinions on how road deaths can be reduced in Gauteng
- Road traffic observation checklist
- Household and Respondent Randomised Selection grid

The Questionnaire was printed in English, though the fieldworkers translated it into the language preferred by the respondents interviewed. The fieldworkers made use of show cards to enhance reliability levels and the flow of the interview. The fieldworkers also completed the Observation checklist before or after the household interview, by viewing the situation on the street nearest to each dwelling visited. These observations provided a rough estimate of the road safety conditions in the areas where households resided.

A focus group discussion guide was developed in line with the main themes of the Questionnaire (Appendix: D)
A sound theoretical model was used in the development of this questionnaire and took into account major road interventions in Gauteng, and international findings on the causes and reduction of road traffic deaths.

**THEORETICAL MODEL**

**Road Environment**
- Street lighting
- Traffic lights are working
- Traffic calming measures
- Road surfaces and potholes
- Pedestrian bridges
- Repair road signs

**Vehicle Condition**
- Remove overloaded
- Remove un-road worthy vehicles
- Road worthy re-checks fixed
- Check un-licensed vehicles

**People Behaviour**
- Mobile phone usage
- Reckless driving
- Drunk driving/drugs usage
- Road rage
- Identify end retest high-risk drivers
- Speed cameras and road racing

**Law Enforcement**
- Drivers paying bribes
- Safety and awareness
- Fraud and corruption of staff
- Harsher penalties for speeding/drunk driving/seatbelts/mobile phone
- More regular roadblocks
- Fraud and corruption of DLTC
The data was systematically analysed using SPSS. The following procedures were executed:

- Scale transformations and psychometric analysis:
  - Scale transformations, resulting in a 0%-100% scale were done on selected scales, to determine levels of opinions.
  - Cronbach-alpha coefficients were done to determine the internal reliability of the scales.
- Determination of margin of error.
- Descriptive analysis:
  - Means
  - Frequencies and percentages
- Inferential analysis:
  - Chaid-segmentation analysis was performed to determine significant heterogeneous and homogenous road user segments on variables researched. This included variables such as:
    - Race
    - Home language
    - Gender
    - Household and personal income
    - Municipal area living
    - Area living (Inner-cities, township, and suburbs)
    - Educational level.

The table below indicates the internal item-scale reliability levels, as ranges between 0 and 1.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Internal Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opinions on road safety</td>
<td>0.916</td>
</tr>
<tr>
<td>Cause fatal accidents: Road aspects</td>
<td>0.888</td>
</tr>
<tr>
<td>Cause fatal accidents: Vehicle conditions</td>
<td>0.783</td>
</tr>
<tr>
<td>Cause fatal accidents: Traffic Law enforcement</td>
<td>0.801</td>
</tr>
<tr>
<td>Cause fatal accidents: Weather conditions</td>
<td>0.806</td>
</tr>
<tr>
<td>Cause fatal accidents: Emergency Services</td>
<td>0.894</td>
</tr>
<tr>
<td>Cause fatal accidents: Road user behaviour</td>
<td>0.881</td>
</tr>
<tr>
<td>Reduce fatal accidents: Road engineering</td>
<td>0.913</td>
</tr>
<tr>
<td>Reduce fatal accidents: Road user behaviour</td>
<td>0.897</td>
</tr>
<tr>
<td>Reduce fatal accidents: Vehicle conditions</td>
<td>0.790</td>
</tr>
<tr>
<td>Reduce fatal accidents: Law enforcement</td>
<td>0.861</td>
</tr>
</tbody>
</table>

The above findings indicate that high levels on internal reliability have been obtained on all the scales as applied by the fieldworkers.
5. FINDINGS

5.1 Demographics

Graph 1 shows the major geographical municipal areas in which the households and respondents live. Respondents come predominantly from three areas. Just more than a third of all the respondents live in Johannesburg (36%), one quarter in Ekurhuleni (26.7%) and about one-fifth in Tshwane (21.8%). Approximately 8.1% and 7.3% of respondents live in Sedibeng and the West Rand.

The graph below indicates that slightly more women than males participated in the survey (56.8% versus 43.2%). This is in line with most major surveys, showing some reluctance from the males for participation.
The above results show that the largest racial participant group of respondents in the study was Black/Africans (78.3%) followed by 16% Whites. Only about 5.6% were Coloureds and Asians.

The above results suggest that 15.6% of the respondents are 60 years or older. Just over 50% of the respondents fall between the ages of 18 and 39 years, while just more than 30% fall in the age groups 40-59 years. The findings suggest that proportionally more people from the younger age categories were sampled in comparison with people falling in the older age group.
It is evident from the above graph that respondents come from a wide range of home languages. Three large groups have been identified, namely Zulu speaking respondents (20.9%), followed by Southern Sotho (15.5%) and Afrikaans (13%). Somewhat less respondents speak Sepedi (10.8%), English (9.6%), followed by Setswana (9%), Xhosa (8.3%), and Tsonga (5.6%). Very few speak Ndebele, SiSwati, Venda, or other African or European languages.

The above findings suggest a relatively educated group of people interviewed. Very few respondents (2%) do not have any educational qualifications, while 2.6% have attended only some primary schooling, and a further 7.2% have completed their primary education. On the other hand, approximately 40% have completed their secondary school education (grade 12), while nearly 11% have obtained a post matric qualification.
The above results suggest just less than half of the respondents have never been married (47%), while about 31% are married. Approximately 8% are living together, while about 13% are single (either divorced, estranged/separated or widow/widower).

Approximately 40% of the sampled respondents are unemployed, while about a third is working (33.9%). Proportionally more males than females are working (43.1% versus 26.9%). In line with the age distribution, nearly 13% of respondents are pensioners, 5.3% scholars/students, and 6.3% housewives.
About 29.4% of respondents do not earn a monthly income themselves; while 10% earn less than R800 per month. The findings generally suggest relatively high poverty levels. About 18.7% of the respondents though did not indicate their personal monthly income levels, primarily as expected among the unemployed. Very few earned more than R 5 000 per month.

The above results on household income indicate that a slightly more normal distribution of monthly income exists when compared with the personal monthly income. Just less than 5% of households do not have a monthly income, while 8% earn less than R800 per month. A large proportion of respondents did not want to indicate their household monthly income levels (27.3%). The findings suggest that the largest group of respondents are from households that earn between R1800 and
R4999 per month (23.4%), followed by those in the income category R800-R1799 per month (16.5%). Only approximately 3.6% of respondents live in households that earn more than R20 000 per month.

The findings below suggest that the household sizes range between 1 and 12 persons. About 12.7% of households are single person households, while 18.7% of households consist of two people, and 50.3% between 3 and 5 people. Nearly a fifth of the households consist of six or more people (18.4%). The average household size is 3.78 people per household.

An overwhelming majority of respondents are South Africans (95.5%), while only 3.7% are non-South African.
A large majority of respondents live in formal dwellings/houses made of brick or blocks on separate stands (74.2%), while 8.2% reside in flats or apartments and 4% in cluster of townhouses. Just less than 5% live in backyard dwellings, while 7.7% live in informal dwellings. Almost all (99.4%) of the informal dwellings are found among Black households. The findings furthermore suggest that living in informal dwellings are associated with lower household income levels, with 78% earning less than between R1800-R4999 per month.

The findings on the demographics generally suggest that the households and respondents are:

- Predominantly from the Johannesburg, Ekurhuleni and Tshwane regions
- Slightly more females than males
- Mostly black and white respondents interviewed. Results furthermore suggest that a large majority of blacks live in townships and inner-cities, while whites predominantly in the sub-urban residential areas
- Mostly Zulu, Southern Sotho, Afrikaans and speaking households
- Very few have no schooling, while about 50% have matric or higher education
- Just less than half of the respondents have never been married
- A Large group of respondents are unemployed (40%), with no personal monthly income (29.4%)
- The largest group of respondents come from households earning a household monthly income of between R 1800 and R4 999 per month
- Average household size is 3.78 people per household
• Majority interviewees are South African citizens
• Majority are living in formal dwelling structures, though one in ten still lives in informal dwellings. Almost all (99.4%) of the informal dwellings are found among Black households, and among less affluent households.

5.2 HOUSEHOLD TRANSPORT MODE

Graph 14 shows that households in Gauteng make use of four transport modes. It must be stated that most households make use of use multiple transport modes. A very large group of households (73.7% of households) indicated “Walking by foot” as one of their main modes of transport, followed by 69% making use of mini-bus taxis. Just less than a third of households make use of a motor car (32%), while 11.7% make use of bus services. Very few households are making use of trains (2.7%) as travelling mode and very few make use of light delivery vehicles, trucks, and motor cycles or bicycles.

Analysis furthermore suggests that:

- The use of motor cars is the most prevalent among White and Asian households. About 88.7% of White households make use of a motor car as household mode, followed by 82.5% among Asians, 35.3% among Coloured and only 18.7% among Black households
- In sharp contrast, mostly Black and Coloured households make use of mini-bus taxis. (83.3% of Black households make use of mini-bus taxis, followed by 70.6% Coloured households and only 25.5% of Asian and 5.5%among White households)
- 14.1% of Black households make use of bus services, whilst only between 2% and 3% of households of the other race groups make use of this service
- All race groups have indicated that walking forms part of their household transport mode. However, walking is the most prevalent among Black/African households (76%), 73.5% among Coloured households, 49% among Asian and 66.2% among White households.

![Graph 14: Household Transport Modes](image-url)
The above findings suggest that race is the best predictor of car usage, with the least prevalent usage found among Black households (18.7%). Among the Black households car usage is the highest in suburban areas (41.4%) followed by township areas (17.1%). Black households in inner city areas tend to use motor cars the least (7.9%), most probably due to their close proximity to work, shopping and educational facilities.

Whites, Asian and Indian households tend to be making most use of motor cars (87.9%).
The above findings indicate that race is once again the best predictor of mini-bus taxi usage, being the least prevalent among White households (5.6%). Among the Black households mini-bus taxi usage is the highest in inner city areas (94.4%), followed by township areas (84%) and suburban areas (69.7%).

Coloureds also largely make use of mini-bus taxis (70.6%).
The above findings show that race is the best predictor of transportation by foot, being the least prevalent among Asian/Indian households (49%). Among the Black households walking is the most prevalent in township and suburban areas (76.6%) followed by inner-cities (65.2 7%).
In line with the transport mode of households, it is evident from the above that ownership of different types of vehicles is limited among the sampled households. The most prevalent ownership is that of a motor car 32.5%, followed by 5.3% mini-bus taxis. Only about 2.5% of households have a motor cycle or 2.6% a bicycle.

Further analysis indicated that:

- About 86.9% of White households have a motor car, while 80.4% of Asian/Indian households, 35.3% of Coloured households and only 19.8% of black households. However, motor car ownership is higher among Black households living in suburbs than in townships
- About 9.8% of Asian/Indian households have a mini-bus taxi, 6.1% of Black households, 2.9% of Coloured, and 1.5% among White households.
The above findings suggest that race is the best predictor of motorcar ownership, being the lowest among Black/African households (19.8%), and the highest among White and Indian/Asian households (86.1%). Among the Black households, motorcar ownership is the highest in suburban areas (38.6%).

Of major concern is the low level of licensed mini-bus taxi’s and especially motor cycles (78.6% and 50.4%). Another concern is that only 89.3% of busses are licensed. On the other hand, all trucks are licensed, while just less than 94% of motor cars and light delivery vehicles are licensed. Analysis furthermore indicates that:

- The highest level of licensed motor cars found among Asian/Indian households (97.6%) and the lowest among Coloured households (87.5%)
- The highest level of motor cycle licenses was found among White (65.4%) and lowest among Black (36%) households.
In general, favourable opinions were expressed in terms of the physical condition of vehicles owned by households, with 88.1% of households rating their motor cars and 68.8% of minibus taxis owners. Of concern is the 1.5% and 3.6% of respondents that indicated poor physical condition of their motor cars or mini-bus taxi’s. Only 49% of motor cycle owners indicated that the physical condition of their vehicle was good, though a large percentage did not indicate at all.

Only the physical condition of cars could be significantly predicted. Living area was the only significant variable. Households in township and inner city areas tend to be the least favourable in this regard, with 82.1% rating it as good, compared with 93.1% among suburban households.

Reasons for poor physical conditions included aspects such as:

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Poor Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor car</td>
<td>Broken, broken starter, clutch plate, carburettor, engine, hand brakes, indicators, no brakes</td>
</tr>
<tr>
<td>Mini-bus taxi</td>
<td>Not roadworthy or generally in bad condition</td>
</tr>
</tbody>
</table>
5.3 HOUSEHOLD ROAD BEHAVIOUR

This section initially focuses on driving behaviour within households and then on the behaviour of road pedestrians within households.

GRAPH 18

HOUSEHOLD DRIVER BEHAVIOUR: GENERAL ADHERENCE TO TRAFFIC LAWS AND REGULATIONS

Of interest is the above finding that only 73% of households have drivers that usually adhere to traffic rules and regulations. Nearly a quarter (23.6%) of households have drivers that do not adhere to traffic laws and regulations.

FIGURE 6

HOUSEHOLD DRIVER BEHAVIOUR: GENERAL ADHERENCE TO TRAFFIC LAWS AND REGULATIONS

The above findings show that slightly more households in the suburbs than in the township or inner city areas believe that their drivers adhere to traffic laws (74.3% versus 71.6%). However, more suburban households (compared to those in townships and inner cities) also feel that their drivers do not adhere to traffic laws (25.7% versus 21.1%).
The following discussion (Graphs 19 -28) focuses on the adherence to specific laws and regulations.

**GRAPH 19**

**HOUSEHOLD DRIVER BEHAVIOUR: VALID LEARNER/DRIVER LICENSES**

The above graph suggests that 12% of households in Gauteng have vehicle drivers who do not have the necessary valid learners or drivers licenses.

**FIGURE 7**

**HOUSEHOLD DRIVER BEHAVIOUR: VALID LEARNER/DRIVER LICENSES**

The above results suggest that Black/African, Asian/Indian, and Coloured households as a group have significantly more households with un-licensed drivers (16.5%) compared with White households (5.5%).
Approximately 7.1% of Gauteng households have drivers that usually do not make use of their driver seatbelts.

The findings above show that households in townships, compared with those living in suburbs or inner-cities have more drivers not making use of seatbelts (10.1% versus 4.7%). Within the suburbs and inner-city households, more males believe that drivers are not using seatbelts (9%) than females (0.5%).
In comparison with driver seatbelt use, slightly more households in Gauteng have drivers that do not enforce the use of seatbelts by their passenger (11.7%).

The above findings indicate that drivers of households living in Ekurhuleni to a lesser extent than those in Johannesburg, Tshwane or Sedibeng and West Rand, enforce the use of seatbelts by their passengers/children (76.2% versus 91.2%).
About a fifth of the households in Gauteng have drivers that are usually speeding or driving above the speed limits (20.5%).

The above findings suggest that households with drivers that are speeding are slightly less prevalent in the suburban areas, compared with township and inner city areas (18.4% versus 23%).
Of major concern is the finding that 48% of households in Gauteng with motor cycles or bicycles, have drivers not using safety helmets.

The above findings indicate that use of helmets is higher for drivers of bicycles/motor cycles of White and Coloured households than for Blacks/Asian households (50% versus 32.8%).
Of concern is the finding that 24.4% of households in Gauteng have drivers that usually text or talk on their mobile phones whilst driving.

The above findings show that more male respondents than females feel that their households have drivers that talk or text on their mobile phones while driving (28.6% versus 19.9%).
About 9.2% of households in Gauteng have drivers that sometimes overload their vehicles.

The above findings show that the perception exists that overloading of vehicles is greater in drivers of Black/African households, compared with White/Asian/Coloured households, (16% versus 2.7%).
Of major concern is the finding that nearly 7% of households in Gauteng indicated that they have drivers who occasionally drive while intoxicated.

Further analysis suggests that Black households are the most inclined to have drivers driving while intoxicated (8.8%), compared with White households (5.4%) and Asian/Indian households (4.7%).
About 8.5% of households in Gauteng believe that their drivers sometimes skip stop streets or red robots.

The above findings show that more households in Ekurhuleni than the other municipal areas believe that their drivers tend to skip stop streets or red robots (14.7% versus 5.1%). Within Johannesburg, Tshwane, Sedibeng, and the West Rand more males than females believe that drivers of their households are skipping red robots/stop streets (7.9% versus 2.5%).
Of major concern is the finding that nearly 10% of households in Gauteng have drivers that pay bribes to law enforcement staff instead of paying their fines.

The above findings suggest that more households in townships than in suburbs or inner-cities believe that their households’ drivers pay bribes to law enforcement staff instead of paying their traffic fines (12.8% versus 7.6%).
The following Graphs (Graphs 29-33) show the findings on general risky driver behaviour.

GRAPH 29
HOUSEHOLD DRIVER BEHAVIOUR: DRIVE RECKLESSLY/NEGLIGENTLY/DISTRACTED

Of concerns is the 6.1% of households in Gauteng that suggested that the drivers of their household usually drive recklessly/negligently/distracted.

FIGURE 17
HOUSEHOLD DRIVER BEHAVIOUR: DRIVE RECKLESSLY/NEGLIGENTLY/DISTRACTED

The above findings show that more households in township and inner cities, compared with households living in suburbs have drivers that drive recklessly or negligently (9% versus 3.6%).

83
Approximately 6.5% of households in Gauteng have drivers that usually display poor judgement when driving.

The above findings indicate that more households in Ekurhuleni than households in the remaining areas have drivers that display poor judgement when driving (11.2% versus 4%).
Of concern is the 8.5% of households that have indicated that their drivers display road rage or aggressive road behaviour when driving.

The above findings show that more households in township and inner cities, than households in suburbs have drivers that display road rage or aggressive behaviour (12.7% versus 4.9%). Within township and inner-city households, males to a larger extent than females believe so (16.9% versus 7.8%).

Further analysis suggests that Black households are more inclined, compared to other racial groups, to believe that their household drivers display road rage (11.6%), 8.7% among Coloured and only 5.6% among White households.
About 6% of households in Gauteng have drivers within households that drive when they are fatigued.

The above findings show that more households in township areas than in suburbs or inner cities believe that the drivers of their households drive when they are fatigued (10.1% versus 2.8%).
Of major concern is the 31% of households in Gauteng which indicated that their drivers usually do not keep safe following distances.

The above findings show that more households in townships compared with households in suburbs or inner cities believe that their household drivers keep safe following distances (72.6% versus 63.3%).
In total, approximately 443 households of the 863 households in Gauteng with motor cars have been fined for traffic offences within the past 12 months. That is about 51% of these households. The fines range between 1 and 10 per year per household, with an average of 0.88 per household per year.

The main reasons for these traffic fines were:

- Speeding (65.7%)
- Parking (11.3%)
- Not using seatbelts (7%)
- Using mobile phones (4.2%)
- Driving without a licence (3.8%)
- Not stopping at a robot (2.8%).

Very few traffic fines were given for drunk-driving (0.5%).

GRAPH 34
HOUSEHOLD TRAFFIC FINE TYPES
The above results indicate that the type of traffic fines issued to households in Gauteng are related to personal monthly income. Households with respondents having a high income (more than R1800 per month) tend to get more fines for speeding (71.4%), while households with lower income respondents (equal or less than R1 800 per month) get more fines (apart from speeding-50.8%), for parking (16.9%), non-usage of seatbelts (13.6%) and licensing (5.1%).

The results on household driver behaviour in Gauteng suggest that a fair percentage of household drivers, passengers and other road users are daily put at risk due to a variety of improper driver behaviour types. These risks are mostly related to municipal area, area living, personal income levels, gender, and racial groups. Of major concern is the:

- Motor cyclists or cyclists not using helmets (48%)
- Not keeping safe distances (31%)
- Using mobile phones (24.4%)
- Not adhering to traffic laws and regulations (23.6%)
- Speeding (20.5%)
- Not having a licence (12%)
- Not using seatbelts (driver and passengers 11.7% and 7%)
- Paying bribes instead of paying fines (9.9%).
The following discussion focuses on risky pedestrian behaviour within households.

The above results suggest that a variety of pedestrian behaviour exists amongst households in Gauteng, posing road safety threats. This includes behaviours such as:

- Non-use of visible clothing at night (37.2%)
- Crossing of street/taxi/bus off-loading areas recklessly (17.5%)
- Not making use of pavements or pedestrian bridges (15.7%)
- Walking on highways and busy roads (15.2%); and
- Walking when intoxicated (14.2%).
The above results indicate that the use of visible coloured clothing at night within households is related to personal income of respondents. The households with respondents earning less than R10 000 per month are more likely to use such clothing at night, compared to higher income levels (67% versus 47.8%). Among the poorer households the residential area also contributes, with those living in Johannesburg the most likely to do so (73.5%).
The above findings show that households in Ekurhuleni, compared with households living in the remaining areas, are more likely to have household members walking without being sober all the time (26.4% versus 9.6%). In the remaining municipal areas, gender influences the opinion, with males being more negative than females in this regard (13.4% versus 7%).
The above findings indicate that more households in Tshwane (19.4%) and especially Ekurhuleni (32%) believe that some of their household members are crossing streets/robots or bus off-loading areas recklessly, compared to households living in Johannesburg/Sedibeng/West Rand (9.1%). In these latter municipal areas, the households in suburbs and inner cities more than households living in township areas believe that some of their household members display such negative behaviour (15.7% versus 7.1%).
The above findings show that more households in Tshwane and Ekurhuleni (22.5%) believe that some of their households’ members are walking on highways and busy roads, compared with Johannesburg (10%), Sedibeng, and West Rand (4.5%).

Within the Tshwane and Ekurhuleni areas, households with the highest and lowest income levels are less likely to believe that their household members display such negative pedestrian behaviour. In Johannesburg, the poorer households are more likely to believe that their household members are walking on highways or busy roads, than the more wealthy households (12.3% versus 5.5%).

