



**MULUNGUSHI UNIVERSITY**

**DISSERTATION**

**ANALYSIS OF ROAD SAFETY AWARENESS AND ROAD USER  
BEHAVIOUR AMONG PUBLIC SERVICE VEHICLE DRIVERS: A CASE  
STUDY OF KABWE**

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## **ABSTRACT**

Road traffic accidents have become common place in Zambia and they are responsible for the death of hundreds of people in our country annually. Recent times have witnessed a number of measures being implemented by the Road Transport and Safety Agency (RTSA) in order to make our roads safe but ultimately to reduce road carnage and save lives. However, with all these things in place, instead of going down, the number of Road Traffic Accidents in our country continues to rise.

The study was carried out to “Analyse Road Safety Awareness and Road User Behaviour among Public Service Vehicle Drivers”. The study was conducted in Kabwe the provincial capital of Zambia’s Central province. This study was important because it sought to establish the reasons why RTA rates continue to rise despite measures put in place to bring them down. Results obtained showed a heightened level of formal driver education among the PSV drivers, low Road Safety knowledge levels, bad road user behaviour and how young PSV drivers tend to be more reckless in driving and less compliant to road safety rules.

Such behaviour is responsible for the ever increasing RTA rates that we continue to record as a country. Road traffic accidents hamper economic growth as they gobble huge financial resources which government can channel to more urgent developmental programmes. There is need for government and other stakeholders to look into massive investment in the education of drivers and other categories of road users on the importance of Road Safety as well as upgrading our existing road infrastructure to a standard that ensures the safety of vehicles and passengers. Future studies should look into whether measures implemented by RTSA to ensure Road Safety have led to a decline in road traffic accidents.

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Words cannot describe the debt of gratitude that I owe my husband for his confidence in my ability, his patience and for all the support he provided during my studies, from the bottom of my heart I really do appreciate! Special thanks also go to my family for always having my back and cheering me on each step of the way. Lastly but certainly not the least, I want to thank God for once again proving to me that with Him, all things are possible!

## **DECLARATION AND COPYRIGHT**

I, Kavuyi Kamelu Soko, hereby declare to the Senate of Mulungushi University that this Research Report is a true reflection of my own efforts with due and full acknowledgement of the ideas and works of others where required, and has never been submitted as such to any University. Therefore, I take full responsibility of the findings of this research and so commit myself by signing hereunder.

Signed..... (Candidate)

Date.....

**CERTIFICATION OF APPROVAL**

The undersigned certify that they have read and hereby recommend for acceptance by Mulungushi University a thesis research proposal titled: “Analysis of Road safety Awareness and Road User Behaviour Among Public Service Vehicle Drivers: A Case Study of Kabwe” in fulfilment for the Degree of Masters in Transformative Community Development of Mulungushi University.

.....

Prof. K.E. Yambayamba

(Supervisor)

Date.....

## **DEDICATION**

I dedicate this Research Report to the memory of my late friend – Nzala Matyola Kakin’ga who died on 24th March, 2013 in a Road Traffic related accident. I don’t know if I will ever get over the fact that you are no longer here with us; however, I do pray that you continue to rest in eternal peace until we meet again.

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**ACRONYMS**

DS	Driving School
EU	European Union
GOP	Gross Output Methodology
GNP	Gross National Product
HIV/AIDS	Human Immune Deficiency Virus/Acquired Immune Deficiency Syndrome
MOH	Ministry of Health
NRFA	National Road Fund Agency
PSV	Public Service Vehicle
RTA	Road Traffic Accident
RTSA	Road Transport and Safety Agency
RSA	Road Safety Awareness
WHO	World Health Organisation
ZCARD	Zambia Centre for Applied Research and Development
ZP	Zambia Police

# **CHAPTER ONE**

## **1.0 INTRODUCTION**

### **1.1 BACKGROUND**

Transportation has liberated the human race from the hassle of having to trek long distances from point A to point B; in short transportation has made human beings more mobile. The most common mode of transportation in many developing countries like Zambia is road transport. Other than walking, the ordinary Zambian relies a great deal on Public Service Vehicles (PSVs) to travel from one place to another, be it the workplace, school, health facility, shopping area, and many others. With an increased usage of this mode of transport, safety of patrons has become a great concern, particularly owing to the escalating number of Road Traffic Accidents (RTAs) associated with PSVs.

The Road Traffic and Safety Agency (RTSA) was established by an Act of Parliament under Section 3 of the Road Traffic Act, No.11 of 2002 and it has been mandated to implement government policy on safety and transport management in the country. In the wake of making road transport safer, recent times have witnessed a number of measures being put in place by RTSA; for example, intensification of police checkpoints and patrols, enforcement of the law, stringent tests for both the driver and vehicles before issuance of a driving license, and certificate of fitness of all vehicles that are over five (5) years old. Despite these measures, however, the number of road crashes leading to injury and death continue to be on the rise in Zambia RTSA (2011). The 2011 report further stated, in a study conducted jointly by the Zambia Centre for Allied Research and Development (ZCARD), Ministry of Health (MOH), RTSA and the Zambia Police Service (ZP), the numbers of RTAs continue to rise at approximately 9 per cent annually and fatality rates at 10 per cent.

Deaths occurring as a result of RTAs especially on the highways have raised a lot of concern among the general public and government as well. Globally, it is estimated that a total of 1.2 million people lose their lives annually in RTAs (WHO, 2004). These deaths have a significant impact on development objectives, particularly because of the immense economic and social cost associated with these road crashes. According to the World Health Organization (WHO, 2004),

road crashes cost economies of developing countries an estimated US\$100 million per annum, accounting for one percent of their total Gross National Product. This affects the provision of other important needs such as health, education, housing, job creation initiatives, water and electricity production and other state expenses. However, the ultimate loss is on the families that lose their loved ones. It is estimated that a third of these families that lose a loved one in RTA experience a decline in their standard of living, a state of affairs that has helped perpetuate the problem of poverty in many developing countries (Worley, 2016).

According to RTSA (2011), many of these accidents occur as a result of ‘human error’ such as over-speeding, careless or reckless driving and a general lack of compliance to road traffic rules and regulations. Furthermore, RTSA reported that majority of these road mishaps were unnecessary; they occur due to lawlessness on the part of PSV drivers who commit such offences with impunity. From such happenings, it would appear that Road Safety Awareness (RSA) and road user behaviour in Zambia is a challenge – perhaps not only among the PSV drivers but across the entire population. In this sense, WHO (2009) defines Road Safety Awareness as having knowledge about the methods and measures used to prevent road users from being killed or seriously injured.

## **1.2. ROAD NETWORK PROFILE**

Zambia is a landlocked country with one of the world’s fastest growing populations (World Bank, 2015). As at 2015, its population was estimated at 15.5 million people with a life expectancy of 49 and 50 years for men and women, respectively. According to the 2001 figures, Zambia, with total landmass of 752,614 m<sup>2</sup>, has a total road network of 20,117 km paved roads and 71,323 unpaved roads. In the 1970s, it is reported that Zambia had one of the best highway systems in Sub-Saharan Africa NRFA (2003). By the time Zambia returned to multi-party politics in 1991, the National Road Fund Agency (NRFA) estimated that 80 per cent of the road network had deteriorated and out of the total road assets valued at US\$2.3 billion, US\$ 400 million had been lost due to neglected maintenance. The situation has since picked and by 2004, the NRFA rated 57 per cent of paved roads to be in good condition, 22 per cent in fair condition and 21 per cent in poor condition.

### **1.3 PROBLEM STATEMENT**

Road Traffic Accidents leading to injuries and death have become a public health and development problem in Zambia today. According to the Auditor General's Report (2015), road traffic accidents are the number three cause of death in Zambia after HIV/AIDS and Malaria. Research carried out at the global level reveals that motorized public transport puts people at a great risk of injury and death (WHO, 2010). In Zambia, road crashes involving mostly PSVs continue to remain high and they continue to cause unimaginable suffering to the families of the victims and the nation in general as they consume massive financial resources that the country can ill afford to lose. According to the Zambia Road Safety Trust (2016), a general lack of road safety awareness and compliance to road traffic rules and regulations has perpetuated the problem of RTA in Zambia.