Further analysis suggests that such pedestrian behaviour is associated with the use of mini-bus taxis as transport mode, especially among households in Ekurhuleni and Tshwane.
The above findings show that households in Tshwane, Sedibeng and the West Rand are more likely to believe that their household members are not making use of pavements or pedestrian bridges (23.8%), followed by Ekurhuleni (15.1%) and Johannesburg (7.7%). In the first group of municipal areas households in the township areas are most likely to believe so (27.5%), compared with households living in suburban or inner city areas (15.6%).

In conclusion, it appears that pedestrian behaviour tends to be related to variables such as residential area (municipal area and suburban/township/inner-city locations), gender, income levels of households/individuals and occupation. It is clear that the safety of pedestrians and other road users are put at risk by:

- Not using visible clothing at night
- Crossing of street/taxi/bus off-loading areas recklessly
- Not using of pavements or pedestrian bridges
- Walking on highways and busy roads
- Walking intoxicated.

In conclusion, the perceptions on the behaviour of drivers and pedestrians suggest that households in Gauteng should generally be more prone to get involved in road accidents.
5.4 HOUSEHOLD FATAL ROAD ACCIDENT INVOLVEMENT

This part of the report focuses on the extent to which households, in the past twelve months, have been involved in fatal road accidents in Gauteng and the nature thereof.

Approximately 3.7% of households have been involved in a fatal road accident over the past 12 months in Gauteng.

The findings show that more households in Ekurhuleni (8%) than in the remaining municipal areas have been involved in fatal road accidents (2.1%). In the remaining areas, more White and Coloured households have been involved in such accidents than Black/African or Asian households (4.8% versus 1.5%).
The Focus Groups on involvement in fatal road accidents, suggest that a variety of aspects contribute to such accidents. This includes driver behaviour such as drunk driving, speeding, reckless driving; pedestrian behaviour, un-roadworthy vehicles; as well as unfavourable road and weather conditions. All recorded accidents involved a motor car, while some involved pedestrians.

<table>
<thead>
<tr>
<th>Some Passengers were involved in fatal road accidents, while some referred to situations. Drunk driving, speeding, reckless overtaking, red robots and environment were the main causes.</th>
</tr>
</thead>
</table>
| • On route to Wonder Park from Tshwane city centre, there is that circle that you pass just before the mountains. People die there every weekend, because cars hit those steel barriers and fall over to the other side. Mostly due to drunk driving, you can tell by the time these accidents occur, it is always a Saturday and it is always at night. It is never an old car either; it’s always the new flashy cars for; so you can tell someone was trying to show off. speed also contributed.

• Driving on the N1 on way to Mpumalanga, there was a cross wind. a car hit them from behind, this caused their car to fall over to one side of the road and the polo to go over to the other side and they hit a tree. Two people in the polo died. One died immediately and the other died when the paramedics arrived. It was a two way going the same direction, but the line was a barrier line. Had the polo driver not tried to overtake where he was forbidden on that line, then it could have been avoided.

• On way to Boksburg (back from wedding) at robots just before Hercules. The robot was on caution but the driver already a bit in the road, so he hit his dead breaks, and then the car swayed out of the road and hit a pole, but the only person that got injured was the driver.

None of the Drivers has been involved in fatal road accidents, though some has been involved in non-fatal accidents, due to negligent pedestrian behaviour, high-jacking situation, raining conditions and not allowing adequate following distances.

• Coming from Dobsonville, it was on the 10th, and you must be alert on the 10th of each month there seems to be some sort of excitement. The pedestrian was crossing the road from a far, and it seemed as though he was going in the direction of the tree on the other end of the road. There was a car that was standing at the platform and when the car moved and the road was clear, I increased my speed. I do not know where this person came from, but I was certain it was the same person I had spotted crossing. I had assumed they had gone to a house or something but they just came from the tree and went straight into the road, I was unable to break in time and I hit him. When I asked him, that I saw you crossing what are you doing on the road? The gentleman says that he was picking up his hat that had fallen on the road.

• Coming from Tladi and I saw boys on the road and I was afraid they were going to hijack me so I increased my speed and I landed up driving into a house, well the wall of the house. I did not realize I was injured at the time, but as time went by, I started feeling chest pain, so I guess it was when I hit against the steering wheel. It was the middle of the night.

• Coming from Gold Reef city and it was raining and the car in front of me, well it seemed as though I was about to crash into it. The car crashed into the vehicle in front of it and I moved my vehicle to the yellow lane, the car behind me didn’t see what was going on because we were driving bumper to bumper, so that car crashed into the car that I was following, that accident turned into a car bumper to bumper accident. There were traffic cops on the side of the road so they were quick to assist. It was raining and not following the correct and safe following distance played a role.

<table>
<thead>
<tr>
<th>One pedestrian was involved though not as a pedestrian, but a passenger. Due to drunk driving, non-licensed, un-roadworthy vehicle and speeding.</th>
</tr>
</thead>
</table>
| • Involved, car speeding behind us. We left the road under a bridge. My younger brother passed away. The owner of the car was injured but he is still alive, when they checked him, they found that he was drunk. He also did not have a licence.

• Attempted accident, the driver was drunk and driving the BMW and the tires were worn out. "I do not understand what the driver was thinking speeding the vehicle. There are two curves near the hospital here, the first curve is a normal curve the next curve is a sharp curve, so the driver went and turned on the sharp curve at the speed of 120. The car did not roll over, but the car spun around and hit the hospital wall with the rear end of the car. We didn’t get injured, only the spoiler and bumper of the car got messed up". The car worthiness, the tires were finished.

<table>
<thead>
<tr>
<th>None of the learners has been involved in a fatal road accident.</th>
</tr>
</thead>
</table>
| • I have witnessed an accident, to be precise I was involved in the accident, my friend was driving no one died. The weather was fine, it was late in the evening, and all I remember is the car crashing into a wall.

• Here at Kweza, this lady just hit her breaks in the middle of the road, and she kept on changing lanes and when we tried to avoid her, she would switch lanes and come to our lane, eventually we hit her car on the side.

<table>
<thead>
<tr>
<th>None of the Taxi owners was involved directly though some family members were. Both were pedestrians; due to speeding, pedestrian crossing.</th>
</tr>
</thead>
</table>
| • Father passed away. He was crossing from Plaza to Block BB. It was a private car; the driver was speeding from the clinic. He was taken to hospital, passed away after 3weeks.

• A family member was going from Soshanguve KK to the Soutpan side crossing the road; a taxi hit her. She survived and when they checked she was fine, until on that very same day the cops requested for her to go with them to the scene and explain what had happened. Then she started getting ill at the scene and died, after been checked at the hospital. |
Of major concern is the finding that among the 3.7% of the households that have been involved in fatal accidents, about 12.8% of households indicated that they have been exposed twice to fatal road accidents in Gauteng in the past 12 months, while a further 5.1% indicated more than twice. However, no significant geographical or other demographic differences were found.

The following table indicates the average number of household and non-household members that have died in these fatal road accidents in Gauteng. Within households: on average mostly passengers died, followed by drivers and pedestrians. In terms of non-household people that died; most were once again passengers, followed by drivers and pedestrians. On average 2.16 people died per accident, of which 1.5 were passengers.

<table>
<thead>
<tr>
<th>Household type</th>
<th>Road user type</th>
<th>Driver</th>
<th>Passenger</th>
<th>Pedestrian</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household members</td>
<td></td>
<td>.24</td>
<td>.64</td>
<td>.12</td>
<td>1.00</td>
</tr>
<tr>
<td>Non-household members</td>
<td></td>
<td>.22</td>
<td>.86</td>
<td>.08</td>
<td>1.16</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>.46</td>
<td>1.5</td>
<td>0.2</td>
<td>2.16</td>
</tr>
</tbody>
</table>

The analysis furthermore indicated that:

- Driver deaths of household members are related to poor vehicle conditions.
- Pedestrian deaths of household members are the highest among households with no formal household income, compared to those that earn some sort of an income.
The above results clearly suggest that among this sample of households in Gauteng, the majority of fatal road accidents involved a motor car (53.8%), followed by mini-bus taxis (34.6%) and trucks (16.7%). Of further concern is the 10.3% accidents related to busses and motor cycles (7.7%). Pedestrians were involved in 6.4% of these fatal road accidents, lower than expected.

The specific involvement of motor cars has been supported by the focus group findings.

More fatal road accidents involving a motor car took place among White and Coloured households (86.4%) compared with Black/African households (41%). This is most probably related and influenced by the different modes of transport used by these racial groups.
As expected, more fatal road accidents involving a mini-bus taxi took place among Black/African households (44.6%) compared with White/Coloured households (9.1%). This is most probably also related to the different modes of transport used by racial groups. The poorest Black/African people (earning less than R 800 per month) are less prone to be part of such fatal accidents, most probably also due to the fact that they are rather walking and not making use of mini-bus taxi services, due to the costs involved (20% versus 58.3%).

No significant predictors were found in terms of the involvement of pedestrians, trucks, light delivery vehicles suggesting that all households are subject to such fatal accidents.
A very important finding is portrayed in the above graph. The most prominent perceived contributing factor (according to the surveyed households) for the fatal road accidents in Gauteng is that of driver behaviour. In total, 60.3% of fatal crashes in Gauteng has happened due to \textbf{driver behaviour}. No statistical demographic differences were found in this regard.

Another important finding is that a wide \textbf{range and combination of other factors} contributes to fatal road accidents. In about 11.5% of cases, pedestrian behaviour played a role, followed by bad weather or poor road surfaces (9% each), poor road signs/markings and vehicle condition (6.4% each).

Passenger behaviour and poor emergency services played a very small role in this regard. It is clear that distractive passenger behaviour does not play a major role, while poor services of emergency services also contribute a very small part in death rates in these types of accidents.

No geographical or demographic differences exist in terms of the other factors as well. This is a very important finding as it suggests that households in Gauteng, irrespective of race, area living, etc. share the same opinions.

The focus group discussions also support the above findings, that risky driver behaviour (such as speeding, drunken-driving, skipping red robots, etc.) plays a critical role in fatal road accidents, with only some instances of pedestrian behaviour. Vehicle and road conditions, though mentioned, play a much smaller role in the factors contributing to fatal accidents, in line with the survey findings.
The above findings show that fatal road accidents, according to the surveyed households in Gauteng, have occurred in all areas researched. However, fatal road accidents are the most prevalent on the Freeways and Inner City/Towns (29.5% and 28.2% respectively). Nearly a fifth of the accidents also took place within residential areas, while 14.1% in industrial areas. Just more than 1 in 10 accidents took place in rural areas of Gauteng.

The above findings indicate that Coloured and White households (59.1%) are more prone to be involved in fatal road accidents on the Freeways, than Black/African households (17.9%).
The above findings show that the households with respondents with no monthly personal income or less than R 5 000 per month are the least prone to be involved in fatal road accidents in industrial areas. Those earning more than R4999 are the most exposed to fatal accidents in these workplace areas (29.4% versus 2.3%).
The above findings indicate, according to the surveyed households in Gauteng, that accidents take place every day of the week. However, it tends to increase from mid-week to peak on Fridays, with nearly a third of accidents taking place then (29.5%). Nearly another third of accidents take place over the weekend (26.9%). It is clear that the least number of fatal accidents take place on Mondays and Tuesdays (7.7%).

On Sundays, fatal accidents are primarily related to household transport mode in Gauteng: Households using motor cars are more likely to have been involved in fatal accidents (16.1%) on Sundays. Among these households, home language also play a role with Venda, Ndebele, and SiSwati, Xhosa speaking households are the most prone (80%) versus the remaining home languages (3.8%).

No significant demographic differences were found in terms of the remaining days.
According to the surveyed households in Gauteng, the above findings indicate that most accidents take place early morning between 8:00-12:00 (20.5%) or early afternoon to midnight (between 16:00-24:00 - 60.5%). About 5.2% of fatal accidents take place after midnight up to early morning.

Fatal road accidents occurring between 16:00-20:00 are only related to the personal income level. Households with respondents earning more than R20 000 per month tend to be the most prone (68.4%) versus the remaining households (32.2%).

No significant demographic differences were found in terms of the remaining time of day.
The above findings indicate that, according to the surveyed households in Gauteng, most fatal road accidents happened with visiting friends/family (30.8%), followed by travelling to and from the workplace (25.6%), holiday travel (14%) and shopping (12.8%).

No significant demographic variables have been identified in this regard.

The findings of this section clearly demonstrate that fatal road accidents in Gauteng, (where 3.7% of households have been involved) tend to specifically be related to:

- Vehicle types: Motor cars and mini-bus taxis
- Causes: Driver behaviour and pedestrian behaviour
- Location: all areas but the most on freeways and city centres
- Day: least on Mondays and Tuesdays, and mostly over weekends
- Time of day: Early morning and late afternoon to midnight
- Activities: whilst visiting friends/family, workplace, holiday and shopping.

Racial group, household/personal income, and municipal area living in Gauteng generally predict the various underlying factors of fatal road accidents.
The focus groups among drivers, passenger, and pedestrians suggested that the following perceptions exist in terms of high-risk groups:

### Passenger perspective

The opinion generally was expressed that pedestrians and drivers are at most risk, and especially taxi involvement. Some suggested that anyone is at risk. Narrow roads, children playing in roads, speeding, drunken-driving, drug-abuse, road rage, un-roadworthy vehicles and passenger distraction all contribute to high-risk road user groups.

**Pedestrians**

- The rural roads are too small and are the cause of most of the accidents. Pedestrians in these are highest at risk.
- The pedestrians are at most risk, as there are many cars and the children have nowhere to walk the roads are too small.
- Pedestrians, because some of the drivers are reckless drivers and at times they drive of the road, where the pedestrians should walk. The taxi drivers drive as they please, they do not obey the rules of the road, some don’t have licenses.
- Pedestrians because the drivers don’t always follow the rules, they drive drunk, they could bump people and we have children on the road.
- Pedestrian are at most risk, the drivers drive fast and the children are playing on the road and then there are no speed humps forcing the cars to stop, for children to pass.
- Pedestrians, where do you walk facing on-coming traffic. Even at risk on the pavement as there are sometimes two cars on the road with insufficient space and the one car has to go on the pavement to make way for the other car, then the pedestrian’s life is put in danger.

**Drivers**

- Taxi drivers are most at risk, as they cause the most accidents were pedestrians are involved.
- Taxi drivers are the ones who increase the risk, they are driving drunk, they don’t follow rules and they smoke ‘nyaope’.
- With the taxis it is the quantum drivers, because they drive at speeds between 100 and 120 because they are in a rush to drop you off and collect the next load even if you don’t tell them to hurry, they drive fast any way and that is how accidents come about.
- Men drivers in their 20s. The reason is that they constantly drink, drive, and feel pressured to show off their new cars.
- Feel safer in an older drivers’ car then the young ones, thus age is a contributing factor, the younger the driver the higher the risk. It is a competition for the young ones; they want to pass each other.

**Everyone**

- Everyone is at equal risk because you could be in a taxi that is not road worthy and that taxi could land you in an accident due to driver behaviour. In the view of a passenger, at times it is our fault because a driver could be obeying the laws and driving at an acceptable pace, we as passengers then put pressure on the driver forcing them to drive faster because we are late.
- The risk is the same irrespective of vehicle type, equally at risk if you are in a bus or private vehicle. It is all the same: there was a woman who got out of a bus and that very bus that dropped her off hit her. People do not want to give each other way and people are competing on the roads. Road rage also contributes and you end up in an accident, people get upset on the roads.

### Driver perspective

Drivers are most at risk; especially the taxi drivers, the youth, and middle age people. Drunk-driving, distracted behaviour, stress, and excitement contribute.

- The taxi’s
- The drivers. They get distracted and the passenger’s anger them and they drive emotionally stressed and that is a distraction.
- Drivers, because they are involved in the accidents due to drinking and driving during festive seasons. It is a human factor because people drinking knowing that they plan on driving, and a person could come out of nowhere speeding.
- I was also going to say the driver user group is at most risk.
- The **youth**, because they are drunk half of the time and too excited. I think it’s the culture in the townships.
- I use to drink I don’t anymore, you feel like you are in control and you are not I almost crashed a car I was driving 220 on the high way.
- There is one thing I hate about alcohol it lies to you. Hence they say don’t drink and drive, because no one can change your mind once you have set your mind on it when you are drunk.
- The youth.
- The youth and old people, I would have to say the youth and people at the age of 45, our mothers out there drink and drive.
- I hit a **pedestrian** here at West Rand he was being stubborn on the road I had no choice but to drive into the pedestrian because the only other alternative was for me to drive into another car, this guy could see that the car was coming straight towards him, I hooted and I flashed my bright lights yet he didn’t move.

### Pedestrian perspective

**Passengers**, **pedestrians** and **drivers** are at high risk. Both genders. Children and the youth. Drivers contribute by speeding, overloading, not using seatbelts for passengers, skipping robots and stop streets, passenger distractive behaviour, load music, drink-driving, taxi-driver behaviour and stress levels. Pedestrian drunk-walking, walking and crossing busy roads without looking at traffic.

#### The passenges

- Irrespective of whether it is passengers in private motor vehicles or taxis but in general, passengers are the ones that are injured the most. The motor vehicles are speeding most of the times I think is due to speed, it is the high speed that causes the accidents.
- Another viewpoint is that it is passengers in taxis. The taxi drivers take an overload of passengers; they load 17 to 18, when a taxi should only be carrying 16. In the midst of all of this, the drivers have seat belts in front. When this driver steps on his break, all of us passengers are propelled to the front, some get out of windows, and nothing happens to the driver, there are numerous accidents where the passengers are the ones who were endangered.
- Passengers as they do not have seat belts, well on the older taxis not the quantum, the drivers drive at high speeds and they ignore robots and traffic sides.
- Passengers are at highest risk, but at times hence I drive locally, I observe the passengers putting themselves in risky circumstances. The passengers like telling the drivers us that they are in hurry and drivers should speed. Drivers eventually will speed and what will eventually happen is I could end up in an accident.
- These drivers are putting our lives in danger. If a passenger insist that a driver should speed up, that passenger should get money and use it to buy a vehicle. Or that passenger should just pay for the empty taxi, because what wastes time is the drivers are trying to make sure the taxi is full before they move, because they are chasing making sure that they meet targets.
- Taxis drive bumper to bumper, these people play loud music, which distracts them as well, and then their phones ring, the answer immediately, and they have a beer on the side, what are we as passengers supposed to say. They must not blame passengers, as a driver they are also putting their own lives at risk, they should know better.
- Drivers of private motor vehicles put the lives of passengers at risk, especially when drinking.

#### Drivers

- The lives of the driver are also at risk because you have to focus on numerous things at the same time, you focus on passengers, pedestrians and the other cars around you. You have to vigilant about what goes with about six cars around you. As a driver you are stressed about cash flow, and other things, there are plenty of things that stress the taxi drivers.
- The drivers, they are negligent and they do not look out for pedestrians, or children on the road.

#### Pedestrians

- Pedestrians that get injured the most, because at times they are walking on the yellow lanes, and when it is high traffic volume times they rarely obey the rules of the road.
- Pedestrians, most of the time when people drive they do so intoxicated, and when pedestrians cross the streets they are at risk of getting hitting by the drunk drivers.
- The pedestrians are also at risk, because people walk around the streets when they are sick.
- The pedestrians here in the local area do not obey the pedestrian crossing, though at the spot I am referring to, here at Naledi mall, when the traffic officers are there then they obey.
- Pedestrians not aware of the rules of the road, they just cross anywhere, even on the freeway.
- The pedestrians are stubborn they do not care for the rules of the road, even in areas where there are pedestrian.
crossings they deliberately cross elsewhere, the drivers have to hoot and stay alert of them because they do not look out for cars

**Males**
- Males, as most of the times guys like to drive drunk, and then age category would have to be the youth (18-35). Male driver as they are trying to impress us
- Males, we generally drink and we like to impress the women, and we all drink. The situation could be different if the person who was telling you to slow down was a sober passenger, but we are all drunk. The age would have to be between 19-35 years, these kids are killing us.

**Females**
- Females these days tend to hang around in groups and the cheese girls (girls perceived to be well off) also like to impress and be seen, the age would have to be the 18 to 35
- Females, when drunk just want to have fun and forget everything else and influence the company around them, that is why at most risk.

**Children and young adults**
- 17 upwards, and 5 years to 25 years old. Because most of the time the children are playing on the pavement and the drivers drive fast and these fast cars frighten the children whilst they are playing and they do not know how to react or where to run to and they land up on the streets. Where the youth is concerned; well we are always on the street going to the mall and so forth, the drivers do not care about us they just care about money and our street are narrow more so the street that goes to the mall
- 5 to 25 because those are the people who are using the roads, children are always playing on the street and the 20 to 25year old
- I would have to say from 5 to 15, these are the children that have to walk to school, because the schools are far from our homes. When they are crossing the street, there are no traffic officers to assist
- 15 and 25, because during the weekends we walk on the street drunk and you cannot be vigilant when you are drunk and a car could easily come and knock you over

**Adults**
- Though it is very rare that the children get hit on the road it is mostly us adults

**Learner perspective**

*Passengers, but especially pedestrians, males, teenagers, children and elderly are at high risk. The drivers protect themselves usually in accidents, drivers skipping robots, road needs for disabled pedestrians lacking and reckless drivers, drunk-drivers and pedestrians, children playing soccer in the streets contribute to fatal road accidents.*

**Passengers**
- Passengers are at most risk are the passengers because when a taxi driver for sees danger, they will automatically try to make sure that their side is safe and the person sitting in the passenger side will be at highest risk because they tend to position the vehicle to save themselves making the passenger side the riskiest
- Passengers who are in the most danger, because the drivers can see the road

**Pedestrians**
- Pedestrians, because when the traffic light is red indicating that a vehicle should stop, drivers do not stop because they are in a rush and the pedestrians are trying to cross
- Pedestrians are at most risk because very little is being done in general to accommodate them, if you look at shopping centres etc. There are no demarcated areas for wheel chairs or special needs of pedestrians
- Pedestrians are in the most danger of such accidents, because as a driver you need to be alert. If you are a pedestrian and you do not see what is coming your way. Few drivers understand that they should stop; an individual on the road will be the one that takes the initiative to get the blind person out of the way, with the intention of helping them cross the street when it is safer. Therefore, these pedestrians have the toughest times on the road.
- Pedestrians, because the drivers do not always obey the rules of the stop street. When there is no vehicle on their right or coming on their left side, they just proceed and drive one, forgetting that stop signs are also there for pedestrians to give them opportunity to cross the roads. I think this type of driving is dominant in the location.

**Males**
- Males, because what happens is most men come home late, because after work they go drinking. I have noticed on occasions when I go drinking. When we are driving back from town late in the evening after 10pm, the drivers are in a rush and they tend to drive at high speeds. Passing roads when the traffic light is red…passing stop signs. People on the roads at these times are usually drunk. The driver is trying to make conversation, and trying to be observant on
the road at the same time next thing an accident happens.

Teenagers
- 16 years upwards. They are just doing it because they want to; they are not thinking of the latter consequences. More so who are we to tell people that they cannot drink because they are 16, they can easily tell you off and say it is my money. Moreover, they can bribe the securities. If you assess the situation now, by the time someone is in matric, they already have a driver’s license. That the liquor dealers are not to blame because they might be doing their bit to adhere to the law and not sell to minors, but these minors easily get people of age to buy the liquor on their behalf.

Children
- Kids who are at most risk, cars drive fast, kids play soccer at the location, when they are playing and the ball happens to fall outside the yard, these kids are excited and not observant at all times, they just want to run cross to get the ball. On these very streets drivers are driving at a speed of 80 in a residential area, how are you going to be able to break at that speed? From 3 years to 10 years.

- Children, because you could lock your gate, and someone might come and leave it open and you are not aware, so when a car is travelling at a high speed and your child is running across the street, they won’t be able to avoid that accident

Everyone
- Everyone is at equal risk, because you could be crossing the street and a driver could be drunk or he and his friend could be racing and you get hit

Elders
- Older people as well, the problem here in location is that the drivers do not stop at stop signs, you could tell yourself that I am going to cross and the cars will stop, and they won’t and you get run over. I am saying that even the elder people are at great risk.
Taxi owners indicated mixed opinions on gender and age. The perception exist that women are nervous and cannot react quickly enough, while some old men are blind.

- Women
- Females are too nervous on the road
- The females are to slow to react to incidents on the road
- Our family members
- As passenger, with driver, he was drunk when he gets to a traffic circle, he doesn’t check, and there was a corolla approaching he had to step on his breaks immediately. Hence we are all drivers, pedestrians, passengers and car operators at risk
- Doesn’t matter who you are
- The older men are at risk because they can’t see
- There are elderly men who follow road rules, the important thing is road rules, when you follow them you will not cause accident. So when you looking at risk specifically based on age, it’s not only the elderly, in my view it is all age groups who are at risk

Traffic Officers: All road user groups are at risk according to them.

- However, the mini-bus taxi drivers and passengers are the most at risk: These vehicles usually speed above speed limits, sometimes being overloaded. Fatal accidents have occurred between minibus taxis and trucks on the freeways.
- Busses, public transport, with their passengers are also at risk as they usually cannot brake fast enough

In summary, the focus group findings indicate that various opinions exist:

- According to traffic officials, all road user groups are at risk, but especially mini-bus taxis and public transport passengers
- The other road users suggested that drivers, pedestrians and to a lesser extent passengers are all at risk:
  - Drivers, especially taxi drivers, are at risk due to speeding, drunken-driving, distracted behaviour and reckless driving
  - Passengers put drivers at risk by distracting them
  - Pedestrians put at risk due to poor driver behaviour, while pedestrians also place themselves at risk by playing in streets, by drunken walking, inappropriate crossing of streets, etc.
- Some mention was also made of gender differences and age related risks (such as children, elders, and the disabled).
5.5 OPINIONS ON THE STATUS QUO ON ROAD SAFETY IN GAUTENG

This section of the report focuses on the perceptions of Gauteng households on road safety aspects in the province, and the actual observation of road safety conditions at the areas where people live. The green parts of the graph indicate positive opinions, the yellow the neutral and red the negative opinion per road safety aspect.

**GRAPH 44**

PERCEPTIONS ON ROAD SAFETY IN GAUTENG

The above graph indicates that negativity has been raised on all aspects of road safety in Gauteng. However, the most negative opinions were raised with regard to:

- Mini-bus taxi driver behaviour, with 55.3% of households expressing negative opinion in this regard.
- Motor car driver behaviour, with 39.1% of households expressing negative opinion.
- Road conditions, with 38.1% of households rating it as poor
- Bus driver behaviour (37.8% of households rated it as poor)
- Truck driver behaviour (34.7% of households rated it as poor)
- Pedestrian behaviour (32.9% of households rated it as poor)
- Traffic law enforcement (32% of households rated it as poor).

In contrast, the most positive opinions were expressed towards:

- Behaviour of bicycle drivers (50.7% of households rated it as good)
- Public awareness campaigns (48.2% of households rated it as good)
- Road Traffic management (46.9% of households rated it as good)
- Road conditions (44.5% of households rated it as good), and
- Emergency services (41.4% of households rated it as good).
The above findings suggest that the behaviour of drivers, pedestrians, and traffic officers are the most negatively rated aspects, while road conditions also contributed to this negativity.

**FIGURE 35**

**OPINIONS ON ROAD CONDITIONS IN GAUTENG**

The above findings suggest that perceptions on road conditions have been predicted by a combination of three variables, namely: municipal area, age, and household income levels. The most positive opinions on road conditions were expressed by households from Tshwane (58%), with Ekurhuleni being the most negative (52.3%). Households earning less than R30 000 per month are more negative in this regard than the more affluent households in West Rand, Johannesburg, and Sedibeng.
Opinions on roadworthiness of vehicles are related to municipal area and household monthly income. Households in Ekurhuleni tend to be the most negative in this regard (40.8% rated it poor), compared with the remaining areas (24.9%). Households in these remaining areas, with a household income of less or equal to R800 per month tend to be the most negative (33.2%).

Further analysis suggests that township households have rated vehicle roadworthiness the most negatively (31.8%), while households in inner cities displayed the most positive opinions (51%), and the suburban households were mostly undecided (44.9%).

Black households were the most negative on vehicle roadworthiness (30%), followed by White (27%), Coloured (26.6%) and Asian/Indian households (14.3%).
Opinions on Traffic Law Enforcement in general within Gauteng are related to municipal area, household monthly income, and home language. Households in Ekurhuleni tend to be the most negative in this regard (43.8% rated it poor), especially the households speaking Xhosa, English, Afrikaans, Ndebele and SiSwati (46.3%). In contrast, only 26.5% of households in Johannesburg shared this negative sentiment, and 29.1% within the West Rand, Sedibeng, and Tshwane.
Opinions on Emergency Services are related to household monthly income and municipal area living. The poorer the households the more negative they tend to be, and the richer the more positive they become. Households earning more than R5000 per month are the most positive (48.8%), and within this group, households in the West Rand and Tshwane are the most positive (54.3%), and households in Ekhurhuleni the least positive (37%).

Further analysis suggested that households in living in township areas are the most negative towards Emergency Services (32%), compared with those living in inner-cities (22.7%) and the suburbs (20.8%).
Opinions on the behaviour of pedestrians are once again related to household income, with an increase in positive opinions as household income increases, and increase in negative perceptions as household income decreases. Among the households earning R30000 or more per month, households in Ekurhuleni and the West Rand tend to be the least positive (36.3%).
The opinions on the motor car driver behaviour are once again related to household income. Increases in positive opinions are associated with household income increases, while becoming more negative as household income decreases. Among the households earning R30000 or more per month, female respondents tend to be the more positive than males (50.2% versus 39.4%).

Further analysis indicate that Coloured households tend to be the most negative in this regard (52.2%) followed by Black households (39.9%) and White households (36.3%).
The opinions on the behaviour of mini-bus taxi drivers are related to racial group and municipal area. Coloured and White households generally are the most negative in this regard (77%). Among Black and Asian households, households living in the Ekurhuleni, Johannesburg and Tshwane municipal areas are the most negative (51.7%) versus 42.4% in West Rand and Sedibeng.
The opinions on the behaviour of bus drivers are once again related to racial group and municipal area. Coloured, Asian and White households generally are the most negative in this regard (40.6%). Among Black households, households residing in Ekurhuleni are the most negative (43.8%).
The opinions on the light delivery vehicle driver behaviour are once again related to household income, with an increase in positive opinions expected as household monthly income increases, though becoming more negative at the highest income level, where personal monthly income also plays a significant role.
The opinions on the behaviour of truck drivers are firstly related to racial group, municipal area and age. Coloured and White households generally are the most negative in this regard (41.1%), especially those living in Johannesburg and Ekurhuleni (52.1%). Among Black and Asian households, age also influences the perceptions on truck driver behaviour.
The opinions on the behaviour of motor cycle drivers are related to municipal area, race and occupation. Thswane households are the most negative in this regard (41.5%). Black and Coloured households in Johannesburg, West Rand and Sedibeng are more negative than the White and Asian households (30.8% versus 15.9%).
The opinions on the behaviour of bicycle drivers are related to household monthly income, marital status and educational level. It seems that positive attitudes are generally linearly related to household income. Households earning more than R20,000 are the most positive, while those earning less than R800 per month are the least positive. Marital status and educational level also play a role in this regard.
The opinions on the public awareness and educational programmes are firstly related to racial group. Coloured and White households (29.5%) are generally more negative than Black and Asian households (21.2%). White and Coloured households in Ekurhuleni and Johannesburg are the least positive (28.6%). Personal monthly income also played a significant role in Black/African and Asian household perceptions.

Further analysis suggest that the most negative opinions were expressed by Coloured households (35.5%), followed by White households (28.1%) and Black households (21.4%).
The opinions on the Road Traffic Management in Gauteng are once again related to racial group. Coloured and White households are generally more negative than Black and Asian households (28.1% versus 20.2%). White and Coloured households in Ekurhuleni and Johannesburg are the most negative (35.1%).

In conclusion the results indicate that negativity were raised on all aspects of road safety in Gauteng. However, the most negative opinions raised were to:

- Mini-bus taxi driver behaviour
- Motor car driver behaviour
- Road conditions
- Bus driver behaviour
- Truck driver behaviour
- Pedestrian behaviour, and
- Traffic law enforcement.

To some extent road conditions also contributed to this negativity. It is clear that opinions on road safety were influenced by variables such as race, municipal area, household income, gender, and age.
The following section focuses on the evaluation of the roads in the residential areas where households live. It has been found that about 19.2% of fatal road accidents take place in these residential areas or inner cities (28.2%). Thus apart from the freeways, industrial and rural areas, these observations will provide a glimpse of the status quo on actual road safety where people live.

The above findings suggest that nearly 72% of the households are found to be living in townships, while 24% in suburban areas and only 4.29% in inner city areas. Analysis furthermore suggested that:

- Within Suburbs, 65.6% of households were White, followed by Black (28.4%), Asian/Indian (3.3%) and Coloured (2.7%) households
- Within Township areas, 94.1% of households were Black, 3.6% Coloured, 2.3% Asian/Indian and only 0.1% white households, and
- Within Inner-cities, the majority of households (98.9%) were Black households.

### TABLE 7

**DAY AND TIME OBSERVATIONS TOOK PLACE**

<table>
<thead>
<tr>
<th>DAY</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
<th>Sunday</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>17.8%</td>
<td>17.0%</td>
<td>18.2%</td>
<td>19.8%</td>
<td>15.7%</td>
<td>0.6%</td>
<td>4.9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TIME OF DAY</th>
<th>04:00-08:00</th>
<th>08:00-12:00</th>
<th>12:00-16:00</th>
<th>16:00-20:00</th>
<th>20:00-24:00</th>
<th>Not indicated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.7%</td>
<td>41.2</td>
<td>41.2</td>
<td>8.8</td>
<td>0.3</td>
<td>5.8</td>
</tr>
</tbody>
</table>

Observations were done:
- On all days of the week, though very few on a Sunday (4.9%) or on Saturdays (0.6%).
- Mainly between 08:00 and 20:00.
A large percentage of the households in Gauteng have tarred roads within their residential areas (77%), while about a fifth of households still have gravel roads.

As expected the majority of households in the suburbs and inner-city areas have tarred roads (98.2%), with only 68.9% in township areas. Tarred roads in Johannesburg townships are more prevalent than in the remaining municipal township areas (79.5% versus 52.9% and 69.8%).
About 70% of households in Gauteng live on a two way road, while just less than a third live in a one way road (27.5%).

Of concern is the finding that about a third of the roads in residential areas in Gauteng were observed to have uneven road surfaces, while only 64.8% have even surfaces.
The above findings suggest that households living in township areas are more likely to have uneven roads (36%), compared to households in the suburbs and inner-cities (23.5%).
Just less than 80% of households in Gauteng live near roads that are clear of road obstacles, while a fifth of households live near roads that have some obstacles (20.1%). The observations did not cover the nature of the obstacles in the roads, suggesting future research focus on this aspect.

**FIGURE 51**

OBSERVATION: OBSTACLES IN ROAD

It is evident from the above that households in Gauteng townships are more likely to have roads with obstacles (24.5% versus 9.3% in suburbs and inner-cities). The situation in townships is furthermore related to day of the week, peaking during Wednesday and Thursdays (30.6%).
Stray animals have been found on about 12.4% of the residential roads of Gauteng.

The findings below suggest that stray animals are the most prevalent in Ekurhuleni (21%), while the least are in Johannesburg and Sedibeng areas (6.4%). In Tshwane and the West Rand more stray animals are found in the townships (18.5%) than in suburbs and inner-cities (4.1%).
A major concern is that 30% of roads in Gauteng residential areas have potholes. Only 67% of households live near roads that do not have any visible potholes.

The above findings indicate that potholes are more prevalent on roads within the Ekurhuleni municipality (45% of all households have roads with potholes nearby), while the least were found in Johannesburg and the West Rand (21.2%). About 38.6% of households in townships in Tshwane and Sedibeng live nearby roads that have potholes, while 14.5% of suburban and inner-city households have potholes in their nearby roads.
About a third of roads near households have been observed to be narrow (29.9%), while two thirds are standard size. Narrow roads are found more predominant in township areas (35.2%) compared with urban areas (19.6%).

The observations indicate that Black/African households are more likely to live in areas with narrow roads (32.5%) compared with the remaining racial groups (20.4%). Black households in Tshwane and the West Rand have narrow roads to a lesser extent when compared to Black households in the remaining municipal areas.

Analysis also suggested that narrow roads are most predominant in township areas (35.2%) compared to sub-urban areas (19.6%).
Only 43.8% of households have pavements or pedestrian walkways in the roads where they live. The findings below indicate that about 60% of households in township areas do not have pavements or walkways, compared to only 26.6% in suburbs/inner cities.
In Gauteng just more than a third of the traffic lights in the roads where households live are not working or have been vandalised/damaged or even removed (38.1%).

The findings below suggest that the situation is the worst in township areas, where 45.8% of traffic lights are not working/damaged or have been vandalized/removed.
About 81.9% of households live in areas with roads that have road signs.

Of concern again is the finding that 25.6% of these households live near roads where the road signs have been damaged or removed or have been vandalised. It appears that damaged or vandalised road signs are more prevalent in Ekurhuleni, Sedibeng and West Rand, especially the township areas.
Of concern is the finding that just more than 50% of households that live near tarred roads, have road markings that are unclear.

The above findings indicate that unclear road markings are more prevalent in Johannesburg, Sedibeng and the West Rand (63%) and especially within the township areas (75.5%), followed by Ekurhuleni (49.4%) and Tshwane (29.1%) municipal areas.
About 11% of households live on a road that have a pedestrian bridge nearby.

Pedestrian bridges are the most prevalent in Ekurhuleni (21%), Tshwane and the West Rand (12.4%).

FIGURE 59
OBSERVATION: PEDESTRIAN BRIDGE NEARBY
Just less than 36% of households have traffic calming measures in the roads near their houses. These includes mini-circles and speedhumps.

Results below suggest that traffic calming measures are the most prevalent in Tshwane (49.9%), followed by Ekurhuleni (37.5%). The remaining areas (Johannesburg, Sedibeng and West Rand) have the least traffic calming measures, especially in the township areas (24.8%).
About 55.7% of households live on a road that has an intersection nearby.

In summary, the observation results suggest that the road environment near the residential areas of households do pose a road safety problem, especially in view of driver and pedestrian behaviour of households surveyed:

- No nearby traffic calming measures (61%)
- Poor road markings and signs (51.8%)
- No pedestrian pavements or walkways (50%)
- Traffic lights not working (38.1%)
- Uneven road surfaces (32.4%)
- Potholes (30.1%)
- Narrow roads (29.9%)
- Damaged road signs (25.6%).

The above observations clearly demonstrate some road environmental aspects which could contribute to fatal road accidents in the areas where households are living. Further more, it is evident that the problems are mainly located in township areas, and certain municipal areas.
The graph below shows the type of vehicles found on the roads near the dwellings of households. It is quite clear that motor cars and mini-bus taxis constitute the majority of vehicles (63.7% and 37.7%). Just more than one fifth of the roads had some light delivery vehicles, 9.7% of roads had busses making use of it. Trucks, motor cycles and bicycles were the least prevalent on the roads (ranging between 6% and 7%).

Further analysis suggests that:

- Motor cars have predominantly been found in inner cities and suburbs (93.3% and 92.6%), while only 52.1% of observations in townships recorded motor cars
- About 86% of observations in inner cities recorded some mini-bus taxi activities, followed by 41.3% in townships and only 18.6% in suburbs
- Busses were mostly found in inner cities (60%), with only 8.3% in township and 4.9% in suburban areas
- LDVs were mostly recorded in inner cities (50%), followed by suburbs (25.2%) and township areas (19.2%)
- Trucks were found in 33.3% of observations of inner cities, and only 6.8% in suburban areas and 5.5% within townships
- Motor cycle usage were the least in townships (3.3%), while 16.4% of observations in suburbs recorded motor cycles, and 33.3% in inner cities
- Bicycle usage was low in all areas (4.9%, 8.4%, and 11.1% in respectively township, suburban and inner city areas).
The above findings suggest a relatively normal distribution in terms of the vehicle volumes found during the observations. Nearly two-thirds of the roads observed had medium to low traffic volumes, while 19% had high or no volume traffic at all. As expected, the highest volumes were found in inner cities (72.2%), followed by townships (17.9%) and suburban areas (13.1%).

High volume traffic was the most prevalent in Ekurhuleni (34.9%), while low or no traffic volumes were predominantly found in Sedibeng and the West Rand (67.6%).
The observations suggest that about 80% of the vehicles observed seemed to be in a good physical condition, while 18% not at all. Further analysis suggests that poor perceived vehicle conditions are more prevalent on roads being used by mini-bus taxis than motor cars (19.1% versus 12.9% rated as poor). Poor physical vehicle conditions are also more prevalent in township areas (23.7%), compared with only 7.1% in suburban and 5.6% in inner-city areas.

The observed poor physical condition of vehicles were the most prevalent in Ekurhuleni (33.9%), followed by Tshwane, Sedibeng and West Rand (16.9%)-especially in the township and inner-city areas (23.2%).
About 16.8% of the vehicles observed, were overloaded by goods or passengers. Further analysis suggests that perceived vehicle overloading was more prevalent on roads being used by mini-bus taxis than motor cars (20.7% versus 11% rated as overloaded). Vehicle overloading occurs mostly in township areas (21.2%), followed by 8.8% in suburban and 5.6% in inner-city areas.

Overloading of vehicles were the most prevalent in Ekurhuleni (33.6%), followed by Tshwane (12.9%) and the least in the Johannesburg, Sedibeng and West Rand areas (7.4%).
Of concern is the finding that nearly 18% of the roads had vehicles which were speeding. Further analysis suggests that perceived vehicle speeding is more prevalent on roads being used by minibus taxis than motor cars (19.3% versus 14.6% rated as speeding). In terms of area, speeding behaviour was mostly observed in suburban (26.2%) and township areas (15.5%) compared with inner-city areas (3.4%).

Speeding vehicles were most prevalent on the roads in Ekurhuleni (29.1%), followed by Tshwane (18.6%) and the suburbs in Johannesburg, Sedibeng and West Rand (20.4%).
Of major concern is the finding that 20% of vehicle drivers were observed to be driving recklessly. Further analysis suggested that perceived vehicle reckless driving was more prevalent on roads being used by mini-bus taxis than motor cars (23.6% versus 15% rated as driving recklessly). In terms of area, reckless driving was mostly observed in suburban and township areas (21.3% and 20.9%) compared to inner-city areas (3.4%).

The findings below indicate that a very large percentage of vehicles were driving recklessly in Ekurhuleni (41.9%), while the least were in Sedibeng and the West Rand (6.6%).
Another concern is that 46.2% of vehicles observed were not using front driver or passenger vehicle seatbelts.

The findings below indicate that vehicles driven in the townships tend to be using their front seatbelts (66.6%) the least versus 36.3% in the suburbs/inner-cities.
About 31.7% of vehicles observed did not make use of child restraints when travelling with children.

Once again the results suggest that vehicles driven in township areas are making the least use of child restraints (76.9%) when compared with suburbs and inner-cities (52.7%).
Almost a quarter of drivers did not make use of their indicators when turning.

The non-use of indicators is the most prevalent in the township areas (28.2%), especially in Johannesburg, Ekurhuleni, Sedibeng and West Rand (30.9%). The findings also suggest that high levels of non-compliance were found in the Ekurhuleni, Sedibeng and West Rand suburban and inner city areas (24.8%).
About 17.1% of motor cyclists do not wear helmets on the roads in the areas where households live. No significant demographic predictor variables were found.

In summary, the observation results suggest that the vehicle drivers making use of the roads near the residential areas of households do pose a road safety problem, as many are:

- Not using child restraints (68.3%)
- Not using front seatbelts (53.8%)
- Not using indicators (24.1%)
- Driving recklessly (20.1%)
- Exhibiting poor vehicle condition (18%)
- Speeding (17.9%)
- Not using helmets (motor cyclists and cyclists) - (17.1%)
- Overloading their vehicles (16.8%).