In fact, despite the establishment of RTSA and all the measures put in place to manage transportation and make the roads safe, compliance to road service regulations among PSV drivers remains a problem and consequently, the numbers of RTAs continue to increase. According to statistics produced by RTSA and ZP in the 2016 report, there has been a general increase in RTAs between 2010 and 2014, rising from about 20,500 in 2010 to well over 32,300 in 2014. Similarly, the number of fatalities has generally increased over the same period from about 1,400 in 2010 to over 2,300 in 2012, and then a small decline to slightly below 1,900 in 2014. The question is "What are the factors influencing increase in RTAs in Kabwe?" This is the gap that needs filling in, in order to find a lasting solution.

### **1.4 OBJECTIVES**

#### **1.4.1 General Objective**

The general objective was to; "Establish Factors that have led to an Increase in RTA in Kabwe despite Measures to bring them down

#### **1.4.2 Specific Objectives**

The specific objectives were;

- 1) To determine the number of PSV drivers who undergo formal training in driving
- 2) To assess knowledge levels among PSV drivers regarding road safety
- 3) To assess road user behavior among PSV drivers

- 4) To investigate the effect age has on compliance levels to Road Safety by PSV drivers.

### **1.4.3 Research Questions**

The research questions were;

1. How many PSV drivers undergo formal training in driving?
2. What are the knowledge levels among PSV drivers regarding road safety?
3. How is the road user behaviour among PSV drivers?
4. What is the effect of age on compliance levels to Road Safety by PSV drivers?

### **1.5 SIGNIFICANCE OF THE STUDY**

Road Traffic Accidents have ravaged our communities with unimaginable suffering and they continue to rob our communities of valuable resources like human and financial resources. This study on “Determining factors influencing Road Safety compliance levels among PSV drivers” aims to inform policy makers and other relevant stakeholders the factors that have led to an increase in RTA on our roads. It also seeks to emphasize priority measures that can be implemented/adopted in order to have the tools and information that will aid in effective Road Safety interventions that will lead to reduced RTA rates. Further, it also serves as an information tool which our communities can utilize to reduce the level of risk in our communities in the face of unfortunate events like a road crash.

# **CHAPTER TWO**

## **2.0 LITERATURE REVIEW**

### **2.1 INTRODUCTION**

Motorized public transportation is the go-to option for many ordinary Zambians who travel from one place to another. For many years now, they have depended on this mode of transportation to carry out their businesses. However, recent years have witnessed a spate of RTAs involving mostly PSVs, raising the question: What has led to this upward spiral in the numbers of RTAs on the Zambian roads?

The problem of road traffic accidents dates back to the year 1863 when a J.J Lenoir built the first car in France. However, it was not until 1899 that the first motor accident was recorded in the USA. During that period, road crashes were very low and in certain areas like Africa almost rare due to low vehicle population (Haddon, 1968). However, the last five decades paint a totally different picture in terms of vehicle population in that the numbers of cars on the road as well as other categories of travellers have increased dramatically. Throughout the world today, the roads are shared by cars, buses, motorcycles, pedestrians, taxis, animals and other categories of travellers. Vehicular movement supports economic and social development in almost, if not all countries. Yet each year, numerous lives are lost to road crashes.

### **2.2 INJURY AND DEATH**

According to the Centre for Disease Control (2015), an estimated 1.3 million people are killed in road crashes annually; a further 50 million are injured and for every death, 20-30 people are disabled. Deaths resulting from RTAs are comparable to the number of global deaths caused by Tuberculosis and Malaria. In addition, it is estimated that by 2030, 2.4 fatalities will result from RTAs and that it will be the third leading cause of death worldwide. Furthermore, road crash injuries are the leading cause of death among young people aged between 15 and 44 in Africa (see table 1). This category of people is in their prime time, and dying at this age robs families of people that are most likely to be bread winners and nations of people that could contribute to national development. The WHO report of 2004 showed that the leading cause of death in people aged between 15-14 years were; lower respiratory infections, Malaria, diarrheal disease and Road traffic



injuries. Similarly, in those aged 15-29, it was found that HIV/AIDS, Tuberculosis, violence and then followed by road injuries were the main causes of death. In those aged between 30-44, it was reported that, HIV/AIDS, Tuberculosis, violence and road traffic injuries were the main causes of death. From this report, it can be argued that road traffic injuries are contributing a great deal to the deaths of a lot of young people globally today.

Road Crashes leading to injury and death have become a serious social and development challenge on the African continent. According to results obtained from a study conducted by the Global Disease Burden (2004), the situation is expected to get even worse. In many African countries ill health and deaths resulting from road crashes have emerged as a significant cause of death and has been so for a long time. Unfortunately, until now, the issue has been relegated to the background as it has always been considered as a law enforcement and transportation concern. Thus, the matter has attracted very little concern and scrutiny from relevant stakeholders who have rather paid attention to infectious diseases.

### **2.3 ECONOMIC AND SOCIAL COSTS**

A study carried out by WHO (2004) in a poor country revealed that due to more people being killed through RTAs in the age group 15-44, poor families are more likely to lose a household head than those who are better-off. The loss of a household head causes poor families to suffer immediate economic effects. This is because their loss means loss of earnings, sudden expenditure on medical bills and funeral expenses; this puts a serious strain on the finances of poor families. Among the poor people surveyed, it was reported that 32 per cent of deaths resulted in the loss of the household head compared to 21 per cent among those who were not classified as poor. Further, over 70 per cent of the poor households reported that their household income, food consumption and food production declined after a road death. Three quarters reported a drop in their standard of living and 60 per cent had to borrow money as a result of a death resulting from a road crash.

The WHO report of 2004 showed that road crash victims made up 30-86 per cent of all hospital admissions. Accident victims tend to stay for extended periods of time in hospital admissions compared to sufferers of other forms of illnesses. In the Philippines, the Philippine General University Hospital, for instance, records that 25 per cent of all hospital admissions involve road crash victims (ibid). This has serious consequences on the capital of public hospitals as the hospital

bears an average of between 25-75 per cent of the victims' total cost of medication and treatment. This is even made worse by the fact that 80 per cent of those seriously injured seek medical attention in public hospitals.

One of the important reasons that justify the need to bring down the numbers of RTAs other than the humanitarian aspect is for economic reasons. Galvin (2007) argues that road crashes gobble vast financial resources in many developing countries. The problem of Road Safety actually remains one of the most serious issues that many developing countries are faced with. The issue has, for a long time, received very little attention when in actual fact it requires serious attention and funding. This state of affairs has been necessitated by the fact that many developing countries have to make some very tough decisions to allocate money to road safety which money could have been channeled elsewhere especially developmental projects. However, decisions for road safety should be made and funds should be allocated because investing in road safety is much more beneficial than dealing with the economic costs of road crashes. Global Disease Burden (2004)

The Department of Civil Engineering at the University of Singapore (2003) argues that one of the important methods used in calculating the amount of loss incurred as a result of road crashes is the Gross Output Methodology (GOP); the basis of this methodology is that every individual is peculiar and a valuable economic entity; it views life as statistical. What this implies is that the "value of an individual is regarded to be the output that that person can produce over the period of their productive life". Based on this argument, the cost of a road crash will then be the loss or output forgone by the economy as a result of the accident.' This methodology bases its argument on the notion of economic repercussions, accompanied also by a notional sum to capture the pain, grief and suffering of the victims and the families left behind. The authors, argue that it would pay governments good money if due attention was given to road safety measures and dissemination of information that gives a clear picture of the serious repercussions associated with RTA.

Whitelegg et al. (2006) points out that, in the European Union (EU) about 1,300,000 accidents a year cause 40,000 deaths and 1,700,000 injuries on the roads. The authors further add that; these occurrences cost the EU directly and indirectly EUR 160 billion per annum which is equivalent to 2 per cent of the EU GNP. However, the past 30 years have seen a great improvement in road safety within the EU. While the overall volume of traffic has tripled, the number of deaths has declined by half (ibid). According to the Swedish Transport Administration (2015), the Swedish

Parliament introduced a “Vision Zero” policy which requires that fatalities and injuries are reduced to zero by 2020. The Swedish road safety work is based on a refusal to accept human deaths or lifelong suffering as a result of road traffic accidents, meaning that it has removed emphasis away from reducing the number of RTA to eliminating the risk of chronic health impairment caused by RTA. It rather stresses that accidents be prevented by designing roads, vehicles and transport services in a way that someone can tolerate the violence of an accident without being killed or seriously injured. As a result of this approach and many other proactive measures to road safety, Sweden stands among the countries with the lowest number of traffic fatalities in relation to its population.