The above findings demonstrate that some vehicle aspects have been observed, which could contribute to fatal road accidents in the areas where households are living. Furthermore, it is evident that the problems are mainly located in township areas and certain municipal areas.
The graph below indicates the use of local residential roads by different pedestrian road user groups. Just less than 80% of all observations of roads indicated the presence of adults, followed by 36.4% elderly people and 33.1% school children. About 9% and 4% of the observations recorded the presence of babies and disabled people on the roads.

Further analysis suggests that:

- Babies were most frequently observed in inner-city areas (12.2%) followed by township (10.6%) and lastly within suburbs (3.7%)
- School children were most frequently observed in inner-cities areas (53.3%), followed by township (34.4%) and suburbs (26%)
- Adults were observed in all areas, especially inner-cities (95.6%), followed by suburbs (86.3%) and township areas (75%)
- Elderly were most frequently observed in suburban areas (42.1%) followed by inner-city (34.4%) and townships (34.47%)
- Disabled people were mostly observed in inner-city areas (21.1%) and the least in township (3.7%) and suburban areas (1.8%).
The above graph, as in the case of the vehicle types, indicate a relatively normal distribution. About 75% of the observations recorded medium to low pedestrian volumes, while 17.6% of observations recorded high pedestrian volumes and only 2.9% no pedestrians. As expected, the highest volume of pedestrians were observed in inner city areas (58.9%) and the lowest in suburbs.

The findings below indicate that municipal area, residential area and time of day influences the pedestrian volume.

### FIGURE 69
**OBSERVATION: PEDESTRIAN VOLUMES**
Of major concern is that 19.4% of the pedestrians observed have been reckless in their road use behaviour. Reckless pedestrian behaviour was mostly observed in township areas (20.9%), followed by suburbs (17%). Only 7.8% of observations in inner-city areas recorded some reckless pedestrian behaviour.

Reckless pedestrians were the most prevalent in Ekurhuleni (37.6% of observations) and the least in Johannesburg, Sedibeng and the West Rand (10.4%). Time of day did influence the latter areas.
Of concern is the finding that 74% of pedestrians tend to be walking in the streets. This behaviour was found to be the least predominant in inner cities (62.2% of observations) followed by suburban areas (73%).

This type of road behaviour among pedestrians was the most prevalent in Johannesburg (76.8%), followed by Tshwane (75.2%) and Ekurhuleni (65.7%).

FIGURE 71
OBSERVATION: PEDESTRIAN WALKING IN STREETS
29.5% of households live on streets where children are playing. This aspect was mainly found in township areas (38.5%).

The above findings suggest that children playing in the street were the most prevalent in township areas (38.5%) compared to only 7% in suburban and inner-city areas. The problem is the most prevalent in township areas within the Ekurhuleni Municipality (54.1%).
Just more of 50% of the observations had pedestrians crossing the street. This behaviour was the least predominant in inner city areas (35.6%) and the most in township areas (52.3%).

### Graph 75
**Observation: Pedestrians Crossing Street**

**Figure 73: Observation: Pedestrians Crossing Street**

Crossing of streets was the most prevalent in township areas in Johannesburg, Tshwane and the West Rand (51.3%), as well as in the whole of Ekurhuleni and Sedibeng (56%).
In summary the observation results suggest that the pedestrians making use of the roads nearby the residential areas of households do pose a road safety problem, as:

- About 51% of observations recorded that pedestrians were crossing streets
- 29.5% of observations had children playing in the streets
- 19.4% of observations recorded pedestrians walking in the street
- 19.4% of observations recorded that pedestrians were displaying reckless behaviour.

The above observations clearly demonstrate that pedestrian behaviour could contribute to fatal road accidents in the areas where households are living. Furthermore, it is evident that these pedestrian problems are mainly located in township areas, certain municipal areas, and are related to a specific time of day.

The following discussion focuses on the Law Enforcement within these areas.

![Graph 76: Observation: Law Enforcement-Traffic Officials in Street](image)

Only about 15% of the observations recorded visible law enforcement by traffic officials. Observations in inner-city areas recorded the highest visibility level of 31.1%, followed by 17.3% in township and 5.9% in the suburbs.
Visible law enforcement was the most prevalent in Ekurhuleni (36.7%) followed by Tswane (16.6%). It was the least prevalent in township areas in Johannesburg, Sedibeng and the West Rand (1.1%)
The observations suggest that school patrols were found at 16.5% of all observations. School patrols were mostly found in township areas (21.3%).

School patrols most prevalent in Ekurhuleni (43%) and Tshwane (22.1%).
During 4.4% of the observations some actual accidents were observed on the roads, while there were 6.9% near accidents. In total 69% of observations recorded no accidents. Accidents or near accidents were mostly observed in township areas (15%) compared with suburban areas (2.2%).

Observed accidents were mostly observed in Ekurhuleni (12.1%) and Tshwane areas (5.3%).

In summary it is clear that law enforcement in the areas where people live in Gauteng tends not to be visible enough and that school patrols might be lacking in some areas.
5.6.1 Perceptions on using roads in Gauteng

The above graph suggests that mixed feelings exist on whether road users feel safe on the roads in Gauteng. It is clear that more drivers of motor cars/taxis and busses feel safe (57.8%) compared to pedestrians (49.1%), passengers of vehicles (42%) and especially drivers of motor cycles and bicycles.

Proportionally more motor cycle drivers and cyclists feel unsafe (37.6%) followed by passengers of motor cars/mini-bus taxis/busses (35.5%) and pedestrians (30%).

The findings furthermore suggest that:

- Drivers of cars/minibus taxis/busses in suburban areas feel the safest, while those in inner cities feel the most unsafe (63.3%)
- Passengers of cars and minibus taxis/busses within inner-cities and townships feel the most unsafe (42.2% and 39.2% versus 22.6% in suburbs)
- Pedestrians in inner-cities feel the safest (64.4%), while those in township feel the most unsafe (32.9%)
- Motor cycle and bicycle drivers feel the most unsafe in inner-city areas (50%), followed by township (38%) and suburban areas (34.5%)
Figures 77 to 80 indicate the dynamics of these perceptions as road users.

FIGURE 77
PERCEPTIONS ON USING ROADS IN GAUTENG: AS A DRIVER OF A CAR/MINI-BUS TAXI/BUS

The above findings suggest that drivers of cars/minibus taxis/busses that live in the suburbs feel the safest (71.5%), while those in townships and inner cities are actually feeling less safe on the roads (46.4%). About 41% of this latter group actually feel unsafe. Within these township and inner city areas, marital status plays a role, with the people that never got married, or who are estranged, or divorced feeling more unsafe than the rest (47.3% versus 33.7%).
Motor cycle drivers and cyclists in Tshwane and Sedibeng feel the most unsafe (56.2%) compared with the other remaining areas (31.1%), while age plays a role among those living in Johannesburg, Ekurhuleni and the West Rand, where the youngest and oldest people feel the most unsafe (32.2%).
Among passengers, it is clear that perceptions on road safety decreases as household income decreases. Those earning less than R 1800 per month as a household are the most negative in this regard, especially the households in Tshwane. Among the remaining groups that feel more safe (people living in the higher income households) people in specifically the suburbs and inner cities feel the safest.
The above findings suggest that 32.9% of pedestrians living in townships are feeling unsafe as a road user group, compared with 30% in inner cities and only 21.2% in suburbs. Among those living in suburbs, the Black/African pedestrians feel the safest (57%) compared to 40.6% among Whites, Asians, and Coloureds. Among township pedestrians, those living in Tshwane feel the most unsafe (50.9%) and those in Johannesburg, Sedibeng, and East Rand the safest (54.6%)
Of concern in the above are the findings which suggest that nearly 60% of households believe that fatal road accidents tend to be a very large problem in Gauteng, while another 31.6% view it as just a large problem. None perceived it to be not a problem at all, while only 2.4% view fatal road deaths as a small problem.

The results indicate that households in inner city areas to hold the largest extent of problem view at (72.9%) compared with 61.9% among township residents and only 42.9% among suburban residents.
The above graph shows that perceptions on the extent of the road safety problem are related to municipal residential area. Households in Johannesburg and Sedibeng (59.6%) tend to be more negative on this aspect compared to those living in Tshwane and the West Rand (49.7%), and especially those in Ekurhuleni (60%). Among this latter group, the White/Asian and Coloured households are the most negative. Township households in Tshwane and West Rand are more negative than those living in suburban areas. Township and inner city households are more negative in Johannesburg and Sedibeng when compared with suburban households.

In summary, the findings suggest that mixed feelings exist on whether road users feel safe on the roads in Gauteng. It is clear that more drivers of motor cars/taxis and busses feel safe compared to pedestrians, passengers of vehicles and especially drivers of motor cycles and bicycles. Municipal and township/suburban/inner-city areas once again play a significant role in these perceptions. Of concern is that a large number of households believe that fatal road accidents are a very large problem in Gauteng.
The focus groups indicated that all road user groups, except the taxi owners/drivers felt that the roads in Gauteng are unsafe, due a range of reasons such as speeding, driving intoxicated, reckless driving, unequal treatment, un-roadworthy vehicles, drivers driving without valid driver’s licences, etc.

The following describes the opinions raised during the focus groups on Road Safety perceptions. All groups, except the taxi owners/drivers felt that the roads in Gauteng are unsafe.

<table>
<thead>
<tr>
<th>Passengers generally suggested that they do not feel safe on the roads. This is due to taxis speeding drivers smoking weed, using narrow roads and driving intoxicated.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Don’t feel safe</strong></td>
</tr>
<tr>
<td>No. The taxi drivers drive fast during rush hours, the passengers also pressurize the taxi driver and I don’t feel safe</td>
</tr>
<tr>
<td>I do not feel safe because the taxi drivers are always in a rush. At time they are going far and the passengers are putting pressure on them</td>
</tr>
<tr>
<td>No, taxi speed that they drive in the mornings is not ok, the passengers keep pressurizing the drivers to speed and the drivers speed to please the passengers because they are told they have to be at work at 6am in the morning</td>
</tr>
<tr>
<td>The drivers are smoking weed and you cannot feel safe, and they do not drive according to the limit specified on the signs</td>
</tr>
<tr>
<td>These roads are too narrow and too many accidents happen</td>
</tr>
<tr>
<td>It depends who is driving: when a taxi driver is driving fast I feel unsafe, when it is an older driver I feel safer. Obviously the driver has my life in their hands, if they are reckless then my life is in danger and if they are cautious then I feel better</td>
</tr>
<tr>
<td>With me it depends, I feel safe when it is somebody from my family driving me, because you could be driving in an older driver’s car who is cautious then the young driver could come and hit your car, so I usually feel safer when it is a family member driving</td>
</tr>
<tr>
<td>For me I just get busy when I get in a taxi, I immediately start fidgeting with my phone I don’t consciously think of safety issues</td>
</tr>
<tr>
<td>Well, with my peers that have had their license for a long time I feel safe, but with friends that just recently got their license, I do not feel safe when we are going there, but when we come back I do not. Because my friend would be driving fast, rushing to get home.: And probably intoxicated</td>
</tr>
<tr>
<td>I don’t feel safe in any transport, well except the train, and in any case I don’t make use of other transport modes that often, I usually walk, you don’t hear of train accidents that often</td>
</tr>
<tr>
<td>We keep quiet. This one time I told the taxi driver that the car was smelling of smoke, and he told me that it is his car and he knows it, it’s either I keep quiet of I get off, and he actually started insisting I get off, and I had paid</td>
</tr>
<tr>
<td>I had an experience with an overloaded truck, the plastic bins in the truck were falling of the truck and on getting on the road the car in front of us was trying to avoid the bin hitting the car, I don’t know if perhaps the driver was not aware that those bins were plastic bins, but point I am trying to get to is that this driver moved his car out of the road and almost fell in to a ditch because he was trying to avoid getting hit by the bins in the overloaded bin</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pedestrians mostly expressed unsafe feelings, due to reckless drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>To be frank with you there is no vehicle in Gauteng that makes me feel safe. It matters not, who is driving, and be it your uncle or whoever. They are reckless. I think I would be safer in a bus.</td>
</tr>
<tr>
<td>Though Gauteng drivers are skilled drivers, every trip on the road is viewed as tomb and I am grateful whenever I arrive to my destination</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drivers suggested that they do not feel safe due to unequal treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you do not have money in Botswana to pay for the fine, you are jailed on the spot. I think it is because they belong to the same nationality, South Africa is mixed, you get a Xhosa, you get Zulu, and you get Tsonga. All these people are everywhere, because a white person could be driving with an expired license disk and say you are wasting my time why don’t you just send me the ticket, and you won’t argue with the white person if he is blocking traffic</td>
</tr>
<tr>
<td>They should treat us the same way they treat the whites They just let them pass even though their cars are not road worthy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learners generally indicated that they also do not feel safe, especially because of un-roadworthy vehicles.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not feel safe at all, it is all a risk. You could be standing at a corner and you get hit by a car</td>
</tr>
<tr>
<td>The breaks of that particular vehicle could have failed, that driver could be coming from the mechanic, or a fast time driver who does not know how to balance the clutch and fails to control the car, accidents are caused by unexpected events for example a tire could just come out on the freeway. A neighbour of ours had just brought his car back from the mechanic he was certain that it was in good condition only to find out something failed he had to avoid the road by driving into the electricity box, the kids around like playing there, fortunately this time round they were not playing around there, had one of them been there he could have smashed into that electricity box and again into the children</td>
</tr>
</tbody>
</table>

170
Taxi Owners indicated that they feel safe on the roads in Gauteng when driving, being in control.

- When I am driving, I am flexible so I feel safe. hundred per cent safe
- We feel safe when driving ourselves because we are focused on the road
- Feel safe because I hardly drive long distances I always just drive around

Traffic officers expressed mixed feelings on the safety of the Gauteng roads. Some officials indicated that it is fairly safe, due to the fact that the main road network is in a good condition (not many potholes) and even upgraded, while other said it is fairly unsafe.

- Taxis overturning—that happens on a daily basis.
- There are some reckless drivers on the roads
- People drive without valid driver’s licences (we take them to SAPS but they get away with it)

5.6.2 Perceptions on the reasons for fatal road accidents in Gauteng

The graph below indicates the perceptions on the extent to which different factors contribute to fatal road accidents in Gauteng. One of the most important findings portrayed in this graph is that all aspects, according to these households, contribute in one or another way (directly or indirectly) to fatal road accidents in Gauteng.

**GRAPH 81**

PERCEPTIONS ON THE REASONS FOR FATAL ROAD ACCIDENTS IN GAUTENG

*The higher the score the greater impact and the lower the score the smaller the impact*

However, according to these findings four variables can be viewed to be contributing significantly to fatal road accidents, namely:

- Behaviour of drivers specifically (77.2%)
- Traffic Law enforcement (74.7%)
- Behaviour of road users (71%) in general (pedestrians, drivers and passengers combined)
- Behaviour of pedestrians specifically (69.3%)

This is followed to a lesser extent by:
- Road conditions (68.3%)
- Vehicle conditions (68.26%)
- Behaviour of passengers (66%).

The two variables that contribute the least to fatal road accidents, based on the perceptions of respondents are Weather conditions (59.67%) and Emergency Services (60.48%).

The findings below show that largely households in Johannesburg attribute fatal road accidents to poor road conditions (74.4%) compared with households in Ekurhuleni, Sedibeng and West Rand (66%) and Tshwane (62.5%). Within these municipal areas two variables, Occupation, and Home language significantly influence perceptions on road conditions.

**FIGURE 82**
PERCEPTIONS ON ROAD CONDITIONS AS CAUSE OF FATAL ROAD ACCIDENTS IN GAUTENG

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Occupation</th>
<th>Home Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johannesburg</td>
<td>Working for Someone else, Formal</td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td>Working for Someone else, Informal</td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td>Unemployed</td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td>Dem. Formal</td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td>Sepedi, Not prescribed, Other African Languages, Ndebele, Sesotho, Xitsonga, Tsonga, Tshivenda</td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td>English, Afrikaans, Chinese, Urdu, Hindi, Other</td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td>Working for Someone else, Informal</td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td>Working for Someone else, Formal</td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td>Unemployed</td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td>Dem. Formal</td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td>Sepedi, Not prescribed, Other African Languages, Ndebele, Sesotho, Xitsonga, Tsonga, Tshivenda</td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td>English, Afrikaans, Chinese, Urdu, Hindi, Other</td>
<td>Various</td>
</tr>
</tbody>
</table>

**Note:**
- Mean: 74.8 (SD: 7.48)
- N: 700
- Predicted: 74.8
The above findings suggest that largely households in Johannesburg attribute fatal road accidents to vehicle conditions (72.4%) compared to Sedibeng and West Rand (68.5%) and Tshwane/Ekurhuleni (65%). It appears that household monthly income and personal income contribute negatively in this regard, in Johannesburg and Tshwane/Ekurhuleni areas respectively, with higher income households or respondents expressing less negative perceptions.
The above findings indicate that largely, households living in townships and inner cities attribute fatal road accidents to poor law enforcement (77.3%) compared with suburban households (65.4%). Among the first group of households, those living in Ekurhuleni seem less likely to attribute fatal road deaths to law enforcement (71.5%) whilst those in Johannesburg (80.8%) and remaining areas more likely to do so (77.9%).
The above findings suggest that largely, households in townships and inner cities believe that weather conditions contribute to fatal road conditions (64.8%) compared to households in suburbs (43.4%). It is also evident that the poorest and the richest households in townships and inner cities are more inclined to believe that weather conditions are a cause of fatal road accidents in Gauteng.
The above findings show that largely, households in townships and inner cities believe that emergency services contribute to fatal road conditions (64.9%) compared to households in the suburbs (46.7%). It is also evident that the households living in Johannesburg and West Rand townships and inner cities are more inclined to believe so (70.9%), while Johannesburg and Ekurhuleni suburban households tend to be the least inclined (only 41.1%).
PERCEPTIONS ON BEHAVIOUR OF PEDESTRIANS AS CAUSE OF FATAL ROAD ACCIDENTS IN GAUTENG

The above findings show that largely, households in Johannesburg believe that the behaviour of pedestrians contributes to fatal road conditions in Gauteng (75.9%), compared to Sedibeng and the West Rand (71.1%), Tshwane (66.7%) and Ekurhuleni (61.5%). Within Johannesburg, the households with respondents that are not married or estranged.separated are the most likely to believe so (78.4%).
The above findings indicate that largely households in Johannesburg believe that the behaviour of passengers contribute fatal to road conditions (70.6%) compared to households in Tshwane and the West Rand (66%) as well as households living in Sedibeng and Ekurhuleni (62.5%). Within Tshwane and the West Rand, households in the township areas are the more likely to believe as (69.7%) compared to households in suburbs and inner-cities (60%).
The above findings indicate that largely households in Johannesburg believe that behaviour of drivers contribute fatal to road conditions (80.9%) compared to households living in Sedibeng, West Rand or Tshwane (78.2%) and Ekurhuleni (70.7%). Within Johannesburg, the poorer households are more likely to believe so (82.3%) compared to the more affluent households (79.5%). Households living in townships within Tshwane, Sedibeng, and the West Rand are more likely to believe that driver behaviour causes fatal road accidents (79.9%) compared to suburban and inner city households (75%).
The above findings suggest that largely households in Johannesburg believe that behaviour of people in general contribute fatal to road conditions (75.8%) compared to households living in Tshwane, Sedibeng, and the West Rand (70.7%) and especially Ekurhuleni (64.9%). Within Tshwane, Sedibeng, and West Rand, the township households seem to be more inclined to believe so than households living in suburban and inner-city areas (72.6% versus 67.2%).
The following discussion zooms into the underlying dynamics of the main causes of fatal accidents in Gauteng. The findings in the graph below focus specifically on road conditions.

**GRAPH 82**

PERCEPTIONS ON ROAD CONDITIONS AS CAUSE OF FATAL ROAD ACCIDENTS IN GAUTENG

*The higher the score the greater impact and the lower the score the smaller the impact*

It is evident that households in Gauteng generally feel that all road aspects contribute in one way or the other to fatal road accidents. However, the road conditions that contribute the most to fatal road accidents are:

- Potholes in roads (74.4%)
- Traffic lights not working (74.3%)
- Lack of traffic calming measures (72.7%)
- Uneven or poor road surfaces (72%)
- Poor street lighting at night (71.2%)
- Damaged/removed road signs (70%)
- Road markings not visible (69.9%)
- The lack of pedestrian bridges (69%).
The least contributing factors are:
- Stray animals (60.8%)
- Obstacles in the road (62.1%), and
- Road construction areas (62.8%)

It is clear that households in Gauteng generally feel that all vehicle aspects contribute in one way or the other to fatal road accidents. However, the vehicle conditions that contribute the most to fatal road accidents are:
- Overloaded vehicles (76.5%)
- Mini-bus taxis in general (75%)
- Un-road worthy vehicles (74.9%)
- Un-licensed vehicles (73%)

Other vehicle aspects that contribute to a lesser extent include vehicle types: motor cars (67%), busses (66.9%), and trucks (64.7%) while motor cycles contribute the least (57.5%).
It is evident from the above that households in Gauteng generally feel that all traffic law aspects researched, contribute in one way or the other to fatal road accidents. The aspects that contribute the most include:

- Fraud and corruption by law enforcement staff (77.8%)
- Fraud and corruption by driving schools (75.3%)
- Fraud and corruption by DLTC staff (73.8%)
- Non-visibility of law enforcement staff (73.2%)
- Fraud and corruption by VTS staff (72.5%).
It is clear that households in Gauteng generally feel that one weather condition, namely rain and hail contributes the most to fatal road accidents (75.4%). Weather conditions such as very warm (55.4%) or cold conditions (49.6%) or fog/smoke/fires (58.2%) contribute to a much lesser extent to fatal road accidents.
It is clear from the above that households in Gauteng generally feel that emergency services in one way or the other contribute to fatal road accidents, though to a relatively low level. Some negativity was aired on the slow response rates (61.6%) and incompetence of emergency staff (59.4%).
The next graph indicates the perceived impact of road user behaviour on fatal road deaths. All aspects of road behaviour contribute in one way or the other to fatal road accidents. The aspects that contribute the most (that are critical) to fatal road accidents include:

- Drivers speeding excessively (84.6%)
- Intoxicated drivers (83.8%)
- Drivers using mobile phones (83.1%)
- Drivers skipping red robots and stop streets (81.6%)
- Drivers driving recklessly (80.2%)

The aspects that largely contribute to fatal road accidents, though not critically are:

- Drivers not using headlights or indicators (79%)
- Drivers fatigued (79.2%)
- Drivers lacking skills and competence (77.9%)
- Driver road rage (77.4%)
- Drivers not following safe distances (77.5%)
- Driver poor judgement (76.8%)
- Pedestrian intoxicated (76.8%)
- Driver lack of road safety knowledge (73.5%)
- Driver no valid license (72.2%)
- Pedestrians crossing roads (71.7%)
- Drivers not wearing seatbelts (71.2%)
- Pedestrians lack of knowledge on road safety (70.4%)
- Pedestrian poor visibility (69.2%)

The factors that contribute the least to fatal road accidents include:

- Disabled pedestrians (62.6%)
- Motor-cyclist behaviour (63.1%)
- Usage of child restraints (67.3%)
- Passengers not wearing seatbelts (66.9%)
- Children playing in the streets (67.3%)
- Pedestrians walking unnecessarily in the streets (68.1%)

It is clear that the perceived critical factors of fatal road accidents relate to only inappropriate driver behaviour, while the factors contributing the least also focus on inappropriate pedestrian and passenger behaviour.
PERCEPTIONS ON ROAD USER BEHAVIOUR AS CAUSE OF FATAL ROAD ACCIDENTS IN GAUTENG
The following discussion indicates the perceptions obtained during the focus group interviews on the causes of fatal road accidents.

### The Passenger perspective

Suggested that a range of aspects cause such fatal accidents. This includes human behaviour (especially that of drivers and pedestrians), taxis in general; drunk-driving, children playing in roads, speeding vehicles, poor road signage, narrow roads, too many cars, mobile phone usage, road rage, un-roadworthy cars, and poor law enforcement linked to bribes.

### Human behaviour

- I think that it is the human factors
- The environment because we leave in shacks and small roads and the drivers drive drunk, and the people here get drunk during weekends and these people share the same road

### Pedestrian behaviour

- Sometimes it’s our fault by drinking and walking and leaving the children to play on the streets unsupervised, the children get confused when they see the a speeding car and possibly run to the incorrect side
- Human factor because the people are on drunk and they are on drugs they are not scared of cars
- They teach children road rules at pre-schools. However, children imitate the parents, so if you cross the red robot when you with her they will do like you. Yes they need to remind us, because we will remember when we are laying in hospital

### General Driver behaviour

- high speed
- I think it is the high speed, because there are no road signs indicating the acceptable speed
- I think it’s because the drivers are driving drunk and driving fast and some don’t even have licenses, they cause the accidents
- The vehicles that drive on the pavement, I still say the taxi drivers some don’t follow the rules and some don’t even have driver’s licences
- The vehicle these people are driving drunk
- Social and human factors, the drivers are talking on the phones and that causes a lot of accidents
- I agree with her on the drinking and driving, because when you are drunk your vision is no longer clear
- Road rage

### Taxi driver behaviour

- Taxi drivers do not care what happens to passengers they just care about the money. They rush to get loads. In addition, the loud music if something is wrong with the car, you will not be able to hear weird noises made by the car. They also drink if the passengers are drinking
- I was a taxi driver at some point and its true, if your taxi is slower and it always get passed by other taxis, the next time no one want to use your taxi, the passenger contribute to the driving of the taxis

### Bicycles and motor cycles driver behaviour

- The bikes don’t want to drive properly they just want to pass all cars, in Pretoria north the car driver just wanted to block the bike from passing for no reason and then the guy in the bike got injured he hit another car and got injured, because the robot was green and the other car had right of way so it hit him

### Truck driver behaviour

- For the trucks it’s all about size because they driver bigger vehicles they want to show you that there is nothing you can do they can drive as they please

### Bus driver behaviour

- In the residential area, the bus drivers and taxis don’t give each other way; they do not work together on the road

### Infrastructure

- I think that it is an environmental factor, because the roads are too narrow and there are just too many cars on the road
- Environmental factors the roads are too small and we are sharing roads with the taxis

### Vehicle conditions

- The cars are too old and are not road worthy and at times these cars just explode and the people in the car could die

### Law enforcement
- Lack of traffic controllers and the condition of the vehicles and the drivers are always in a rush
- Licensing and bribing
- If one passes the Test can just go through, they tell you that you must practise on the road. Also the bribe. Yes even if you hit a pole if you have the money you will get your license, and even if you can drive but you don't have the money you won't get it

<table>
<thead>
<tr>
<th>Pedestrian perspective</th>
<th>focuses on driver behaviour (especially that of mini-bus taxis) and vehicle conditions. The driver behaviour includes drunken-driving, driving when fatigued, speeding, unsafe lane changes, and deliberate sabotage of roads to cause accidents.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Driver behaviour:</strong></td>
<td></td>
</tr>
<tr>
<td>- When the drivers are drunk they think that they are the kings of the road and they don't think that they share the road with pedestrians, and the markings on the roads are not even clear enough</td>
<td></td>
</tr>
<tr>
<td>- I think it is the drivers, people drink, and there are people who cannot go a day without some sort of drug.</td>
<td></td>
</tr>
<tr>
<td>- I think it is the drivers, they drive drunk and tired, a person wants to drive fast all the way from KZN, they forget that they are tired, especially the truck drivers, the biggest accidents in my view are those involving trucks</td>
<td></td>
</tr>
<tr>
<td>- I think it is the drivers and cars. They drive at high speeds. Cars that are on the roads are on poor conditions and shouldn't be driven</td>
<td></td>
</tr>
<tr>
<td><strong>Taxi driver behaviour</strong></td>
<td></td>
</tr>
<tr>
<td>- The taxi drivers, scare us because they come at high speed, the ones that drive public transport are the ones that are killing us on the Gauteng roads</td>
<td></td>
</tr>
<tr>
<td>- Drivers mostly taxi drivers they do no indicate when they change lanes, when they see a potential passenger they just drive as they please to get them. This is thus also caused by passengers</td>
<td></td>
</tr>
<tr>
<td><strong>Public bus transport behaviour:</strong></td>
<td></td>
</tr>
<tr>
<td>- I think it is public transport not private transport as much, the public transport drivers are always in a rush because of money, the drivers who drive buses, bicycles and trucks usually cause these accidents by mistake</td>
<td></td>
</tr>
<tr>
<td><strong>Vehicle conditions</strong></td>
<td>I think it's the cars that are not road worthy</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
</tr>
<tr>
<td>- Human factors, for example when it is raining I have seen these tow truck guys, pour oil and marbles on the road and then people will assume that the accident was due to the rain</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Driver perspective</th>
<th>focused on driver behaviour (usage of mobiles phones and bending of road rules), road infrastructure (potholes and poor street lighting), and corruptive law enforcement.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Many reasons.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Driver behaviour</strong></td>
<td></td>
</tr>
<tr>
<td>- These cell phones are a problem</td>
<td></td>
</tr>
<tr>
<td>- The drivers know the road rules but just they choose to bend the rules. We are going to end up like Nigeria, when someone bumps into you all they say is sorry, there is nothing you can do</td>
<td></td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td></td>
</tr>
<tr>
<td>- At times, the conditions of the road, the potholes contribute. Also at night because it is dark. In terms of the infrastructure, do you think the streetlights are enough? Not all the roads</td>
<td></td>
</tr>
<tr>
<td>- There is a bridge before the robots at pick and pay and cars fall over the other side</td>
<td></td>
</tr>
<tr>
<td><strong>Law enforcement</strong></td>
<td></td>
</tr>
<tr>
<td>- Where is this corruption coming from? Is it the lack of law enforcement? Starts at parliamentary level</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learner perspective</th>
<th>generally focused on limited road infrastructure, poor public transport, driver behaviour (fatigue, witchcraft, poor health, socialising while driving, reckless-driving of taxis) and reckless pedestrian behaviour.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infrastructure</strong></td>
<td></td>
</tr>
<tr>
<td>- More people have cars, prior 1994; it was just the white people</td>
<td></td>
</tr>
</tbody>
</table>
Public transport:

- The government with the Rea Vaya are attempting to reduce the accidents, so others use the Rea Vaya or trains. Less people are making use of taxis and the Rea Vaya is cheaper. Rea Vaya is always packed and it hardly stops anywhere it just drives past, it only stops at its stops station. The Rea Vaya is incapable of stopping at the traffic circle to give way. Sometimes the markings do not indicate restricted pathway for the Rea Vaya, like the traffic circle here, everyone needs to give each other a chance to pass. The Rea Vaya markings need to be reconstructed so that they can be safe for all road users.
- Public transport do not have the required safety features.

Driver behaviour

- The accidents are usually caused by drivers, these drivers drive long distance, and they get fatigued and they fall asleep and when they realise that they are sleeply when it’s too late, the buss could have driven into the bush.
- Human factor: Also which craft plays a role, there is this thing called ‘stongwani’ (falling asleep), that they bewitch people with, especially the taxi drivers. However, ‘stongwani’ (falling asleep) is caused by fatigue. Even if you are not tired, they bewitch you.
- There is a taxi driver that is always sleepy I do not even climb his taxi anymore, and he takes a while before he wakes up. Maybe he does not get enough rest. They rush to be the first on the road.
- People get fits when they are on the road: If you are sitting in the front then you should move the car out of gear, even if they have their hands held tight on the staring, if you keep it out of gear then it will not move. This once happened to me. The driver had a fits attack and he had his hands held tight on the staring wheel, I tried to move it out of gear, but he had his hands held tight to the staring wheel, the taxi was going to roll over, we managed to stop the car by crashing into the car that was in front of us. I do not understand why people who have fits are permitted to drive, because you cannot tell when it is going to happen, it applies to albinos, those people can hardly see, what if there is an accident ahead and he cannot see. I am telling you I went to school with an albino and he could hardly see the board he had to stand up and go right in front with his book to write what was on the board.
- Socialising too much also contributes, you talk so much that you lose concentration
- Life is ultimately in the hands of the driver. That is true and like he mentioned earlier if an accident is approaching your way as the driver they do not sway the car to the right and to the left. Be honest as a driver yourself if you for see danger are you most likely to sway the vehicle so that your life is at risk/ You probably won’t you would also sway the vehicle to the left, which places the passenger at greatest danger.
- Drivers are selfish in our thinking when we drive we only think of ourselves. We do not have much of a choice because we do not have cars, there was a taxi driver that threatened to kill all of us if one person did not pay, you see from that kind of talk that the drivers know they can control their actions during an accident.
- As passengers we also put pressure on the taxi drivers, when we are in a rush we encourage them to drive faster, also because we are full so we complain about comfort ability and the driver then rushes.
- However, taxi drivers drive recklessly, even though they see a caution.

Trucks and bus driver behaviour

- The trucks and busses do not care about other road users because they know they will not be injured they know that your small vehicle will be endangered they are negligent. They don’t care at what speed you are driving, they just cut in front of you knowing very well that it is your vehicle that could possible land under the truck or buss, so obviously you have to make means to avoid them.
- The busses are becoming safer, because they have their own lanes now, the Rea Vaya lanes and they stick to those lanes. Unless other people use the Rea Vaya lanes.
- The bus and truck drivers drive recklessly because they know they are rarely viewed as at fault, even if you took them to court they will ask you, did you not see the big vehicle. You are not even paid if you are hit by a bus or truck. They do not bother checking who was at fault.
- Rea Vaya lanes are on t right, the bus turns on the left, when they turn they do not check the other cars, this Rea Vaya thing has caused a lot of accidents.
- Rea Vaya was made to stop people from taking taxis because most people are using the buss instead of the taxi; taxis cause the most accidents. I have not seen a Rea Vaya driving slowly, and the bus is always packed. Yes they are, because it is cheap it is always packed you will never use Rea Vaya when it is hot; because it is cheap it is
always full.

Pedestrian behaviour
- Social factors among the youth. When we come from parties, we do not care about anything else, because we are drunk. We could go to a spinning car and want to touch it and when the driver sways that car it could hit you and you could lose your limbs. Even those that wear short skirts when you driving, whilst you driving you get distracted and start watching that, if a wind comes her skirt gets lifted and you looking at that and no longer the road. When we are drunk we know that our state of mind is not ok, and some guy decides to spin his car, we want to go and touch that spinning vehicle

Taxi Owner perspective focused on careless driving behaviour of mini-bus taxis, busses and motor cycle driver behaviour, bribery, pedestrian behaviour and vehicle conditions.

Taxi driver behaviour
- In my opinion the drivers must be extremely careful, stop trying to take short cuts, because you can get a head on collision, a bus was at a stop sign , I thought I can over take this bus and after that a traffic officer gave me a fine, and I accepted that ticket because I was in the wrong

Bus driver behaviour
- The bus drivers are careless, because they know they are driving a bigger vehicle, and they know for a fact we will move for them because no one is going to be stubborn and wait for a bus to drive into them

Motor cycle behaviour
- The bikes, we as drivers have to be weary of them because they drive in between cars etc.

Driver behaviour and Bribery in Law enforcement
- Two weeks back there was an accident because of drunk driving and two people passed away. They chased after the driver to let him know he had crossed the stop sign, he bribed the traffic office with 200 rand and went on to kill the two people I am talking about later in the day at transfer with drunk driving. The problem is this bribery

- If you are short of a taxi driver and someone comes to the office and offers to drive, they call you and let you know that there is an available driver for you, you say yes, without checking all documentation and credentials of the person. You find out that that person does not even have a license and we agree; letting them drive. Because our major goal is, we would like someone to reach our target for the day for us. The accidents that that driver is going to cause will all be directed at us owners. Moreover, what happens when he is on the road he is stopped by metro police, he offers them R20. The problem is the weak law enforcement as a whole

- People have licenses that they got from where ever, you can tell by the way someone drives if they have been to driving school or not. So we were thinking of doing our own assessment to evaluate our drivers. For example, a person will just stop in the middle of a T-junction to get a passenger to climb their taxi; and when you indicate to them that they are blocking the road they curse at you. We as the taxi association want to start some form of training so people can be reminded of what humanity is on the road. Like there was an accident on Ruth first a massive one, the driver had gone off drinking and then decided to start loading passengers again. There were bodies everywhere, the sad part of all this is the culprit; the taxi driver, was not injured he was extremely drunk at the back of the police van, and lives had been lost because of him. On top of that he has ruined someone car. When these people leave, the taxi is supposed to have a route form indicating how many people go on it and where it goes, to and from routes of the vehicle. You find cars that go out without a route form. Therefore, these are some of the things we are trying to fix. You can’t put everything on the hands of the metro police; these people are humans like us and might also have cars that are not road worthy

- Not all taxi drivers are the same, as I was mentioning the taxi drivers are not the same, some are ignorant. Drivers are not the same. This is caused by people who know the k53 rules, regarding when you should go and when you should stop. The painful thing about all this is even if the metro police come, they are just going to take him to some corner, and he will bribe them. What needs to be addressed is bribe, being hush on taxi industry and bribe will help

Pedestrian behaviour
- In my view the pedestrians do not dress accordingly at night, they have no bright items. I think workshops regarding dress codes could help.

- Cause children don’t check, if other children cross, they just follow

- Another point is when these pedestrians get off a taxi they want to cross the road immediately they don’t check at the back if there are other cars coming; they just want to cross in front of the taxi

- I was driving a venture at 60 km/h speed; this woman was rushing to go to the bus top. This girl was rushing to the bus stop I had to sway to try not to hit her but I did, her mother was standing behind the bus. So she was hit. Therefore, when you evaluate that particular accident you see that the fault is that of the pedestrian because she was rushing to the bus stop and was not alert of what is going on the road. Pedestrians do not look. I do not blame them completely because our drivers are useless we do not enforce the laws on our drivers.
If you note the foreigners are careless on the road, they cross the road with baggage a child and an animal.

The law says there should not be pedestrians crossing the freeway, and your car is not allowed to stop on the freeway. They also waiting for lifts, so they would still wait on the highways. I lived in the XX area, and the taxis take too long within the area before they go to town, so people would rather take the risk of going to the high way then lose their jobs, people do not know the rules of the road. It isn’t often that a driver gets hit by a car, so I agree with the view that people should be taught about rules.

Vehicle conditions:
- We have to make sure people who drive our cars have the correct papers, these people call us and tell us that something is wrong with our vehicles and what do we say, take the car to some random mechanic. And then the person goes and gets into an accident because of the poor condition of such cars.

Driver behaviour:
- Perhaps also a culture we have developed here in Gauteng that you know that every weekend and month end you are going to get drunk and you know very well no one will dare to arrest you.

Traffic officer perspective suggested that multiple causes exist that are inter-linked with each other. The most common causes focus on driver behaviour, vehicle, and weather conditions.

- Usage of mobile phones, all people tend to be guilty in this regard
- Drinking and driving, especially the Taxi and Truck drivers
- Reckless driving, especially the Taxi drivers
- Un-roadworthy vehicles
- Speeding vehicles, especially luxury/sport cars, and taxis
- Overloading, especially trucks, bakkies and taxis
- Environmental factors such as rain and fog.

In summary this section suggests that all main factors, according to these households, contribute in one or the other (directly or indirectly) to fatal road accidents in Gauteng. However, according to these findings four variables are viewed to principally contribute to fatal road accidents, namely:

- Behaviour of drivers
- Traffic Law enforcement
- Behaviour of road users in general
- Behaviour of pedestrians

This is followed by:

- Road conditions
- Vehicle conditions
- Behaviour of passengers

Households in Gauteng generally feel that all road aspects contribute in one way or the other to fatal road accidents. However, the road conditions that contribute the most to fatal road accidents are:

- Potholes in roads
- Traffic lights not working
- Lack of traffic calming measures
- Uneven or poor road surfaces
- Poor street lighting at night
- Damaged /removed road signs
• Road markings not visible
• The lack of pedestrian bridges.

The least contributing factors are:
• Stray animals
• Obstacles in the road
• Road construction areas.

Households in Gauteng generally feel that all vehicle aspects contribute in one way or the other to fatal road accidents. However, the vehicle conditions that contribute the most to fatal road accidents are:
• Overloaded vehicles
• Mini-bus taxis in general
• Un-road worthy vehicles
• Un-licensed vehicles.

Households in Gauteng generally feel that all traffic law aspects contribute in one way or the other to fatal road accidents. The aspect that contributes the most is:
• Fraud and corruption by law enforcement staff
• Fraud and corruption by Driving schools
• Fraud and corruption by DLTC staff
• Non-visibility of law enforcement staff
• Fraud and corruption by VTS staff

Households in Gauteng generally feel that one weather condition, namely rain and hail contributes the most to fatal accidents.

All aspects of road user behaviour contribute in one way or the other to fatal road accidents. The aspect that contributes critically is:
• Drivers speeding excessively
• Drivers intoxicated
• Drivers using mobile phones
• Drivers skipping red robots and stop streets
• Drivers driving recklessly.

The aspects that contribute also to a large extent, though not critically are:
• Drivers not using headlights or indicators
• Drivers fatigued
• Drivers lacking skills and incompetent
• Driver road rage
• Drivers not following safe distances
• Driver’s poor judgement
• Pedestrians intoxicated
• Drivers lack of road safety knowledge
• Drivers no valid license
• Drivers not wearing seatbelts
• Pedestrians crossing roads
• Pedestrians lack of knowledge on road safety
• Pedestrian poor visibility.

Households in Gauteng generally believe that emergency services in one way or the other contribute to fatal road accidents, though to a relatively low level.

The focus groups confirmed the findings of the survey, in the sense that fatal road accidents should be viewed as the result of a range of multiple factors (including driver behaviour, pedestrian behaviour, as well as vehicle and road conditions).

**Passengers** felt that the following factors contribute to fatal accidents: human behaviour (especially of drivers and pedestrians), road signage and narrow roads, vehicle volumes, un-roadworthy cars and poor law enforcement linked to bribes.

**Drivers** focused on driver behaviour, infrastructure, and corruptive law enforcement.

**Pedestrians** focused on driver behaviour and vehicle conditions.

**Learners** focused on limited infrastructure, poor public transport, driver behaviour and reckless pedestrian behaviour.

**Taxi Owners** focused on careless driver behaviour, bribery, and pedestrian behaviour and vehicle conditions.
The above graph suggests that a large percentage of households indicated that fatal road deaths could be reduced in Gauteng. About 38% of households indicated that it could be reduced to a very large extent, while a further 31.9% said to fairly large extent. Just less than 4% of households said it could not be reduced.

The above findings suggest that households in Johannesburg are more likely to believe that road accidents can be reduced, while those in Ekurhuleni the least inclined to think so.
The above findings suggest that all four main aspects have been viewed as important aspects in reducing road deaths in Gauteng in future. The highest rated is vehicle conditions (76.94%) followed by:

- Law enforcement (76.36%)
- Road user behaviour (75.1%)
- Road conditions (74.1%)
The above findings suggest that the perceptions on road conditions, as assisting in reducing fatal road accidents are related to municipal area. Households living in Johannesburg are more likely to believe that improved road conditions will lead to a reduction of fatal road accidents compared with households in Tshwane and Ekurhuleni (80.6% versus 68.9%). Within Johannesburg, as well as Sedibeng and the West Rand, residential type played a significant role in perceptions. Households residing in township areas are more likely to believe that improved road conditions could lead to a reduction in fatal road accidents.
The above findings indicate that perceptions on road user behaviour used in the reduction of fatal road accidents are related to municipal area. Households living in Sedibeng and Johannesburg are more likely to believe that improved road user behaviour will reduce fatal road accidents (79%) compared with households living in Tshwane and the West Rand (74.8%) as well as those living in Ekurhuleni (68.3%).
The above findings show that perceptions on vehicle conditions towards reduction of fatal road accidents are related to municipal area. Households living in Sedibeng, Johannesburg, and West Rand (80%) are more likely to believe that improved vehicle conditions will reduce fatal road accidents, compared with households in Tshwane (75.4%) and Ekurhuleni (72%). Within Sedibeng, Johannesburg and the West Rand, the households living in the suburbs are the least likely to believe so (74.9%).
The above findings suggest that the perceptions on law enforcement on reduction of fatal road accidents are once again related to municipal area. Households living in Sedibeng, Johannesburg and West Rand (80.5%) are more likely to believe that improved law enforcement could reduce fatal road accidents, compared with those in Tshwane (76.1%) and Ekurhuleni (68.4%). The households living in townships and inner-cities within Sedibeng, Johannesburg and the West Rand are more likely to believe so than households living in suburbs (82.3%).
The following discussion zooms into the underlying dynamics of the possible reduction strategies to address fatal accidents rates in Gauteng. The findings in the graph below focus on the road conditions specifically.