## **2.4 VEHICLE POPULATION VERSUS RTA RATES**

According to Sumaila (2013), the African region is the least motorized in the world at 2 per cent, yet in 2007 over 234,700 people were estimated to have died on the roads representing 20 per cent of all road deaths worldwide. In addition, it is also reported that 70 per cent of all these deaths occur in only ten countries namely; Ethiopia, Democratic Republic of Congo (DRC), Ghana, Kenya, Madagascar, Uganda, Mozambique, Tanzania, Nigeria and South Africa. Given this low number of vehicles on the continent, it is believed that an increase in the same will lead to even more road crashes; hence the need to ensure that an increase in the vehicle population is accompanied by dramatic improvements in compliance among drivers and consistent road safety measures.

Adeloye et al. (2016) argues that Nigeria has the highest number of road crashes leading to 4,120 and 160,000 injuries and deaths per 100,000 population, respectively, a situation which to many Nigerians is that of “frustration and near helplessness” The country continues to feature in the bottom half of the WHO (2009) country rankings of RTA at number 149 out of the 178 countries. The author further argues that in Nigeria, RTAs have claimed more lives than all the communicable diseases put together including the dreadful HIV/AIDS.

Similarly, Bachani et al. (2013) reports that as at 2007, Kenya had seen a sharp increase in the number of registered vehicles per 100 population. Consequently, this has led to a historically high burden of RTAs in Kenya. The authors contend that this state of affairs has had a huge economic effect on the Kenyans, costing them as much as US\$38.8 billion annually which corresponds to 5 per cent of its total Gross National Product (GNP). The authors add that according to the study

conducted in 1998 comparing mortality due to RTAs in 12 countries, Kenya ranked highest with a rate 1.6 times higher than Zimbabwe, 3.6 times higher than Chile and an astounding 48.9 times higher than Great Britain.

The state of affairs in Zambia is not so different from the rest of Africa; the last 10 years have seen a dramatic increment in the inflow of second hand used Japanese cars, meaning that even those that could hardly afford a car in the past can now afford one. By implication, this has not only increased the volume of traffic in the country but has also given rise to an increase in the number of RTA leading to serious injuries and death. According to RTSA (2010), as many as 1,200 people die and 50, 000 are left handicapped or permanently injured as a result of RTA every year. Compared to the total population of the country, these numbers are too high and the losses too great!

## **2.5 DATA AVAILABILITY**

Treibich and Grimm (2010) argue that data on road traffic injuries and fatalities which are systematic and reliable are very hard to find in lower and middle income countries. They add that most of the data available and the studies done take the approach of a cross country perspective leading to very little being known about the relevant factors that cause RTA at the individual level. Furthermore, most of the available data do not help in creating a distinction between different injuries as related to the cause; they also do not show the medical costs involved.

Furthermore, global research on RTAs in relation to disability and its socioeconomic impact seems much less than research into mortality. As earlier noted, due to this gap, very little is done about the effects on the wellbeing of the victims and their households. Most published data on road traffic accidents focus primarily on deaths and hospitalizations. Reliable estimates of post-traffic accident causing disabilities, and information on factors that modify disability processes, are essential to prioritize and allocate appropriate resources for road traffic injury prevention. Ericson (2008) also adds that usually the road traffic casualty rates that are reported mostly tend to downplay the magnitude of the safety problem in many countries particularly developing countries. This is mostly a consequence of poor reporting processes in many developing countries.

WHO (2013) asserts that countries in the African Region have to make deliberate efforts to improve the collection of data needed to plan and make interventions, as well as monitoring the

progress of road safety. Targets cannot be set in the absence of reasonable data on the major risk factors, numbers and characteristics of people being injured and killed on the roads, circumstances surrounding road accidents and the extent to which interventions are being used. Major investment in collection of data and proactive measures to curb the scourge is what is needed to reverse the trend. Actually, resources that the country might want to invest in road traffic accident interventions could be wasted if authorities saddled with the responsibility to improving road safety lack accurate and sufficient data to help them plan. Countries cannot improve what they are not able to measure. Therefore, there is need to carry out more research to come up with statistics that should be used for road safety interventions.

## **2.6 RISK FACTORS CONTRIBUTING TO RTA**

The risk factors involved in the causation of RTA are usually classified in three categories namely; driver-dependent (or pedestrian-dependent for motor vehicles involving an RTA between a vehicle and a pedestrian); vehicle-related; and environment-dependent (Caret et al. 2002). Most scholars blame most road crashes to factors dependent on the drivers as they are thought to account for between 60-90 per cent of all road traffic accidents. The rising number in motor vehicle population is one of the major contributing factors in the escalating figures of deaths and injuries resulting from RTA in many poor countries like Zambia.

Peden et al. (2001) contends that a small road space is utilized by modern cars, buses, other locally manufactured vehicles for public transportation (keke's in the case of Nigeria three-wheel cars), scooters and motorcycles, tricycles and ox-carts. The design of the road infrastructure cannot accommodate the mobility and safety needs of this combination of transportation modes, hence making the roads unsafe and a risky place.

## **2.7 MAJOR CAUSES OF RTA**

One of the biggest challenges with RTAs is either lack of compliance to Road Traffic Regulations (RTR) or lack of proper, enforceable and comprehensive RTR which form an important contribution to efforts to foster road safety and proper road user behaviour. According to WHO(2013), only 28 countries(majority of which are in the Scandinavian region and make up 7 per cent of the world's population), have comprehensive road safety laws which cover five key risk factors namely; drinking and driving, speeding and use of motorcycle helmets, seatbelts and

child restraints. Many countries in the world are still faced with the problem of drivers with destructive habits on the road such as texting, driving with fatigue, drunken driving and many others, which have led to an increase in RTA. Most poor countries also grapple with poor enforcement of even the little road traffic rules they have and this has led to many of these countries featuring prominently. According to the Lusaka Times (2013), RTSA reported that 65 per cent of drivers on the roads especially on the weekend drive under the influence of alcohol, leading to accidents which can very well be avoided. The agency, in its quest to curb the vice and many other vices that contribute to RTA in the country, has come up with measures such as recruitment of 60 road traffic inspectors, introduction of mobile fitness tests, highway surveillance system to monitor driver's behavior in order to mitigate RTAs. The agency has also procured the mechanized motor vehicle fitness which will be launched soon, use of evidential cameras in dark spots. The agency will soon develop a syllabus to be used by all driving schools country wide in order to deal with the existing gaps in many of the schools. The agency also plans to introduce fast track court to serve as a deterrent measure so that offenders are quickly prosecuted.

Herbst (2002) writes that over 95 per cent of road accidents are as a result of some negligent behavior combined with three other common factors. The first one is that drivers usually try to blame poor conditions; secondly they blame failure or mechanical fault of the vehicle; and lastly, they tend to blame other drivers for accidents that they themselves have caused. However, the fact is that their behavior is usually the main cause of accidents. Most accidents occur because of excessive speed or bad driver behavior actions that are not reported to the relevant authorities and hence no action is taken to reverse the trend.

## **2.8 THEORETICAL FRAMEWORK**

According to the Encyclopedia of Occupational Health and Safety (2010), accidents are defined as 'unplanned occurrences which result in injuries, fatalities, loss of production or damage to property and assets.' Prevention of accidents is a very difficult thing if there is no explanation for their causes. Therefore, scholars from fields such as engineering and other sciences have come up with different theories to try and explain the cause of accidents. Some of the theories developed include:

### **2.8.1 The Epidemiological Theory of Accident Causation**

This approach considers the relationship between environmental factors and disease. Two key components are (1) Predisposition characteristic tendencies may predispose the worker to certain actions; (2) Situational characteristics such as peer pressure, poor attitude and risk taking. Together, these characteristics can cause or prevent accidents that a person is predisposed to a given situation or condition. What this implies is that accidents occur because there are certain factors in the environment that necessitate the occurrence of an accident; for instance, the state of the road may make it dangerous for a vehicle to move upon it, hence making the vehicle vulnerable to an accident. It could also be the weather; sometimes bad weather such as heavy rains or a snow storm contributes to putting the vehicle at risk of a crash. On the hand, sometimes drivers of vehicles predispose themselves to accidents by engaging in behaviors that are not appropriate on the road such as competing in a road race with other vehicles. This is especially common among PSV drivers who compete by over-speeding in order to woo customers. In addition, sometimes they engage in risky behavior such as cutting in traffic or over-speeding in order to bit the traffic lights.