It is clear that households in Gauteng generally feel that all road aspects could contribute in one way or the other to reduce fatal road accidents. However, the road conditions that could contribute the most in reducing fatal road accidents in future are:

- Better Street lighting (78.5%)
- Ensure traffic lights are working (77.8%)
- Building traffic calming measures (77.6%)
- Improved maintenance of road surfaces and potholes (76.7%)
- Building of pedestrian off-loading areas (75.4%)
- Repair of road signs (75.3%).

All the remaining factors on road conditions should be considered, though to a lesser extent.

**GRAPH 90**

**PERCEPTIONS ON ROAD ENGINEERING: REDUCTION OF FATAL ROAD ACCIDENTS IN GAUTENG**
The above findings suggest once again that households think that all aspects of road user behaviour should be addressed to reduce fatal road accidents. However, the most appropriate ways are:

- Stricter law enforcement on usage of mobile phones (80.9%)
- Focus more on reckless driving (79.3%)
- More frequent road blocks for drunk-driving/drug-usage (79%)
- More cameras for drivers skipping red robots (77.6%)
- More staff focusing on road rage and aggressive drivers (77.4%)
- Identification and re-testing of high risk drivers (77.1%)
- Checking of motor lights and indicators (77%)
- Law enforcement for pedestrian drunk-walking (76.1%)
- Driver skill education (75.7%)
- Roadblocks checking for learners and drivers licences (75.4%)

All the remaining road user behavioural factors should be considered, though to a lesser extent.
The above findings suggest once again that households believe that all aspects of vehicle condition should be addressed in initiatives focusing on the reduction of fatal road accidents. The findings suggest that:

- Stricter laws on and removal of overloaded vehicles (77.6%) is viewed at the most appropriate factor
- Stricter laws and frequent roadblocks for checking and removal of un-road worthy vehicles (77.2%)
- Fixed period vehicle roadworthiness re-checks (76.8%)
- More frequent roadblocks to check for un-licensed vehicles (76.2%).
The above findings suggest once again that households think that all aspects of law enforcement should be addressed. However, the most appropriate are:

- Eradication of fraud and the corruption of drivers paying bribes (78.4%)
- Awareness programmes on laws and consequences of trespassing (77.8%)
- Eradication of fraud and corruption of law enforcement staff (77.7%)
- Improved emergency services (77.4%)
- Introduction of harsher penalties for speeding, seatbelt non-usage, mobile phone usage and drunk-driving (77%)
- Eradication of fraud and corruption at Licence Testing Centres (76.7%)
- More frequent road blocks checking drivers, passengers and vehicles (76.7%)
- Consistent fine application (76.2%)
- Eradication of Fraud and Corruption within Driving schools (76.1%)
- Eradication of Fraud and Corruption at Vehicle Testing Centres (75.8%)
- Greater Law enforcement visibility (75.7%)

The least preferred is the:

- Introduction of the road traffic penalty system (73.7%)
- Zero tolerance (74%).
The following results portray the perceptions obtained via the focus group discussions.

<table>
<thead>
<tr>
<th>Pedestrians</th>
<th>suggested that Law enforcement focus on the eradication of fraud and corruption by traffic cops, education of passengers and pedestrians on road safety</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Law enforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Law enforcement will not work because they easily get bribed, we as the community (passengers) have to do something, because we are the ones that go into these cars, and when they stop these cars, we encourage the drivers to bribe so we can just pass. We should be giving the traffic offices tip offs</td>
</tr>
<tr>
<td>• The government should also be stricter to people who accept bribes because if you take a bribe and let a car that isn’t road worthy go, you have played a role in the accident that that vehicle gets into, that is why the government should be stricter on them.</td>
</tr>
<tr>
<td>• Furthermore, the government needs to investigate what goes on at driving schools, because one could get a license even though you do not know how to drive as long as you have the cash. The government should find a means to ensure that people who get licenses are those who thoroughly know the rules of the road and know how to drive</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education of passengers and pedestrians</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The passengers just stand anywhere in the main road, even at a hump the passengers wait, and you still have to wait and converse about where the passenger is going etc. Whilst you stopped there in the middle of the road, the traffic officers come and ask you, what you want. If you tell them, the passengers decided to stand in the middle of the road they do not want to know. Point is I will not just hoot and scream for a passenger to come to me, I will go and stop wherever the passenger is waiting. The laws of the road should be taught to passengers, the passengers are the pedestrians after all. I suggest workshops. I think the Government should assist people to assist in how to get the car road worthy, this thing that they tell you to just get your car off the road that doesn’t teach you anything, the drivers need workshops as well as pedestrians</td>
</tr>
<tr>
<td>• Pedestrians need to be taught, I think that if the traffic officers see a pedestrian standing where they should not they should charge that pedestrian and not the driver.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Before 1994 it was older people driving, people who respected the road, now from 18 to 25 get licenses these people are full of games and obviously, there are a lot more cars on the road.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drivers</th>
<th>suggested that community workshops on road safety should be done, especially among pedestrians, school educational programmes for especially black children, implementation of school patrols with traffic officials; continues law enforcement (focusing on taxi’s, drunk pedestrians, mobile phone usage) and fixing infrastructure (potholes, street lights, water drainage, speed humps).</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Community education</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Work with the community, and especially the pedestrians. Should have workshops to teach them the rules of the road. Children who go to school should know that there is a set class to teach road signs. I don’t want to seem like I am blaming apartheid, but most white kids have learners licenses by the time they finish matric they already know the rules of the road, that is because they have classes within their curriculum to teach them the rules of the road. The black children are still oppressed or disadvantaged in this regard; they only learn these things at driving school after tertiary or even at a later stage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>School patrols</th>
</tr>
</thead>
<tbody>
<tr>
<td>• School patrols: All they get are those bips, they do not get anything to encourage them, they should get a certificate, or something tangible, that is encouraging that child could be a traffic officer. There should be a traffic cop present at these schools, then these children will realise they mean something; these taxis don’t listen to these kids</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Law enforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>• I wish the law could be stricter on the taxi drivers, they do not stop</td>
</tr>
<tr>
<td>• They must enforce the law. The punitive measures should be harsher for drivers and the pedestrians because they also play a role</td>
</tr>
<tr>
<td>• Pedestrians walk drunk and they don’t even see the car lights coming you have to stop in the middle of the road, arrest them</td>
</tr>
<tr>
<td>• The law should be enforced throughout the year not just during peak times of the year, Easter time festive’s and so forth</td>
</tr>
<tr>
<td>• I think for the sake of our safety they should bring back the checking of the taxi</td>
</tr>
<tr>
<td>• There is a test that needs to be done say for instance, your rear tale light has been hit, on fixing it the taxi needs to be checked if it is road worthy, but due to bribes no one bothers to do those checks</td>
</tr>
<tr>
<td>• Cell phones and people chatting as they drive</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fix the pot holes because they even ruin the car gear box</td>
</tr>
</tbody>
</table>
• They should fix the roads, like the one they are talking about, has pot holes and so forth, the water there get quite full
• Street lights
• Yes there are no drains on that street. Mostly on urban roads but you do get them on the local streets but never in the suburbs
• Which bring us back to the point I was making that they will do anything for the whites but they take their time when it comes to us
• Speed humps are a good idea, there is a valid reason why streets have humps, in the rural streets we should always be driving thinking a child can crop out of nowhere, so the humps help control the speed we use, I don’t mind speed humps
• The hump accommodates the pedestrian and the driver, There should be a hump before a stop sign
• Some stop signs are weak
• The roads are ok, some freeways are a bit bumpy, and the freeway speed is 120, so they should smooth those up, and within residential areas, they should put speed bumps after every 60 meters so that the drivers do not get the opportunity to drive and accelerate to higher speeds on the residential roads.
• The roads are fine; they should just revamp the road markings and signage

Other
• I also think if transport could be arranged to collect people from certain places

Passengers alluded to vehicle conditions (inspections, replacement of old taxi’s), infrastructure (broaden roads, speed humps, road signs, speeding cameras, more lanes, pavements), law enforcement (do their job, remove non-road worth cars from road, reduce speed, more visible, harsher penalties for drunk walking/driving).

Vehicle inspections
• The department of transport should inspect the old cars. They must inspect the car itself if it is good to carry people
• New cars need to replace the old taxis

Infrastructure
• They should extended the size of our roads, and find a measure to reduce the speed
• make humps on our roads
• I would make speed humps after every 2 kilometres
• The government has to expand the roads in our location
• Yes we are, but they should do something, they could put in humps which will force a car to drive at a reduced speed when approaching that area
• The government should put humps on the streets to help reduce speed
• They must put a lot of road signs
• The government put road signs and people took those and built shacks
• Would you suggest that there be humps before the bend? I think they should different kinds of humps, those silver round ones because the ones currently there you can hardly feel they don’t force you to slow down. Those types of humps are not appropriate for that road, the speed there is 120, and it’s a freeway, the only other alternative would be to change the design of the road
• Perhaps if they could also put cameras there
• Other stop signs are not safe you need not stop you must yield, else you will get hijacked
• Perhaps they should increase the lanes
• They should make pavements for the pedestrians, robots that the pedestrians can control at busy areas
• In other areas they have a bridge and a long wall
• Repaint the stop signs, because people pass knowing that this was a stop sign , their excuse is that it is not visible anymore
• They should introduce those small humps on the high-way

Law enforcement
• The police should just work harder
• Our traffic officers should do their work, the people causing accidents do not have licenses and they do not follow the rules of the road, this would not be the case if the traffic officers did their jobs
• The traffic officers must do their jobs and the drivers should comply with the rules of the road and they should extend the roads
• The people who use the roads should learn to follow the rules of the road, and the cars that are not road worthy the cops would just take them away
• on the busy roads I would place traffic officers, so that the people who are driving without licenses should be locked away
• The speed should be reduced
• In the rural areas within the residential area, the speed should be restricted to 60, because the fast speed of over
100 puts our brothers and sisters in danger
- Traffic officers should attend to the cars that are not road worthy
- The government should hire more traffic officers
- More traffic officers on the roads and the cars that are not road worthy should be kept of the streets
- Speed
- The traffic officers could be more visible that could help, on the R80 road
- There should be cameras at the residents as well not just in town, they should hide them
- I think a harsher penalty could work for drinking and driving and walking and driving
- Perhaps an undercover strategy, to catch out the traffic officers that take bribes, people go about their day to day lives, and offer bribes to catch the officers that take bribes
- Increase road blocks also to check the road worthiness of the cars
- The cops are always there, and they are sitting around them during the day not doing their jobs, even if you went now you will find them there. Even in town they are just there all day eating, they only work when the white traffic officers are also there. I think Gauteng is just not strict enough, in Mpumalanga, things are strict
- How are they controlling the situation in Botswana? They have the death sentence for people who cause accidents that result in deaths, even if you see a Botswana car in SA they drive according to the speed limit
- And the thing with bribes, people just think I have money if they catch me I will get out

Education
- The parents should not let their kids play on the streets. Sometime s they are not playing in the street a reckless driver just comes. The children here in Gauteng are not afraid of cars
- Other parents when teaching their children how to drive they tell them not to wait, and that contradicts what driving school teaches
- Workshops could be a good place to start
- Yes campaigns, and pamphlets at school
- I don’t think pamphlets would work, people just through those in the bins without having read them, you need something shocking it need not be a celebrity, but it could be anyone’s face that has been in an accident and a warning that says do not drink and drive
- Education
  - Learners focused on vehicle conditions (new technology). law enforcement (limit speeds, employ traffic officials in local residential areas, stricter or point system) and road environment(traffic calming)

Vehicle conditions
- Should bring cars like the ones in China or overseas, these cars can sense an accident
- Have cars with restricted speed, so when you see an accident at the maximum speed of 80 you can just break on the freeway.

Law enforcement
- Speed limits; Like the olden day cars the speed ended at 80
- They could create jobs and hire people to assist with the traffic within residential areas. That is a good idea; we could be the local traffic officers
- Get the traffic officers to come inside the residential areas, even if they come in bicycles, because there are people who drive at the speed of 100, thinking they know how to beat the bends and this is their home town they can drive as they please
- All I can say is that the law has to be reinforced in a strict manner, perhaps bring the point system, increased fines

Traffic calming
- The driver care about not damaging their cars at the hump so they are obliged to slow down
- I think they should have the humps at the stop signs as well; this will force them to reduce the speed because they care about not damaging their cars
- They have to put in the humps they put in town, because these single humps they just drive on the side of them

Taxis focused on education, road shows, proper communication, taxi management, school patrols, law enforcement (harsh punishment, visible patrolling and consistency) and improved road infrastructure (pedestrian bridges, highway access and improved street lighting)

Education
- Workshops, they use to show ads in 2003
- The lack of communication between community and government, things would be better, and people would have information. At school, during school days, Monday or Tuesday, just rotate at schools
- Road shows as well, they should go where the people are, at the taxi rank, churches and other social events, bring manikins to show what the impact of an accident can do to a human, make the shows entertaining, in a group of 20 five might listen
- There are too many foreigners, Nigerians, Zimbabweans, and Pakistani. The Gauteng people are picking up bad driving habits, because these people are allowed to drive with their license from their countries. They lack respect, we as people in Gauteng we should teach our children and perhaps with time we can get back to our humanity and
In my view the traffic offices should have shown at schools, to teach the children and the communities, to teach the communities to be alert and aware, maybe that would help, even though not everyone will pay attention, but someone or a few will pick up something and remember when their on the roads, the community and business sector and churches should be involved.

Taxi management

- Taxis are penalised but they do not listen. As the taxi association we are not strict enough on taxi drivers, we should call a board meeting and set the law and make it known what consequences will be faced if the drivers drive inappropriately, the problem is that the majority of the taxis out there belong to non-members. For example if you forget your purse in the taxi and come to us we cannot contact that driver or trace them because they are not listed they are non-members, or when taxi drivers rob passengers when the cops come with their number plates we cannot assist. Us as association, community safety should be the cops, if we should escalate matters of community safety if need be to the minister. Taxi owners have a bad reputation; even our children assume that we are gangsters because of the illegal taxis on the road. We should work to rid the roads of such taxis. It used to be easy to have a healthy relationship with passengers, if you forgot your bag, you came to us we would call the driver and they would bring the bag. People are resorting to lift clubs because drivers are rude and curse the passengers. When we check these drivers are not on our list. People assume you can drop out of school and join the taxi business.

- Taxi management

- Scholar patrols has helped reduce accidents, because the time that those kids go to school is a busy time at about 7am when people are making their way to the trains and to work so the roads are busy at these times.

Law enforcement

- If a taxi or a private car passes where the scholar patrol have prohibited, such drivers should get hush punishment, for example Ephraim from the Cape. As taxi owners you were meant to tell your drivers that they should obey the law, carelessness should be directed at the drivers.
- What must be done; is they must allocate specific people to the road allocated to the taxi drivers and drunken private vehicle drivers.
- Traffic officers visibility It should be done on a daily basis; they should stop being lazy and work.
- The law should be stricter not just for taxi drivers everybody who is in the wrong should be punished.

Road Infrastructure

- Why isn't there a bridge built for pedestrians in XX? The law doesn’t allow for a bridge to be built on a highway, they should rather insure there are sufficient cars driving inside the neighbourhood so people do not have to come to the high way.
- The road should be closed so people cannot access the high way.
- It would help if they put streetlights so you can see who is coming your way and in which directions.

Traffic officers focused on:

- Building more weighbridges, e.g. Moloto Road
- Employing more traffic officers
- Zero Tolerance. People need to be charged and go to court
- Road safety awareness campaigns at Taxi ranks and Businesses
- Implement ARTO
- Arrive Alive Campaign must be more visible and prominent

In summary, these findings suggest that a large percentage of households believe that fatal road deaths can be reduced in Gauteng.

All four main aspects researched have been viewed as important in reducing road deaths in Gauteng in future. The highest rated is vehicle conditions, followed by law enforcement, road user behaviour and road conditions.

Households in Gauteng generally feel that all road aspects could contribute in one way or the other to reduce fatal road accidents. However, the road conditions that could contribute the most to reducing fatal road accidents in future are:

- Better street lighting
• Operational traffic lights
• Building traffic calming measures
• Improved maintenance of road surfaces and potholes
• Building of pedestrian off-loading areas
• Repair of road signs.

Households think that all aspects of road user behaviour should be addressed. However, the most appropriate ways should include:
  o Stricter law enforcement on usage of mobile phones
  o Focus more on reckless driving
  o More frequent road blocks for drunk driving/drug usage
  o More speed cameras and no street racing
  o More cameras for drivers skipping red robots
  o More staff focusing on road rage and aggressive drivers
  o Identification and re-testing of high risk drivers
  o Checking of motor lights and indicators
  o Law enforcement for pedestrian drunk walking
  o Driver skills education
  o Roadblocks checking learners and drivers licences

Households think that all aspects of vehicle conditions should be addressed. However, the most appropriate methods include:
  o Stricter laws on and removal of overloaded vehicles
  o More frequent roadblocks for checking un-road worthy vehicles
  o Fixed period vehicle road worthiness re-checks
  o More frequent roadblocks to check for un-licensed vehicles.
Households think that all aspects of law enforcement should be addressed. The most appropriate methods would be:

- Eradicating fraud and corruption of drivers paying bribes
- Awareness programmes on laws and consequences of trespassing
- Eradication of fraud and corruption of law enforcement staff
- Introduction of harsher penalties for speeding, seatbelt non-usage, mobile phone usage and drunk-driving
- Eradication of fraud and corruption at Licence Testing Centres
- More frequent road blocks checking drivers, passengers and vehicle
- Staff becoming more consistent with applying fines
- Eradicating fraud and corruption of Driving schools.

The least preferred is the:

- Introduction of the road traffic penalty system and
- Zero tolerance.

The focus group discussions largely confirm the survey findings, indicating that a holistic approach is needed to reduce fatal road accidents. The perceptions are mainly focused on:

- Law enforcement
- Education
- School patrols
- Improved road infrastructure
- Vehicle conditions.
The above findings suggest that the largest number of households recommended that speed humps be constructed, followed by visible law enforcement. These two are the most outstanding interventions.

This is followed by 14 other interventions:

- Harsher penalties
- Eradication of bribery
- Effective law enforcement
- Focus on Driver behaviour
- Road safety education
- Road users obeying road rules
- More frequent road blocks
- Road repair
- Speed limit reduction
- More speed cameras, control of speeding
- Checking for drivers licences
- Road-worthiness tests
- Offender arrest
- Drunken-driving programs
A range of other less prevalent aspects were raised, dealing predominantly with road conditions, road user behaviour and vehicle conditions.

The results portrayed on the next page suggest that opinions on interventions are mainly related to municipal area living. It appears that households in Tshwane focused mostly on effective law enforcement, followed by visible law enforcement, eradication of bribery, speed humps, and harsher penalties.

Households in West Rand and Sedibeng focused on speed humps, followed by reducing speed limits, visible law enforcement, harsher penalties and focusing on driver behaviour.

Households in Johannesburg focused on speed humps followed by visible law enforcement, harsher penalties, and eradication of bribery.

Households in Ekurhuleni focused on visible traffic law enforcement, harsher penalties, fixing roads, road safety education, and eradication of bribery and checking of vehicles.
**FIGURE 96**

PERCEPTIONS ON INTERVENTIONS: REDUCTION OF FATAL ROAD ACCIDENTS IN GAUTENG

<table>
<thead>
<tr>
<th>Perceived Cause</th>
<th>Gauteng</th>
<th>Eastern Cape</th>
<th>KwaZulu Natal</th>
<th>Northern Cape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic signal deficiencies</td>
<td>30.2</td>
<td>55.4</td>
<td>32.3</td>
<td>10.2</td>
</tr>
<tr>
<td>Lack of pedestrian crossing</td>
<td>35.1</td>
<td>36.0</td>
<td>34.5</td>
<td>25.3</td>
</tr>
<tr>
<td>Speeding</td>
<td>24.2</td>
<td>43.0</td>
<td>29.3</td>
<td>20.2</td>
</tr>
<tr>
<td>Alcohol</td>
<td>12.1</td>
<td>10.3</td>
<td>14.2</td>
<td>6.5</td>
</tr>
<tr>
<td>Irresponsible driving</td>
<td>9.8</td>
<td>12.3</td>
<td>11.2</td>
<td>14.8</td>
</tr>
<tr>
<td>Road safety education</td>
<td>7.6</td>
<td>4.4</td>
<td>4.3</td>
<td>1.0</td>
</tr>
<tr>
<td>Improvements</td>
<td>2.9</td>
<td>2.6</td>
<td>3.1</td>
<td>1.2</td>
</tr>
</tbody>
</table>

**Note:**
- 3902.0: 24.0
- 25.0: 24.0
- 20.0: 24.0
- 15.0: 24.0
- 10.0: 24.0
- 5.0: 24.0
- 0.0: 24.0

**Perception of Road Safety Issues:**
- 1.0: 1.0
- 2.0: 1.0
- 3.0: 1.0
- 4.0: 1.0
- 5.0: 1.0
- 6.0: 1.0
- 7.0: 1.0
- 8.0: 1.0
- 9.0: 1.0
- 10.0: 1.0

**Perception of Road Safety Interventions:**
- 1.0: 1.0
- 2.0: 1.0
- 3.0: 1.0
- 4.0: 1.0
- 5.0: 1.0
- 6.0: 1.0
- 7.0: 1.0
- 8.0: 1.0
- 9.0: 1.0
- 10.0: 1.0

**Perception of Road Safety Education:**
- 1.0: 1.0
- 2.0: 1.0
- 3.0: 1.0
- 4.0: 1.0
- 5.0: 1.0
- 6.0: 1.0
- 7.0: 1.0
- 8.0: 1.0
- 9.0: 1.0
- 10.0: 1.0

**Perception of Road Safety Improvements:**
- 1.0: 1.0
- 2.0: 1.0
- 3.0: 1.0
- 4.0: 1.0
- 5.0: 1.0
- 6.0: 1.0
- 7.0: 1.0
- 8.0: 1.0
- 9.0: 1.0
- 10.0: 1.0

**Perception of Road Safety Enforcement:**
- 1.0: 1.0
- 2.0: 1.0
- 3.0: 1.0
- 4.0: 1.0
- 5.0: 1.0
- 6.0: 1.0
- 7.0: 1.0
- 8.0: 1.0
- 9.0: 1.0
- 10.0: 1.0

**Perception of Road Safety Awareness:**
- 1.0: 1.0
- 2.0: 1.0
- 3.0: 1.0
- 4.0: 1.0
- 5.0: 1.0
- 6.0: 1.0
- 7.0: 1.0
- 8.0: 1.0
- 9.0: 1.0
- 10.0: 1.0
6. CONCLUSIONS

The following conclusions are based on these findings:

- The **demographics** generally suggest that the households and respondents surveyed were predominantly from Johannesburg, Ekurhuleni, and Tshwane regions. Slightly more females than males took part; mostly black and white respondents; mostly Zulu, Southern Sotho, Afrikaans, and speaking; fairly literate. Nearly half of the respondents have never been married; whilst a large group of respondents are unemployed, with no personal income; average household size is 3.78 people; mostly South African citizens; and mostly living in formal dwelling structures, though one in ten still lives in informal dwellings.