### **2.8.2 Combination Theory**

This theory posits that there is no one model/theory that can explain all accidents Factors from two or more models might be part of the cause; therefore, it looks at seven principles of behavior based safety to understand accident causation, and these are: intervention, identification, identification of internal factors, motivation to behave in the desired manner, focus on the positive consequences of appropriate behavior, application of the scientific method, integration of information and planned interventions (Pearson,2010). It is indeed true that usually there is more than one explanation to the cause of accidents; these occurrences are very complex, and to attribute an accident to just one reason alone may not suffice.

### **2.8.3 Human Factors Theory**

This theory attributes accident causation to a chain of events ultimately caused by human error. It consists of three broad factors that lead to human error namely; overload, inappropriate response and inappropriate activities (Pearson, 2010). The issue of human error cannot be over-emphasized. An old saying states that “to err is human”. The issue of human error is inherent; humans have

been biologically wired to, very often, make mistakes and these make for very good learning experiences. What vehicle makers should focus on is making vehicles that lead to the least amount of injury as much as possible in the unfortunate event of an accident because human error cannot be avoided.

#### **2.8.4 Risk Perception Theory**

Rosa (2003) defines risk as ‘a situation or an event where something of human value (including humans themselves) is at stake and where the outcome is uncertain. (Sjoberg, 2006) argues that ‘all risk concepts have something in common; a distinction between reality and possibility.’ Risk perception theory helps to enhance our understanding of how people perceive risk, how they interpret risk which helps to facilitate the way we deal with it and this can help to reduce RTA.

#### **2.8.5 Conclusion**

The cause of accidents is a very complex issue and it ought to be thoroughly understood in order to effectively prevent the occurrence of accidents. As much as these theories exist and are necessary, it suffices to mention that investing in knowledge dissemination and campaigning for change of attitudes and behavior towards road safety and road user behavior is the surest ways to prevent or reduce the number of RTA considering that human error is inevitable.



# **CHAPTER THREE**

## **3.0 MATERIALS AND METHODS**

### **3.1 LOCATION AND DESCRIPTION OF STUDY AREA**

Kabwe is the provincial capital of Zambia's Central province, with an estimated population of 202,914 as at the 2010 census. The town came into existence when Zinc and lead deposits were discovered in 1902. Key to this town is also that it is the seat of Zambia's independence. It is also an important transportation center; it is the main Lusaka-Copper belt railway line route and it also lies on the Great North Road. With regard to RTAs, Kabwe is also on record to have experienced one of the worst road crashes in the history of Zambia when, on February 7, 2013, a bus collided with two other cars, killing about 53 people in the process.

### **3.2 RESEARCH DESIGN**

The research design used in this study was the experimental design. The PSV drivers were the experimental group while the ordinary drivers were the control group. In this regard, both groups were given the same treatment through the use of structured questionnaires. The questionnaire sought to investigate the level of formal training in driving, ascertain the level of road safety awareness, as well as assess road user behaviour among PSV drivers in comparison with Ordinary drivers. The impact of RTSA's role in increasing awareness among PSV drivers was also investigated. Supplementary data was collected, using semi-structured interviews, from key informants including RTSA, the Zambia Police, and driving schools.

#### **3.2.1 Research Methods**

The target groups for primary data were PSV and Ordinary drivers in Kabwe, using the method of structured questionnaires while semi-structured interviews were used to collect supplementary data from the key informants. Secondary data was collected through doing literature review regarding RTAs in the country. Various documents such as reports from RTSA, newspapers and other government documents were accessed to compile the literature review.

### **3.3 SAMPLE SIZE**

The total sample of those interviewed was 110, comprising the following: 35 drivers of small buses and another 35 drivers of big buses, 30 ordinary drivers, 4 Police officers, 3 RTSA officers and 3 managers of driving schools.

### **3.4 SAMPLING TECHNIQUE**

The PSV drivers for both big and small buses and Ordinary drivers were randomly sampled from the population. Similarly, the RTSA officers were sampled conveniently based on the officers that were made available to the researcher and the police officers were sampled using systematic random sampling because a list (duty roster) of traffic police on duty was made available to the researcher. With regard to driving schools, the list of all legally registered driving schools was collected from RTSA and three schools were randomly picked.

### **3.5 DATA ANALYSIS**

Qualitative data was analyzed using descriptive analysis. Frequencies and percentages were generated to establish trends of various parameters. Tabulations and cross-tabulations were also done to describe the effects of independent variables on the dependent variables.

### **3.6 ETHICAL CONSIDERATIONS**

After successful approval of the proposal, informed consent was obtained from the groups sampled before commencing the research. In this case privacy, confidentiality, justice and respect was shown to the research participants and anonymity was also assured. The researcher assured the participants that their identities would not be revealed to the reader and data solicited would not be released to any unauthorized party.

### **3.7 STUDY LIMITATIONS**

The study was limited by time constraints, budgetary constraints as well as lack of response from certain institutions like RTSA from which data was requested. To offset the above, the researcher hired a research assistant to help with data collection so that she could focus on other aspects of the report. Certain expenses indicated in the budget such as buying of fuel could not be met therefore; alternative methods were used to get to the research areas. With regards to data, the

researcher faced a lot of difficulties trying to get updated RTA information from RTSA. The researcher therefore, made use information quoted by different entities which in some cases were not entirely accurate and this in a way affected overall quality and completeness of the report.

# CHAPTER FOUR

## 4.0 RESEARCH FINDINGS

### 4.1 Age Distribution of Small bus Drivers, Big bus Drivers and Ordinary Drivers in Kabwe

Figure 1 shows the age ranges of the both categories of PSV drivers (small and big bus drivers) and ordinary drivers. The youngest and oldest drivers were 20 and 62 respectively. The majority (38%) of drivers fell in the category 40-49.

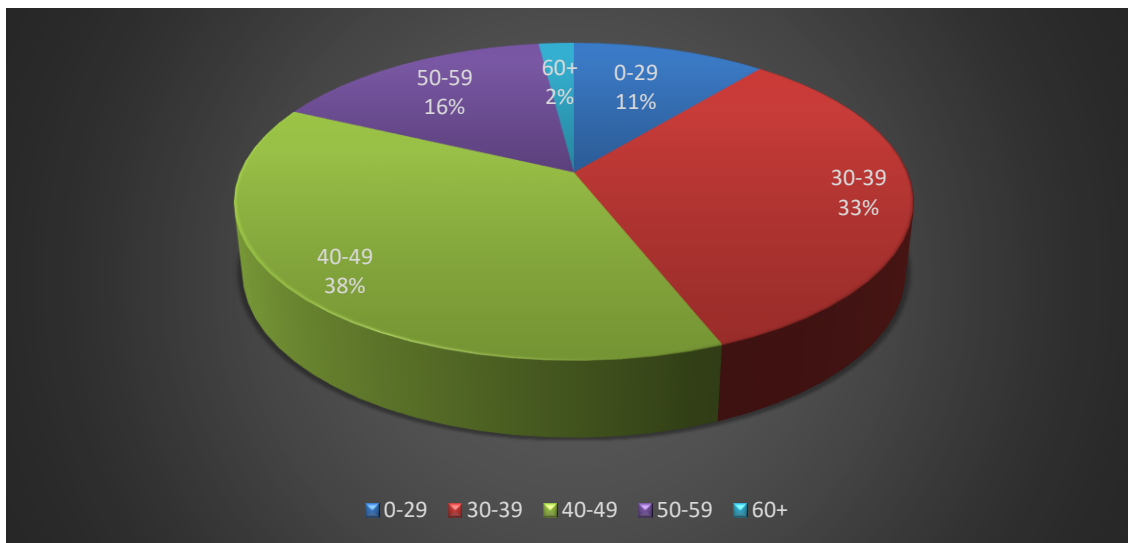


Figure 1: Age distribution of Small bus drivers, big bus drivers and ordinary drivers in Kabwe

#### 4.1.1 Drivers' Level of Education in Kabwe

Figure 2 shows that the highest number of drivers who attained tertiary education fell in the category of Ordinary drivers at 83%, this was followed by small bus drivers with 66% having attained secondary education. The least was ordinary drivers with only 17% having attained secondary education.