- In terms of **household transport mode**, households in Gauteng make use of four transport modes. The most common is “Walking/by foot”, followed by the usage of mini-bus taxis, usage motor cars, and bus services. These four modes suggest that large groups of the Gauteng population should be pedestrians, followed by passengers and drivers of vehicles. Ownership of different types of vehicles is limited, with about only a third of households owning a motor car. Of major concern is the low level of licensed mini-bus taxi’s and especially motor cycles.

- A fair percentage of pedestrians, passengers, drivers and other road users are put daily at risk due to a variety of **improper driving behaviours**. These risks are mostly related to municipal area, area living, personal income levels, gender, and racial groups. Of major concern is the:
  
  - Motor cyclists or cyclists not using helmets  
  - Not keeping safe distances  
  - Using mobile phones  
  - Not adhering to traffic laws and regulations  
  - Speeding  
  - Not having a valid licence  
  - Not using seatbelts (driver and passengers)  
  - Paying bribes instead of paying traffic fines.

About half of the households received traffic fines, mostly for speeding, parking; not using seatbelts, using mobile phones, driving without a licence, and not stopping at red robots. Very few were fined for drunk-driving.
Pedestrian behaviour within households are related to variables such as area living (municipal area and suburban/township/inner-city locations), gender, income levels of households/individuals and occupation. The safety of pedestrians and other road users are put at risk by pedestrians:

- Non-use of visible clothing at night
- Crossing streets and using taxi/bus off-loading areas recklessly
- Not using pavements or pedestrian bridges
- Walking on highways and busy roads
- Walking while intoxicated.

Perceptions on the behaviour of drivers and pedestrians within households suggest that households in Gauteng should generally be prone to road accidents.

It is clear that fatal road accidents still occur, despite interventions by the Gauteng Government. **Actual fatal road accidents** in Gauteng, among these households, are related to specific:

- Vehicle types: Predominantly motor cars and mini-bus taxis
- Causes: Driver and pedestrian behaviour
- Location: all areas (including residential areas, but mostly on freeways and city centres)
- Day of the week: least on Mondays and Tuesdays and predominantly over weekends
- Time of day: Early morning and late afternoon to midnight
- Activities involved: visiting friends/family, workplace, holiday and shopping.

Various underlying factors of fatal road accidents on a household level have been identified such as racial group, household/personal income, and municipal area living in Gauteng.

The focus groups suggested that some passengers were involved in fatal road accidents, while some referred to situations. Drunk-driving, speeding, reckless overtaking, not stopping at red robots, and the environment were identified as the main causes. None of the drivers has been involved in accidents where there had been fatalities, though some had been involved in accidents; mostly due to negligent pedestrian behaviour, high-jacking situations, rainy conditions, and drivers not allowing adequate following distances. One pedestrian was involved though not as a pedestrian, but as a passenger: due to drunk-driving, non-licensed, un-road worthy vehicle and speeding. None of the learners had been involved in an accident where there had been a fatality. None of the taxi owners was involved directly though some family members were. Both were pedestrians; accident due to speeding, and improper pedestrian crossing.
The focus groups furthermore indicated that the following road user groups are at high risk:

**Passenger perspective:** The opinion generally was that pedestrians and drivers are at most risk.

**Driver perspective:** Drivers are most at risk; especially the taxi drivers, youth, and middle age people.

**Pedestrian perspective:** Passengers, pedestrians and drivers are at high risk, male and females, children and the youth.

**Learner perspective:** Passengers, but especially pedestrians.

**Taxi owners** indicated mixed opinions on gender and age.

**Traffic officers** indicated that all road users are at risk, but especially mini-bus taxi and public transport passengers.

- Negative opinions have been raised on certain aspects of current road safety in Gauteng, with the most negative opinions concerning:
  - Mini-bus taxi driver behaviour
  - Motor car driver behaviour
  - Road conditions
  - Bus driver behaviour
  - Truck driver behaviour
  - Pedestrian behaviour
  - Traffic law enforcement.

The most positive opinions expressed were:

- Behaviour of bicycle drivers
- Public awareness campaigns
- Road Traffic management
- Road conditions
- Emergency services.

Thus, the findings suggest that the behaviour of drivers, pedestrians, and traffic officers are the main aspects rated negatively, while road conditions also contributed to some extent.

Opinions on road safety are influenced mainly by variables such as race, municipal area, household income, gender and age differences.
Observation results suggest that the road environment close to residential areas of households do pose a road safety problem, especially in view of the risky driver and pedestrian behaviour of households surveyed. This includes:

- No traffic calming measures nearby
- Poor road markings and signs
- No pedestrian pavements or walkways
- Traffic lights not working
- Uneven road surfaces
- Potholes
- Narrow roads
- Damaged road signs.

Road environment problems are mainly located in township areas and certain municipal areas.

The observations suggest that the drivers, making use of the roads within the residential areas of households, do pose a road safety problem, as many are:

- Not using child restraints
- Not using front seatbelts
- Not using indicators
- Driving recklessly
- Driving vehicles that are in poor condition
- Speeding
- Non usage of helmets (motor cyclists and cyclists)
- Overloading vehicles.

The vehicle problems are mainly located in township areas and certain municipal areas.

The observation results also suggest that the pedestrians making use of the roads nearby the living areas of households do pose a road safety problem:

- Half of observations recorded that pedestrians were crossing streets incorrectly
- Children playing in the streets
- Pedestrians walking in the street
- Pedestrians displaying reckless behaviour.

Furthermore, it is evident that these pedestrian road user risky behaviours are mainly located in township areas and certain municipal areas.
Observations indicate that law enforcement in the areas where people live in Gauteng tend to be relatively low on visibility, and school patrols might be lacking. The problem areas are once again in certain municipal and township areas.

- Mixed feelings exist on whether road users feel safe on the roads in Gauteng. It is clear that more drivers of motor cars/mini-bus taxis and busses feel safe compared to pedestrians, passengers of vehicles, and especially drivers of motor cycles and bicycles. Municipal area and townships/ suburbs/ inner cities once again play a significant role in these perceptions. Of concern is that many households believe that fatal road accidents are a very large problem in Gauteng. The focus groups indicated that all road user groups, except the mini-bus taxi owners / drivers felt that the roads in Gauteng are unsafe.

- Households indicated that all main factors, contribute in one or another way (directly or indirectly) to fatal road accidents in Gauteng. Four principle variables contribute to fatal road accidents, namely:
  - Behaviour of drivers specifically
  - Traffic Law enforcement
  - Behaviour of road users in general
  - Behaviour of pedestrians specifically.

Road conditions, vehicle conditions, and behaviour of passengers contribute to fatal road accidents to a lesser extent.

Households in Gauteng generally feel that all road aspects contribute in one way or the other to fatal road accidents. However, the road conditions that contribute the most to fatal road accidents are:

- Potholes in roads
- Non operational traffic lights
- Lack of traffic calming measures
- Uneven or poor road surfaces
- Poor street lighting at night
- Damaged /removed road signs
- Poorly visible road markings
- The lack of pedestrian bridges.
Households in Gauteng generally feel that all vehicle aspects contribute in one way or the other to fatal road accidents. However, the vehicle conditions that principally contribute to fatal road accidents are:

- Overloaded vehicles
- Mini-bus taxis in general
- Un-road worthy and un-licensed vehicles.

Households in Gauteng generally believe that all traffic law aspects contribute in one way or the other to fatal road accidents. The most critical aspects include:

- Fraud and corruption by law enforcement staff
- Fraud and corruption by Driving schools
- Fraud and corruption by DLTC staff
- Low visibility of law enforcement staff
- Fraud and corruption by VT staff.

Households in Gauteng generally feel that one weather condition, namely rain and hail contributes the most to fatal accidents.

All aspects of road behaviour contribute in one way or the other to fatal road accidents. The most critical aspects include:

- Drivers speeding excessively
- Drivers driving while intoxicated
- Drivers using mobile phones
- Drivers skipping red robots and stop streets
- Drivers driving recklessly

Road behaviour that largely contributes, though not critically include:

- Drivers not using headlights or indicators
- Drivers driving whilst fatigued
- Driver incompetence
- Driver road rage
- Driver unsafe following safe distances
- Driver poor judgement
- Pedestrians walking whilst intoxicated
- Drivers lacking road safety knowledge
- Drivers driving without valid licenses
- Drivers not wearing seatbelts.
- Pedestrians crossing roads recklessly
• Pedestrians lacking knowledge on road safety
• Poor visibility of pedestrians.

Road behaviour that contributes the least to fatal road accidents includes:
• Disabled pedestrians
• Motor cyclist behaviour
• Use of child restraints
• Passengers not wearing seatbelts
• Children playing in the streets
• Pedestrians walking unnecessary in the streets.

Households in Gauteng generally feel that emergency services in one way or the other contribute to fatal road accidents, though to a lesser extent. Some negativity was raised on the slow response rates and incompetence of emergency staff.

The focus groups among road users confirmed the findings of the survey, in the sense that fatal road accidents should be viewed as a result of a range of multiple factors (including driver behaviour, pedestrian behaviour, as well as vehicle and road conditions).

Finally, the findings suggest that a large percentage of households believe that fatal road deaths could be reduced in Gauteng in future.

All four main aspects researched have been viewed as important in reducing road deaths in Gauteng in future. The highest rated is vehicle conditions, followed by law enforcement, road user behaviour and road conditions.

Households in Gauteng generally believe that all road aspects could contribute in one way or the other to reduce fatal road accidents. However, the road conditions that could contribute the most in reducing fatal road accidents in future are:
• Maintenance and upgrading of street lighting
• Ensuring operational traffic lights
• Building traffic calming measures
• Improving the maintenance of road surfaces and potholes
• Building pedestrian off-loading areas
• Road sign repairs.
Households think that all aspects of road user behaviour should be addressed. However, the most critical interventions should focus on:

- Stricter law enforcement on usage of mobile phones
- Reckless driving
- More frequent road blocks for drunk-driving/drug-usage
- More speed cameras and no street racing and skipping red robots
- More staff focusing on road rage and aggressive drivers
- Identification and re-testing of high risk drivers
- Checking of motor lights and indicators
- Law enforcement for pedestrian drunk-walking
- Driver skills education
- Roadblocks checking learner and driver licences.

Households indicated that all aspects of vehicle conditions should be addressed. However, the most appropriate initiatives include

- Stricter laws and removal of overloaded vehicles
- More frequent roadblocks for checking un-road worthy vehicles
- Fixed period vehicle road worthiness re-checks
- More frequent roadblocks to check for un-licensed vehicles.

Households think that all aspects of law enforcement should be addressed. However, the most critical interventions should focus on:

- Eradication of fraud and corruption of drivers paying bribes
- Awareness programmes on laws and consequences of trespassing
- Eradication of fraud and corruption of law enforcement staff
- Institution of harsher penalties for speeding, seatbelt non-usage, mobile phone usage and drunken-driving
- Eradication of fraud and corruption at Licence Testing Centres
- More frequent road blocks, checking drivers, passengers and vehicles
- Consistent traffic fine application
- Eradication of fraud and corruption at driving schools.

The least preferred are the introduction of the Road traffic penalty system and Zero tolerance.

The focus group discussions, largely confirm the survey findings, indicating that a holistic approach is needed to reduce fatal road accidents. The perceptions are mainly focused on:

- Law enforcement
- Education
- School patrols
- Improved road infrastructure and vehicle conditions.
7. RECOMMENDATIONS

The following recommendations are made in terms of reducing fatal road accidents:

- All interventions should take cognizance of the influence of autonomous factors, including the developmental phase of the province. Major backlogs exist in road infrastructure in certain areas due to the legacy of Apartheid, with increased numbers of road users and motor vehicles.

It is suggested that town planning for historically disadvantaged communities be given preference, and that road networks and pedestrian road environments be improved. This should include better street lighting, installation and maintenance of traffic lights, traffic calming measures, road surface upgrading and maintenance, building of pedestrian off-loading zones as well as maintenance and upgrading of road signs. The observations in this study highlighted some problem areas in this regard.

Town planning in these communities should also incorporate sufficient public spaces where children could play (taking them off the streets) and housing developments should ensure safe access to major roads and freeways, with adequate sidewalks and off-loading pedestrian-commuter facilities.

- In terms of household transport mode, attempts should be made to ensure that households make use of the safest transport modes possible, based on their financial circumstances and preferences. Households should be discouraged to make use of transport modes that place them in danger. It is clear that alternative transportation modes need to be investigated. Adequate, safe, reliable, and affordable public transport should be provided, taking into account the high levels of poverty and households which do not have access to a motor vehicle. This should also reduce the road traffic volumes on the roads.

Households with motor vehicles should be encouraged to licence their motor vehicles and to service them regularly. It is suggested that trustworthy accredited community service centres be established -with appropriate training of mechanics. Such centres could assist in reducing unemployment levels and improving Quality of Life in general.

- The risky driver and pedestrian behaviour that exists among a large groups of households need to be addressed urgently. Many of these are due to mere ignorance, where proper communication and awareness campaigns could assist. Other behaviours however, are deeply rooted in household lifestyle. Educational workshops could be used together with media-campaigns to change undesirable lifestyle behaviours, such as the use of excessive alcohol and drugs. A culture of responsible citizenship should be encouraged among individuals, within households and communities.
Households should be encouraged not to make use of drivers driving without valid drivers and learners licenses. It is of major importance to educate households on the **risky road behaviours** of drivers. Such behaviours include drunken-driving, speeding, reckless driving, non-seatbelt use, etc. The same applies to risky pedestrian and passenger road behaviour. It is suggested that road **safety campaigns**, such as Arrive Alive, be increased and implemented on a continuous bases (not only over holiday seasons).

- Households should be encouraged to minimize their traffic offences that place the lives of themselves and other road users at risk. It is suggested that **applicable punitive measures** be put in place, and that systems be put in place to make sure that bribery is eradicated. The **Demerit system** is one such system that should be considered. A **Zero tolerance** approach is needed in terms of speeding, reckless and drunken-driving. This together with awareness and media campaigns could assist in changing undesirable road behaviour. It is suggested that **speed limits** be reduced to 50km per hour in residential areas **where needed**, with a speed limit of 110km/h or less on freeways **close to city centres or neighbourhoods**. Speed limits on Freeway areas, without these activities should be maintained at 120 km/h to avoid frustrating drivers.

- A **better understanding** is required of the nature of fatal road accidents. A range of initiatives could assist in this regard:
  - **Geo-referencing** of fatal road accident sites, with appropriate data on the nature, causes, extent, and identifying hotspots of these accidents. This will greatly assist with the injury prevention and safety promotion in Gauteng.
  - The involvement of reputable state-funded organisations, such as the CSIR, MRC, StatsSA, etc. to conduct integrated, multi-faceted, **technical research** with a view to reducing fatal road accidents.
  - **Social research** is also needed to determine the underlying reasons for risky driver and pedestrian behaviour. Various behavioural and attitudinal change models exist that could be used to determine such dynamics-with the view of using it in behavioural change media initiatives. Focus should be on speeding, drunken-driving, reckless driving and seatbelt use.
  - An appropriate and standardized **monitoring and evaluation** tool needs to be developed and implemented throughout the province to profile fatal road accidents.

- Key-stakeholders involvement in all **spheres of government**, National, Provincial, and Local. All should participate in the development of strategies and action plans (including different **departments** as well) and the implementation thereof. Apart from government, the **private sector** could play a much more prominent role in road safety, as well as the **public** themselves.
Action plans need to be developed that will address the what, who, when and how questions, as well as the outcomes thereof.

The “What” component should at least focus on the:

- Behaviour of road users
- Road environment
- Vehicle environment
- Law enforcement

In terms of road user behaviour, the actions should focus on:

- Stricter law enforcement on usage of mobile phones
- Reckless driving
- More frequent road blocks for drunken-driving/drug-usage
- More speed cameras and no street racing and skipping red robots
- More staff focusing on road rage and aggressive drivers
- Identification and re-testing of high risk drivers
- Checking of motor lights and indicators
- Law enforcement for pedestrian drunk-walking
- Driver skills education
- Roadblocks checking learner and driver licences.

It is clear that the road environment (including residential areas in previously disadvantage communities) pose a major road safety problem, and that attention should be given to:

- Building more traffic calming measures (mini-circles or speed humps)
- Improving road markings and signs
- Building or improving pedestrian pavements or walkways
- Maintaining traffic lights
- Maintaining road surfaces and potholes
- Broadening roads
- Replacing damaged road signs
- Improving street lighting
- Building of pedestrian off-loading areas.

Attention on vehicle conditions should focus specifically on:

- Stricter laws on and removal of overloaded vehicles
- More frequent roadblocks for checking un-road worthy vehicles
- Fixed period vehicle road worthiness re-checks
- More frequent roadblocks to check for un-licensed vehicles.
Attention to law enforcement should focus on:

- Improved visibility and action
- Eradication of fraud and corruption of drivers paying bribes
- Awareness programmes on laws and consequences of trespassing
- Eradication of fraud and corruption by law enforcement staff
- Introduction of harsher penalties for speeding, seatbelt non-usage, mobile phone usage and drunk-driving
- Eradication of fraud and corruption at Licence Testing Centres
- More frequent road blocks checking drivers, passengers and vehicle conditions
- Consistent traffic fine implementation
- Eradication of fraud and corruption at driving schools
- Zero tolerance with fraud and corruption (Traffic officers, Licence Departments, Driving schools, Vehicle Testing centres, and drivers) and focusing on drunken-driving, speeding, or reckless driving, and non-seatbelt usage.

- It is lastly recommended that existing Emergency services should be equipped with the necessary medical equipment. Skilled staff and proper patient referral strategies need to be put in place.
**APPENDIX A: SELECTION GRID**

### A) SELECTION OF HOUSEHOLD
- Identify all households living on the stand and assign a number starting from 1 to each of the households, according to household size.
- Then select randomly a household using the Selection Grid.

<table>
<thead>
<tr>
<th>Household Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>9+</th>
</tr>
</thead>
</table>

### B) SELECTION OF AVAILABLE RESPONDENT
- Determine and record how many people, in selected household, qualify (18 years or older) and are available to participate.
- Then select randomly a person using the Selection Grid.

<table>
<thead>
<tr>
<th>Respondent number</th>
<th>Age</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SELECTION GRID

<table>
<thead>
<tr>
<th>Questionnaire number</th>
<th>Number of households and respondents to be selected from</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>2</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>3</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>4</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>5</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>6</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>7</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>8</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>9</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>10</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
</tbody>
</table>
APPENDIX B: QUESTIONNAIRE

I am ..................................... from SearchWise Solutions, a research company on behalf of Gauteng Department of Community Safety.

Road traffic accidents are one of the leading causes of death among road users in Gauteng. Gauteng Province recorded the highest number of road accidents and fatalities during 2004 to 2009. Policy and Research Unit has decided to undertake research on road safety measures and strategies that were put in place in Gauteng in order to see if they really address the accidents and fatalities that continue to be high. This study aims to provide insight which will help in the development of new or improved road safety interventions and education that are already in existence, particularly in relation to drivers' skill and pedestrians' knowledge.

Households in Gauteng will participate in this study. Your household has randomly been selected to participate in this very important study. We would like to interview someone in your family that is 18 years or older, and it will take about 45 minutes.

Confidentiality
All the information obtained during this study will be treated with confidentiality and will remain the product of the department. Only officials from research unit will have access to it. We therefore guarantee that whatever you say will be treated with strictest confidentiality and your participation will be greatly appreciated.

Please feel free to answer any question. You are not compelled / obliged to answer any question that you feel uncomfortable with. If you have any queries about the study, please feel free to contact Soleni Mobsomolli at 011 (689-3600) during office hours.