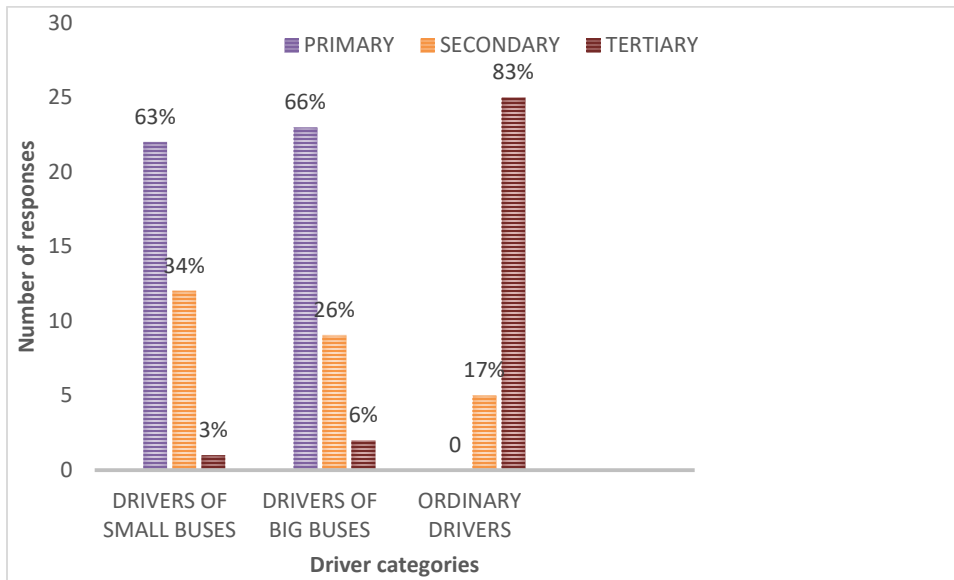


Figure 2: Drivers' level of education in Kabwe

#### 4.1.2 Drivers in Kabwe who Possess Driving Licenses

All respondents except one from both categories of PSV drivers had no driving license. Among the ordinary drivers, only 70% had driving licenses while the rest did not have, as shown in Figure 3.

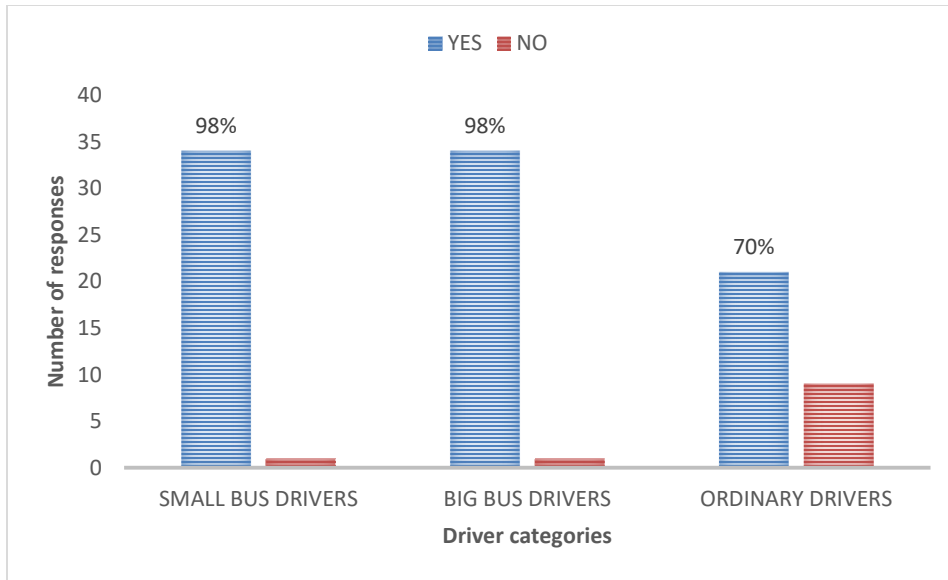


Figure 3: Drivers in Kabwe who possess driving licenses

#### 4.1.3 Drivers in Kabwe who have Attended Driving School

According to Table 1 the study found that the drivers driving big buses had the highest number of respondents attending driving school at 83%, followed by small buses at 69%; the least was ordinary drivers with 50% of the total respondents attending driving school.

Table 1: Drivers in Kabwe who have attended driving school

CATEGORY	Yes	No
<b>Drivers of Small buses</b>	69%	31%
<b>Drivers of Big buses</b>	83%	17%
<b>Ordinary drivers</b>	50%	50%

#### 4.1.4 Acquisition of Driving Skills

Those drivers that did not attend driving school were further asked to state how they learnt how to drive, Figure 4 gives an account of their responses. It is worth noting that; those who learnt by being a conductor (24%), were taught by truck drivers (3%) and learnt through being a mechanic (3%) came from the category of PSV drivers while majority of those who were taught by someone (31%), by self (9%) and by practicing on the vehicle at home (27%); came from the category of ordinary drivers.

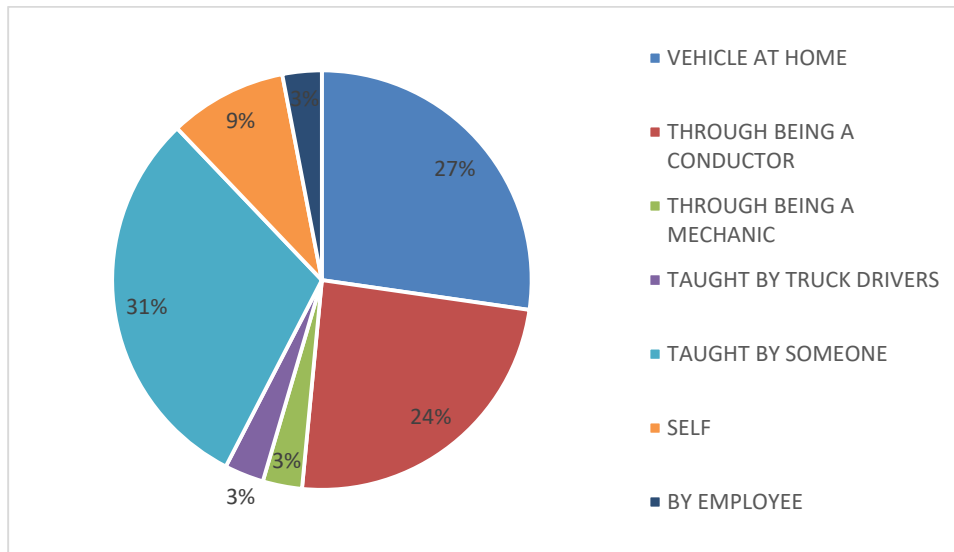


Figure 4: How other drivers who did not attend driving school acquired their driving skills

#### 4.1.5 Ordinary and PSV Drivers' Perceptions of Attending Driving School

Figure 5 shows that of the Small bus drivers, (97%) stated that it was necessary to attend driving school, this was followed by (90%) of ordinary drivers, the least was (86%) of big bus drivers who stated that it was necessary to attend driving school

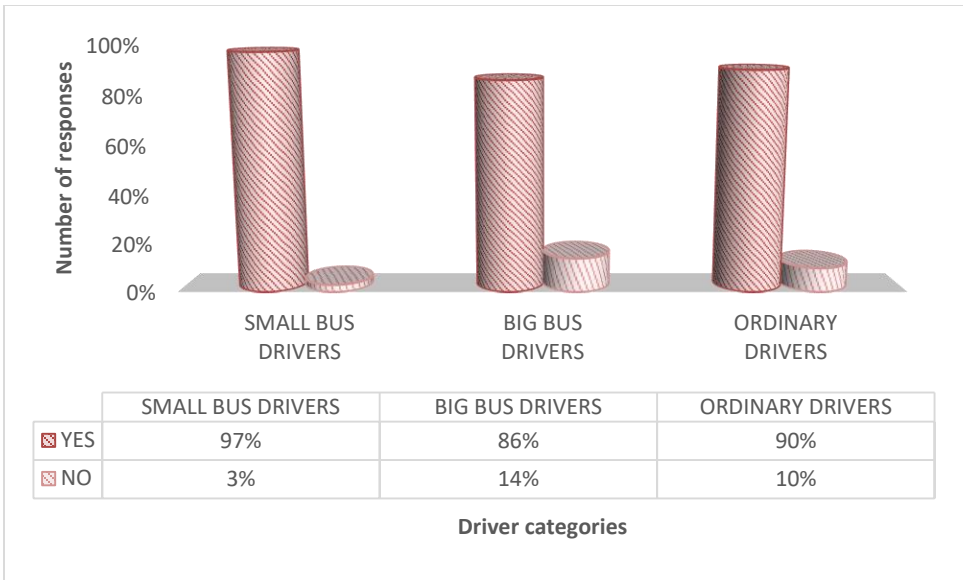


Figure 5: Ordinary and PSV drivers Perceptions of attending Driving School

**4.1.7 Why Drivers PSV and Ordinary Drivers Perceive Attending Driving School as Unnecessary**

The drivers who deemed it unnecessary to attend driving school before one can start driving were asked to explain why, and Table 2 shows the responses they gave. 3% of the small bus drivers and 14% of big bus drivers said it was not necessary because they already knew how to drive. 7% of the ordinary drivers responded that it is just one of those things while 3% said they did not know what goes on there



Table 2: Why PSV drivers and ordinary drivers perceive attending driving school as unnecessary

<b>REASON</b>	<b>DRIVERS OF SMALL BUSES</b>	<b>DRIVERS OF BIG BUSES</b>	<b>ORDINARY DRIVERS</b>
I already knew how to drive, it was not necessary for me to go and learn again	3%	14%	NR
It's just one of those things	NR	NR	7%
I don't know what goes on there	NR	NR	3%

NR= 'No Response'

#### **4.2 Drivers Understanding of Road Safety**

In response to what they understood by Road Safety, Table 3 shows the responses that the drivers gave. Thirty-four per cent, 54% and 43% of small bus drivers, big bus drivers and ordinary drivers respectively understood road safety to be; following all the road traffic rules, the second highest response was being alert and aware of the condition of the road which made up 37%, 23% and 10% of small bus drivers, big bus drivers and ordinary drivers respectively. 6% of the big bus drivers said they had no idea and 3% of the ordinary drivers said it is having roads that are in good condition and another said engaging in defensive driving (a set of driving skills that allows one to defend themselves against possible collisions caused by bad and drunk drivers as well as bad weather)

Table 3: Ordinary drivers' and PSV drivers' understanding of road safety

<b>DRIVERS' UNDERSTANDING OF ROAD SAFETY</b>	<b>DRIVERS OF SMALL BUSES</b>	<b>DRIVERS OF BIG BUSES</b>	<b>ORDINARY DRIVERS</b>
Following road traffic rules(ten basic rules)	34%	54%	43%
Being conscious and aware of your surroundings	NR	11%	7%
Protecting yourself and other people	11%	6%	20%
No drunk driving	3%	NR	
Being law abiding(following the Ten basic rules)	6%	NR	6%
Obedying and interpreting road signs	3%	NR	3%
Being a qualified driver (attended driving school)	NR	NR	7%
Engaging in defensive driving	NR	NR	3%
Exercising patience	6%	NR	NR
Being alert and aware of the condition of the road(volume of traffic)	37%	23%	10%
Having roads that are in good condition	NR	NR	3%
No idea	NR	6%	NR

NR= 'No Response'

#### 4.2.1 Drivers Perceptions on Whether Relevant Authorities have done enough to ensure Road Safety in Kabwe

More than half of the PSV drivers (73%) according to Figure 6 did not think that enough measures have been put in place to ensure road safety; on the hand, 87% of the ordinary drivers thought that enough has been done to ensure safety on our roads.

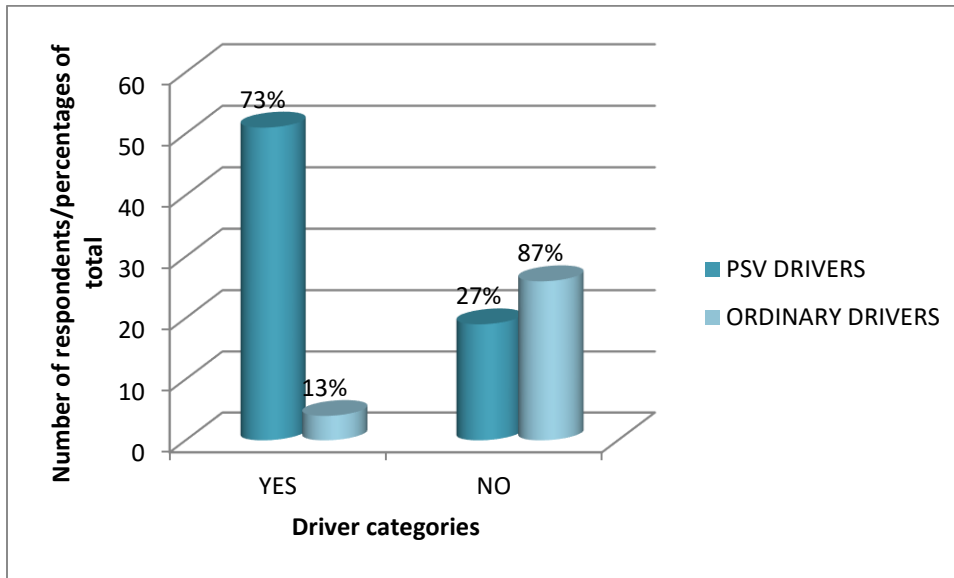


Figure 6: Drivers' Perceptions on whether relevant authorities have put in place enough measures to ensure road safety in Kabwe

#### 4.2.2 More Measures that Drivers feel Relevant Authorities need to implement to ensure Road Safety

Majority of both categories of drivers as shown in Table 4 stated that there was need to improve the road infrastructure particularly upgrading to a Dual Carriageway as many roads were narrow, this response made up 6% and 27% of PSV drivers and ordinary drivers respectively. Another 27% of ordinary drivers highlighted the need to improve road signage and markings and this was followed by 9% of PSV drivers stating that there was need for RTSA to be considerate of the plight of drivers. The least response was the need to encourage drivers to attend driving school and for money collected from road tolls to be put to good use; these responses made up 1% each.

Table 4: More measures that drivers feel relevant authorities need to implement to ensure road safety

REASON	PSV DRIVERS	ORDINARY DRIVERS
Improve road infrastructure(the roads are narrow)	6%	27%
Increase traffic patrols	NR	7%
Hike traffic offence charges to deter offenders	NR	3%
Encourage people to attend driving school	1%	3%
Money collected from tolls should be put to good use	1 %	3%
Increase Sensitisation	4%	13%
Stiffen road traffic laws	NR	3%
Improve signage and road markings	1%	27%
Be considerate to the plight of drivers	9%	NR

NR= 'No Response'

#### 4.3 Whether Drivers are concerned about the Rising Number of RTA in the Kabwe

All the drivers interviewed agreed that they had a responsibility to reduce the number of RTA in Kabwe as shown in Table 5.

Table 5: Whether drivers in Kabwe are concerned about the rising number of RTA in the country

	PSV DRIVERS	ORDINARY DRIVERS
<b>YES</b>	100%	100%
<b>NO</b>	0	0

### 4.3.1 Proportion of Drivers who have driven a Road Unworthy Vehicle

In trying to find out whether the drivers have driven a road unworthy vehicle or not, Figure 7 shows that, 66 % and 51% of the ordinary drivers and PSV drivers respectively drove a road unworthy vehicle on the other hand, 49% of the PSV drivers stated that they drove a road unworthy vehicle while 33% of the ordinary drivers also agreed to having driven a road unworthy vehicle.