Thanks very much

Soleni Mobsomolli
Gauteng Department of Community Safety

OFFICE USAGE:

<table>
<thead>
<tr>
<th>A. Household no. selected</th>
<th>B. Respondent no. selected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respondent Details and Surname</th>
<th>Respondent Contact Details (Website/Home/Email/Address)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1)
## SECTION A
### PERSONAL AND HOUSEHOLD INFORMATION

1. Area living (Observation):

<table>
<thead>
<tr>
<th>Township</th>
<th>Johannesburg</th>
<th>Soweto</th>
<th>Saldanha</th>
<th>Solheim</th>
<th>Vrededorp</th>
<th>West Rand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Township</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Johannesburg</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
</tbody>
</table>

2. Respondent's gender (Observation):

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

3. Respondent's race (Observation):

<table>
<thead>
<tr>
<th>Black/African</th>
<th>Coloured</th>
<th>Indian/Asian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

4. Your age:

<table>
<thead>
<tr>
<th>15-24 years</th>
<th>25-34 years</th>
<th>35-54 years</th>
<th>55-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>

5. Your home language:

<table>
<thead>
<tr>
<th>Language</th>
<th>English</th>
<th>Afrikaans</th>
<th>Other, specify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

6. Your highest academic level:

<table>
<thead>
<tr>
<th>Highest Academic Level</th>
<th>None</th>
<th>Some Primary School</th>
<th>Primary School completed</th>
<th>Some Secondary School</th>
<th>Grade 12*</th>
<th>Post School Diploma/Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

7. Your marital status:

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Married (Traditional)</th>
<th>Married (Western)</th>
<th>Living together</th>
<th>Divorced</th>
<th>Separated</th>
<th>Widow/Widower</th>
<th>Never Married</th>
<th>Other, specify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>

8. Your occupation:

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Formal</th>
<th>Informal</th>
<th>Semi-formal</th>
<th>Informal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

9. What is your and your household's (if applicable) estimated monthly income? (That is, take home pay in your pocket - after deducting tax, pension and medical and deductions. It includes income from all sources/your self-family members, pensions, grants, rentals, etc.)

<table>
<thead>
<tr>
<th>Estimated Monthly Income</th>
<th>Less than R500</th>
<th>R500-R1 199</th>
<th>R1 200-R1 999</th>
<th>R2 000-R4 999</th>
<th>R5 000-R9 999</th>
<th>More than R10 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

10. Your citizenship:

<table>
<thead>
<tr>
<th>Citizenship</th>
<th>South African</th>
<th>Non-South African</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

11. How many people currently live in your household? Number of people in household

12. Dwelling type (Observation):

<table>
<thead>
<tr>
<th>Dwelling Type</th>
<th>Formal</th>
<th>Informal</th>
<th>Semi-formal</th>
<th>Informal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
SECTION B  HOUSEHOLD TRAVELLING MODE AND ROAD BEHAVIOUR IN GAUTENG

1. What is your household’s mode of road transport in Gauteng? (Multiple responses)

<table>
<thead>
<tr>
<th>Mode of Transport</th>
<th>Motor car</th>
<th>Minibus taxi</th>
<th>Bus</th>
<th>LCV</th>
<th>Truck</th>
<th>Motorcycle</th>
<th>Bicycle</th>
<th>By foot (Walking)</th>
<th>Other, specify</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Does your household have any of the following vehicles, and if they are used are they currently licensed and in proper condition? (L = licensed, O = not licensed)

| Vehicle Type | Yes | No | Good | Average | Poor | L | O
|--------------|-----|----|------|---------|------|---|---|
| Motor car(s) | 1   | 2  | 1    | 2       | 2    | L | O
| Minibus taxi | 1   | 2  | 1    | 2       | 2    | L | O
| Bus          | 1   | 2  | 1    | 2       | 2    | L | O
| LCV          | 1   | 2  | 1    | 2       | 2    | L | O
| Truck        | 1   | 2  | 1    | 2       | 2    | L | O
| Motorcycle   | 1   | 2  | 1    | 2       | 2    | L | O
| Bicycle      | 1   | 2  | 1    | 2       | 2    | L | O

3. If your household are using motorised vehicles, do the drivers of your household vehicles:

<table>
<thead>
<tr>
<th>Habit/Behaviour</th>
<th>Yes</th>
<th>No</th>
<th>Be Not Know</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>All have legal learner driver license (instead of late license)</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Usually make use of the vehicles driven seat belts</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Usually make sure that passengers/children use their seat belts</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Usually drive faster than the road speed limits</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Usually make use of helmets (in case of motor cycles, bicycles)</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Talk or text on their mobile phones while driving</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Usually adhere to road traffic laws and regulations</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Drive recklessly/generally distracted</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Display proper judgement, when driving</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Display rash or aggressive road behaviour</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Sometimes overload the vehicles</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Driving while intoxicated</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Stop stop signs</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Drive when they are tired</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Pay bribes to law enforcement staff in place of paying traffic fines</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Usually keep safe following distance</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>99</td>
</tr>
</tbody>
</table>

4. How many traffic fines have your household got the past 12 months in Gauteng? ________ Number of traffic fines

5. If received any fines, what type of fines? (e.g., speeding, cell phone usage, illegal parking, etc.)

6. If some of your household members are ‘Walking’ as a mode of transport, do they usually?

<table>
<thead>
<tr>
<th>Habit/Behaviour</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use visible clothing, dress at night</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Walk sober at the time</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Crossing streets and roads at small streets/less and bus stop/tung roads only</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Walk on highways and busy roads</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Walk on the pavements or pedestrian walkways/bridges</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

SECTION C  HOUSEHOLD’S FATAL ROAD ACCIDENT INVOLVEMENT IN GAUTENG

1. Have any of your household members been involved in a fatal road accident (i.e. one that a road accident in which one person at least have died) in Gauteng over the past 12 months?

<table>
<thead>
<tr>
<th>yes</th>
<th>no</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

If yes, then proceed to following Section (Section D)

2. How many of these fatal road accidents have your household been exposed to?

   Number of Fatal accidents over past 12 months in Gauteng

(2)
2. How big do you think is the problem of fatal road accidents (deaths due to road accidents) in Gauteng?

<table>
<thead>
<tr>
<th>Problem Description</th>
<th>Not a problem at all</th>
<th>Early small problem</th>
<th>Moderate problem</th>
<th>Fairly large problem</th>
<th>Very large problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uneven and poor road surfaces</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Potholes on roads</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Potholes in construction/maintenance sites</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Obstacles in roads (trees, ditches, etc.)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Narrow roads (no shoulders)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>The lack of pedestrian facilities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>The lack of pedestrian bridges</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Traffic lights not working</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Road signs damaged or removed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Road markings (road paint) not visible</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Lack of traffic calming measures (humble blocks, rumble strips, speed bumps, etc.)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Lack of school safety at schools</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Stray animals on roads</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Poor street lighting at night</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

4. To what extent do you think each of the following vehicle conditions and types contribute to fatal accidents in Gauteng?

<table>
<thead>
<tr>
<th>Condition/Type</th>
<th>Not at all</th>
<th>Early small</th>
<th>Moderate</th>
<th>Fairly large</th>
<th>Very large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overloaded vehicles (passenger goods)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Un-roadworthy vehicles</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Un-licensed vehicles</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Motor cars in general</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Minibus taxis in general</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Public transport in general</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Light delivery vans in general</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Trucks in general</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Motor cycles and bicycles in general</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

5. To what extent do you think each of the following traffic control measures contribute to fatal accidents in Gauteng?

<table>
<thead>
<tr>
<th>Measure</th>
<th>Not at all</th>
<th>Early small</th>
<th>Moderate</th>
<th>Fairly large</th>
<th>Very large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-existence of law enforcement staff</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Fraud and corruption by law enforcement staff</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Fraud and corruption by DLTC staff</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Fraud and corruption by VIP staff</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Fraud and corruption by Driving Schools</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

6. To what extent do you think does each of the following weather conditions contribute to fatal accidents in Gauteng?

<table>
<thead>
<tr>
<th>Condition</th>
<th>Not at all</th>
<th>Early small</th>
<th>Moderate</th>
<th>Fairly large</th>
<th>Very large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rain/hail</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Fog/smoke</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Ice/snow</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Visibility</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

7. To what extent do you think does each of the following infrastructure-related issues contribute to fatal accidents in Gauteng?

<table>
<thead>
<tr>
<th>Issue</th>
<th>Not at all</th>
<th>Early small</th>
<th>Moderate</th>
<th>Fairly large</th>
<th>Very large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slow response of Emergency Services</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Insufficient staff of Emergency Services</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
8. To what extent do you think each of the following *rei Diễn* contribute to fatal accidents in Gauteng?

<table>
<thead>
<tr>
<th>Factor</th>
<th>Not at all</th>
<th>Partly small extent</th>
<th>Moderate extent</th>
<th>Partly large extent</th>
<th>Very large extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrians that are disabled (blind, colour blind, hearing problems, elderly, etc.)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Pedestrians crossing roads unnecessarily in traffic</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Pedestrians crossing roads where they should not (including skipping red robots)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Pedestrians intoxicated</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Pedestrians poor visibility</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>People, especially children playing in the streets</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Passengers not wearing seatbelts</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Passengers not using child restraint in vehicles</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drivers not having valid learner driver license</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drivers lacking driving skills and knowledge</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drivers not wearing seatbelts</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drivers intoxicated</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drivers fatique</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drivers displaying road rage and aggressive road behaviour</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drivers poor judgement</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drivers speeding excessively</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drivers skidding, red lights, and stop streets</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drivers using mobile phones while driving</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drivers not using head lights, indicators when needed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drivers not applying safe following distances</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drivers driving recklessly, oppressively</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Motor Cyclists not wearing helmets</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Pedestrians lack of knowledge and awareness on road safety aspects in general</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Drivers lack of knowledge and awareness on road safety aspects in general</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**SECTION F: OPINIONS ON HOW ROAD DEATHS CAN BE REDUCED IN GAUTENG**

1. To what extent do you think the number of road accidents in future can be reduced in Gauteng?

<table>
<thead>
<tr>
<th>Extent</th>
<th>Not at all</th>
<th>Partly small extent</th>
<th>Moderate extent</th>
<th>Partly large extent</th>
<th>Very large extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

2. To what extent do you think each of the following aspects will in reducing road accidents in Gauteng?

<table>
<thead>
<tr>
<th>Road Improvement Areas (extant in reducing fatal road accidents in Gauteng)</th>
<th>Not at all</th>
<th>Partly small extent</th>
<th>Moderate extent</th>
<th>Partly large extent</th>
<th>Very large extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved maintenance of poor road surfaces</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Fixing of potholes on roads</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Better marking of areas at road construction/maintenance sites</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Broadening of narrow roads (no shoulders)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Building of pedestrian walkways/pavements</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Building of pedestrian bridges</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Building of more appropriate passenger loading and off-loading point</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Ensuring that traffic lights are working</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Repair damaged or unattended roads</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Road markings (road paint) that are not visible be reversed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Building of traffic calming measures (roundabout, mini-lambouri, speed bump, etc.)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Compulsory school parking at schools</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Better lighting to keep away animals off roads</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Better street lighting at night</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. (Relevance of policies (exam in reducing fatal road accidents in Gauteng)</td>
<td>Not at all</td>
<td>Fairly small extent</td>
<td>Moderate extent</td>
<td>Fairly large extent</td>
<td>Very large extent</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pedestrian Public education programmes for pedestrian children, elderly and drunk-walking</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>More Road Safety campaign to change behaviour</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Sinclair law enforcement checking on pedestrians walking/bicycling under an overpass</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Sinclair law enforcement checking for pedestrians drunk-walking/drug abused, remove from road</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Improved safe pedestrian transport systems for pedestrians and cyclists</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>More road blocks for drivers who have been convicted/driver licence remove from road</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>More period learner/driver licence re-testing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Driver awareness programmes (including driving in poor weather conditions)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Sinclair law enforcement checking for driver and passenger seatbelt usage/children restraint</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>More frequent road-blocks for drunk-driving/drug abused, and removal of bi-roads</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>More speed traps and cameras for drivers speeding excessively/street racing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>More cameras for drivers wearing red robots</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Lower speed limit for vehicles in certain roads in time with local conditions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Sinclair law enforcement focusing on drivers using mobile phones while driving</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Sinclair law enforcement staff checking on the usage of motor lights and indicators by drivers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Sinclair law enforcement staff focusing on road users, driving behaviour</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Sinclair law enforcement staff focusing more on road users and aggressive driving behaviour</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Sinclair law enforcement staff focusing more on road rage and aggressive driving behaviour</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Sinclair law enforcement for Motor Cyclists/cyclists not wearing helmets</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Vehicles conditions (exam in reducing fatal road accidents in Gauteng)</th>
<th>Not at all</th>
<th>Fairly small extent</th>
<th>Moderate extent</th>
<th>Fairly large extent</th>
<th>Very large extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sinclair laws on and removal of Overloaded vehicle (passenger/goods) from roads</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>More frequent road blocks checking for un-road worthy vehicles (tires/breaks/steering lights, etc.) and removal from roads</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>More road blocks to check for non-licensed vehicles</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Road period - vehicle roadworthiness test/lic</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Injury Law enforcement expected (because of Wrongful Technology, VLR, VFA (exam in reducing fatal road accidents in Gauteng))</th>
<th>Not at all</th>
<th>Fairly small extent</th>
<th>Moderate extent</th>
<th>Fairly large extent</th>
<th>Very large extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction of road traffic penalty system (driver system)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Introduction of heavier road penalties for speeding, seatbelt usage, child restraints,</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Cellphone usage, drink-driving, etc.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Applying zero tolerance to all road safety offenders</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Law enforcement staff becoming more visible</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Law enforcement staff having more regularity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Law enforcement staff becoming more keen to apply the laws</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Graduating Fraud and corruption by law enforcement staff</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Graduating Fraud and corruption by drivers that are paying bribes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Graduating Fraud and corruption by drivers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Graduating Fraud and corruption by Vehicle Testing Centres (VTR)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Graduating Fraud and corruption by Vehicle Testing Centres (VTs)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Improved emergency services (fast/first on the scene, etc.)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Public Road Safety Awareness programmes on laws and consequences of violating</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

6. What other measures should be taken to ensure that fatal road traffic accidents will be reduced in future in Gauteng?
<table>
<thead>
<tr>
<th><strong>ROAD TRAFFIC OBSERVATION CHECKLIST</strong></th>
<th>Name of road street: ____________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DAY:</strong></td>
<td>Monday (1) Tuesday (2) Wednesday (3) Thursday (4) Friday (5) Saturday (6) Sunday (7)</td>
</tr>
<tr>
<td><strong>TIME:</strong></td>
<td>06:00-09:00 (1) 09:00-12:00 (2) 12:00-15:00 (3) 15:00-18:00 (4) 18:00-21:00 (5)</td>
</tr>
<tr>
<td><strong>ROAD ENVIRONMENT/FEATURES:</strong></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Tarred road (1) Gravel road (2)</td>
</tr>
<tr>
<td>4.</td>
<td>One-way road (1) Two-way road (2)</td>
</tr>
<tr>
<td>6.</td>
<td>Road surface (1) Road surface condition (2)</td>
</tr>
<tr>
<td>7.</td>
<td>Road clear of obstacles (1) Road not clear of obstacles (2)</td>
</tr>
<tr>
<td>8.</td>
<td>Sway, animals in road (1) Road clear of sway animals (2)</td>
</tr>
<tr>
<td>9.</td>
<td>Pedestrian crossing (1) No pedestrian crossing (2)</td>
</tr>
<tr>
<td>10.</td>
<td>Road very narrow (1) Road standard size at least (2)</td>
</tr>
<tr>
<td>11.</td>
<td>Pavement walkway for pedestrians (1) No pavement walkway for pedestrians (2)</td>
</tr>
<tr>
<td>12.</td>
<td>Traffic lights working (1) Traffic lights not working or damaged (2)</td>
</tr>
<tr>
<td>13.</td>
<td>Road signs clear of operation (1) Road signs not clear of operation (2)</td>
</tr>
<tr>
<td>14.</td>
<td>Road markings clear (1) Road markings not clear (2)</td>
</tr>
<tr>
<td>15.</td>
<td>No pedestrian bridge nearby (1) Pedestrian bridge nearby (2)</td>
</tr>
<tr>
<td>16.</td>
<td>No traffic signals present (1) Traffic signals present (2)</td>
</tr>
<tr>
<td>17.</td>
<td>Intersection (1) No intersection (2)</td>
</tr>
<tr>
<td><strong>VEHICLE FEATURES AND DRIVER BEHAVIOUR:</strong></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Motor Car (1) Tuk-tuk (2) Bus (3) Light delivery van (4) Truck (5) Motorcycle (6) Bicycle (7)</td>
</tr>
<tr>
<td>19.</td>
<td>High volume - vehicles on road (1) Medium volume - vehicles on road (2) Low volume - vehicles on road (3) No vehicles on road (4)</td>
</tr>
<tr>
<td>20.</td>
<td>Vehicles generally in good physical condition (1) Vehicles generally in poor physical condition (2)</td>
</tr>
<tr>
<td>21.</td>
<td>Overloaded with passengers and or goods (1) Not overloaded with passengers and or goods (2)</td>
</tr>
<tr>
<td>22.</td>
<td>Speeding (1) Not speeding (2)</td>
</tr>
<tr>
<td>23.</td>
<td>Reckless driving-promoting red lights on traffic lights (1) No reckless driving-promoting red lights on traffic lights (2)</td>
</tr>
<tr>
<td>24.</td>
<td>Front vehicle used (1) No vehicle used in front (2)</td>
</tr>
<tr>
<td>25.</td>
<td>Child restraint used (1) Child restraint not used (2)</td>
</tr>
<tr>
<td>26.</td>
<td>Motor lights on early morning/evening and at night (1) Motor lights not on early morning/evening and at night (2)</td>
</tr>
<tr>
<td>27.</td>
<td>Indicators used when turning (1) No indicators used when turning (2)</td>
</tr>
<tr>
<td>28.</td>
<td>Motor overtakes left hand (1) Motor overtakes right hand (2)</td>
</tr>
<tr>
<td><strong>PEDESTRIAN FEATURES AND ROAD BEHAVIOUR:</strong></td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>Babies/Toddlers (1) School children (2) Adults Youths adults (3) Elderly (4) Disabled (5)</td>
</tr>
<tr>
<td>30.</td>
<td>High volume pedestrians on road (1) Medium volume pedestrians on road (2) Low volume pedestrians on road (3) No pedestrians (4)</td>
</tr>
<tr>
<td>31.</td>
<td>Reckless walking/Drunk-walking (1) No reckless walking/Drunk-walking (2)</td>
</tr>
<tr>
<td>32.</td>
<td>Children playing in street (1) Children not playing in street (2)</td>
</tr>
<tr>
<td>33.</td>
<td>People walking in street (1) People not walking in street (2)</td>
</tr>
<tr>
<td>34.</td>
<td>People crossing street at crosswalk (1) People not crossing street at crosswalk (2)</td>
</tr>
<tr>
<td><strong>LAW ENFORCEMENT:</strong></td>
<td></td>
</tr>
<tr>
<td>35.</td>
<td>Traffic police visible (1) Traffic police not visible (2)</td>
</tr>
<tr>
<td>36.</td>
<td>School patrol on duty at school (1) No School patrol (2)</td>
</tr>
<tr>
<td>37.</td>
<td>Observed accidents (1) Observed near-accidents (2) Observed no accidents (3)</td>
</tr>
</tbody>
</table>
APPENDIX C: SHOW CARD

SHOW CARD

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very poor</td>
<td>Fairly poor</td>
<td>Neither poor nor good</td>
<td>Fairly good</td>
<td>Very good</td>
</tr>
</tbody>
</table>

SECTION E: QUESTION 1

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very unsafe</td>
<td>Fairly unsafe</td>
<td>Neither unsafe nor safe</td>
<td>Fairly safe</td>
<td>Very safe</td>
</tr>
</tbody>
</table>

SECTION E: QUESTION 2

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not a problem at all</td>
<td>Fairly small problem</td>
<td>Moderate problem</td>
<td>Fairly large problem</td>
<td>Very large problem</td>
</tr>
</tbody>
</table>

SECTION E: Question 3, 4, 5, 6, 7, 8

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>Fairly small extent</td>
<td>Moderate Extent</td>
<td>Fairly large extent</td>
<td>Very large extent</td>
</tr>
</tbody>
</table>

SECTION F: All questions (1, 2, 3, 4, 5)
FOCUS GROUP DISCUSSION GUIDE

- Introduction of study
- Background of each person
- Have you or anyone in your household been involved in a road traffic accident in Gauteng that resulted in a road death? If so, can you tell me what happened?
- Which road user groups are most at risk in Gauteng, in terms of getting involved in road traffic deaths? (Probe for passengers, drivers, pedestrians - age and gender groups, vehicle types - bicycles, motor cycles, motor cars, minibus-taxis, LDV's, trucks, busses)
- How safe do you feel generally using the roads in Gauteng? Why do you say so?
- What do you think are the main reasons for road traffic deaths on Gauteng roads? (Probe for Human factors, Vehicle factors, Road factors, Environmental factors, Social Factors, etc.)
- What do you think should be done in future to reduce the road deaths on Gauteng Roads? (Probe for Human factors, Vehicle factors, Road factors, Environmental factors, Social Factors, etc.)

2. Bacho, S. Young Drivers, personality and risky driving behaviour. HSRC Review, Volume 8, No 3, Sept 2010.


14. Du Toit, A and Mutle, M.J. Environmental Scanning of all DLTCs in Gauteng to determine the level of corruption at each station, August 2011


17. Ferreira, B. A. N. Analysis of the views of minibus taxi drivers and commuters to road safety: a case study of the northern areas of Port Elizabeth, 2010.


23. Gqajl, A. Road traffic Safety-who is responsible? Civil Engineering, 2011


28. Lefutso, D. A study of current and potential future commuter transportation requirements in Kagiso Township, 2005


42. Ribbens, H 2014 Millennium Goals for Africa to reduce road and other transport deaths by half-South Africa’s challenge to provide sufficient road infrastructure for NMT road users, 2010.
47. Synovate. Gauteng Traffic; Braving the rush hour, 2006
49. Venter, K. Inter-twinning road user behaviour and traffic psychology with its technology in South Africa, CSIR, Built Environment, 2010.
50. WHO. Status report on road safety in countries of the world, 2009a
51. WHO. Status report on Road safety in countries of the WHO African region, 2009b.