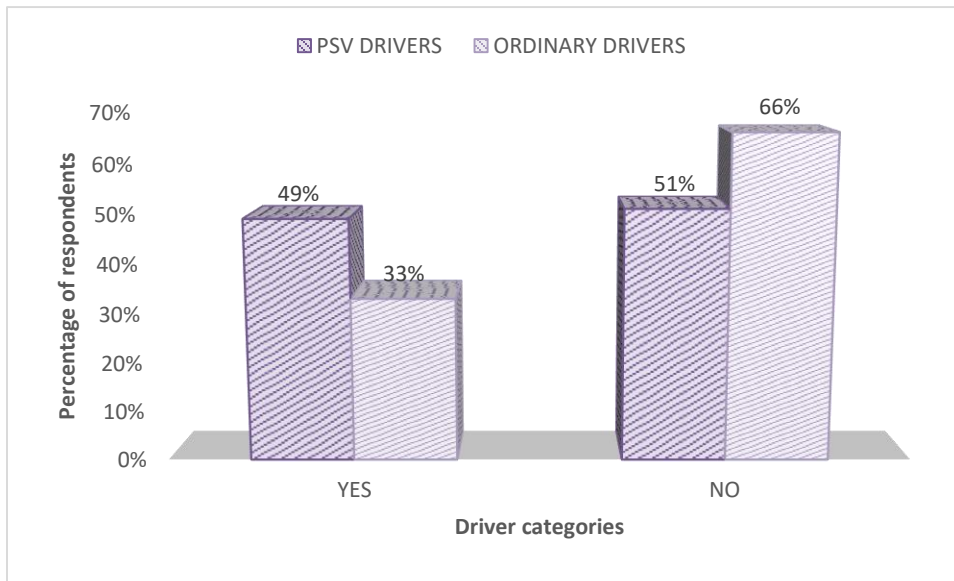


Figure 7: Proportion of drivers in Kabwe who have driven a road unworthy vehicle

### 4.3.2 Reasons Given by Drivers in Kabwe for Driving Road unworthy Vehicles

Of those drivers that agreed to having driven a road unworthy vehicle; 33% of the ordinary drivers said an emergency situation is what led them to drive a road unworthy vehicle. 10% of the PSV drivers stated that their bosses were irresponsible meaning, they did not pay for the repair or servicing of the vehicle. The least reason at 4% was that, back in the day, enforcement of the law was very poor so the drivers got away with as shown in Table 6.

Table 6: Reasons given by drivers in Kabwe for driving road unworthy vehicles

REASONS	PSV DRIVERS	ORDINARY DRIVERS
Owner of the bus(Boss) was irresponsible	10%	NR
Did not know the bus had a fault	7%	NR
I had no alternative means to earn a living	6%	NR
Then, there was poor law enforcement so I got away with it	4%	NR
Developed a fault before reaching the destination	6%	NR
It was an emergency situation	NR	33%

NR= 'No Response'

#### 4.3.3 Number OF Times Drivers in Kabwe have driven above the Stated Speed Limit

Figure 8 shows the drivers responses. Half of the PSV (50%) drivers stated they had never driven above the speed limit while the other half fell in one of the other three categories. The ordinary drivers recorded a higher frequency of driving above the stated speed limit as many of them fell in the category 10 and above which also made up another 50%.

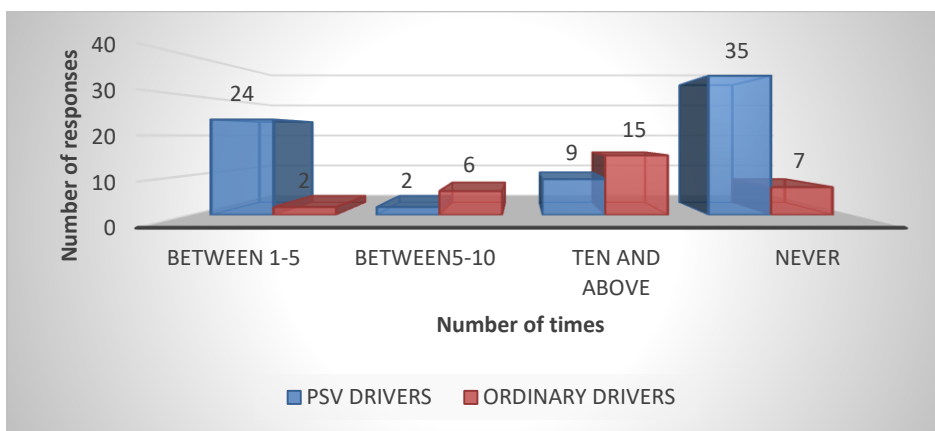


Figure 8: Number of times drivers in Kabwe have driven above the stated speed limit

#### 4.3.4 Reasons Drivers gave for Driving above the Speed Limit

Of the PSV drivers, 72% responded that they drove above the speed limit because they had very little working hours therefore; they rushed in order to get customers. 3% said they did it when overtaking while another 3% said they were not educated about over speeding at the driving school. 92% of the ordinary drivers responded that they were in a hurry to get to work while 8% said they did it for thrill's sake as shown in Table 7.

Table 7: Reasons drivers gave for driving above the Speed Limit

REASON	PSV DRIVERS
Pressure from customers	6%
Rushing for customers because we have very little working hours	72%
There are no road signs to indicate speed limit	6%
When overtaking	3%
We are not educated about speed at the driving school.	3%
No reason	8%
NR	<b>ORDINARY DRIVERS</b>
In a hurry to get to work	92%
NR	8%

NR = 'No Response'

#### 4.3.5 Number of times Drivers in Kabwe Have Over Sped to Beat Traffic Lights

Figure 9 shows that mostly ordinary drivers over sped in order to beat the traffic lights with 20% having driven between 1-5 and 10+ times, this was followed by drivers of small buses with 20% and 6% having driven between 1-5 and 10+ respectively. The least responses came from the big bus drivers who had 89% who had never over sped to beat the traffic lights. Those who responded that they had over sped in order to beat the traffic lights were asked to give reasons for doing so, Figure 10 shows the reasons they gave.

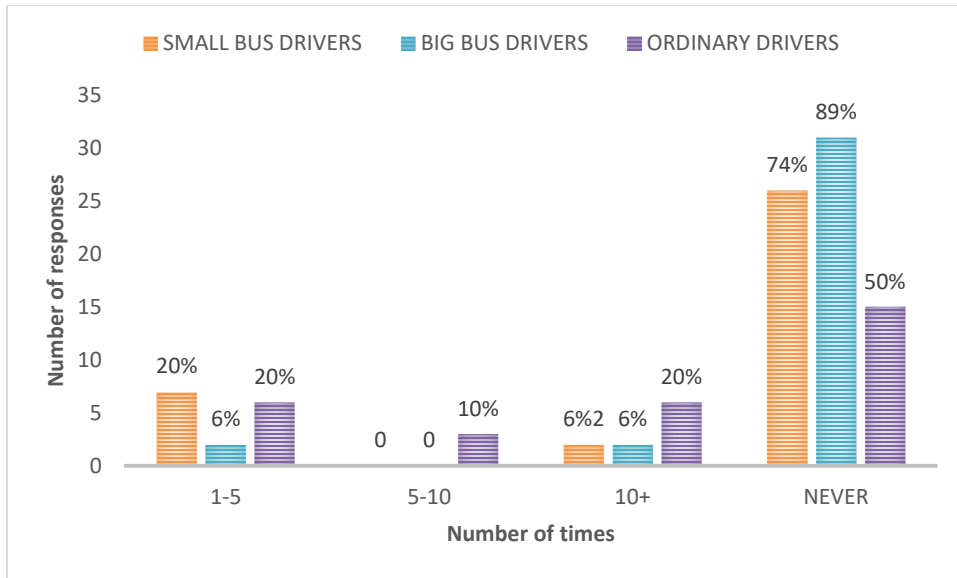


Figure 9: Number of times drivers in Kabwe have over sped in order to beat the traffic lights

#### 4.3.6 Reasons for Over Speeding to Beat Traffic Lights

The respondents who said they did not want to wait for the red light to turn back to green all came from the category of Ordinary drivers including the respondent who did it to avoid being hit at the back. The rest of the responses were given by the PSV drivers as shown in Figure 10.

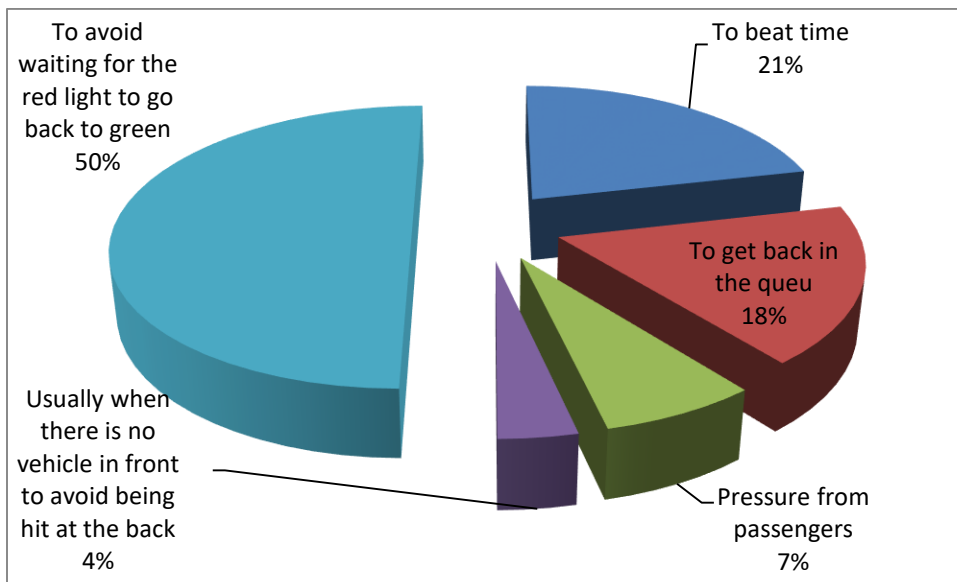


Figure 10: Reasons Drivers in Kabwe gave for over speeding in order to beat the traffic lights



#### 4.3.7 Drivers in Kabwe who have ever dosed off while driving

Figure 11 shows the answers given by the respondents on whether they have ever dozed off while driving. 51% of both categories of PSV drivers said they had at least dozed off while driving while, 49% said they had never dozed off. Among the ordinary drivers, 73% said they had never dozed off while 27% said they had dozed off.

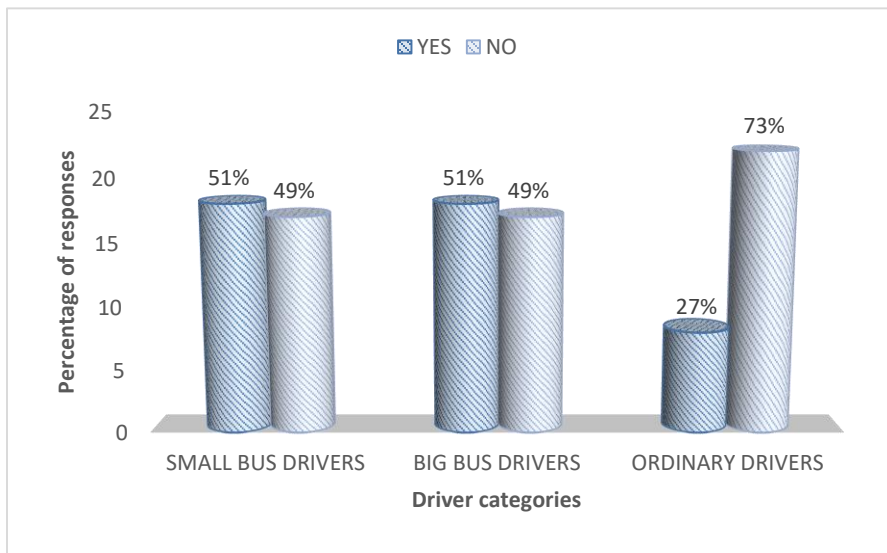
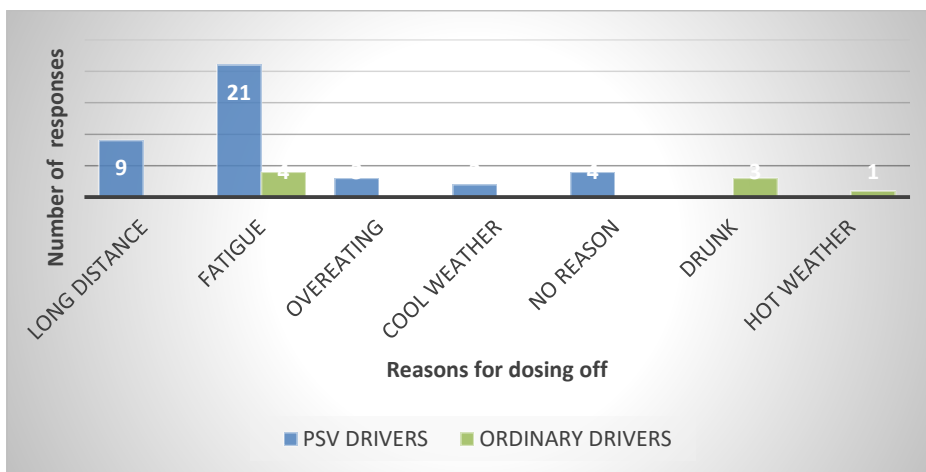


Figure 11: Drivers in Kabwe who have ever dozed off while driving

#### 4.3.8 Reasons for dosing off while driving

Majority (21%) of the PSV drivers as in Figure 12 stated that fatigue was the reason why they dozed off while driving, this was followed by driving for long distances (9%). The ordinary drivers also sighted fatigue (4%) as a reason as well as being drunk. The least response (1%) was that of the weather being hot and this reason was cited by the ordinary drivers.



#### 4.3.9 Drivers who drive with Headlights ON during the Day Time

Of the PSV drivers, 97% as shown in Figure 13 stated that they never switch on the headlights when they drove during the day time, while 80% of the ordinary drivers stated that they did not switch on their headlights. On the other hand, 20% of the ordinary drivers responded that they do switch on their headlights while 3% of the PSV drivers also said they do switch on when driving during the day time.

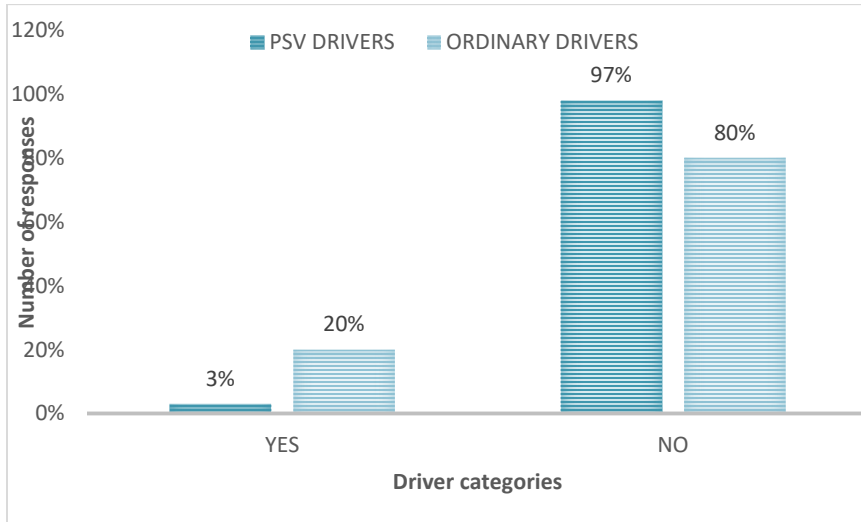


Figure 13: Drivers who drive with headlights on during the day time

#### 4.3.10 Drivers who felt there was Value in Switching ON Headlights when driving During the Day

All the ordinary drivers according to Figure 14 felt there was value in switching on the headlights when they drove during the day time. Of the PSV drivers, 71% said there was value in switching on headlights while 29% said there was no value.

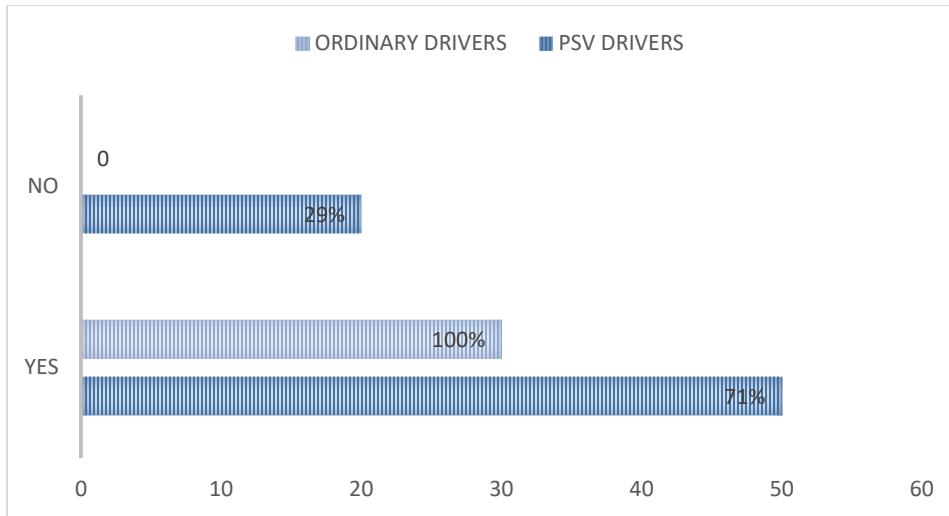


Figure 14: Drivers in Kabwe who felt there was value in switching ON headlights when they drove during the day time

#### 4.3.11 Reasons Drivers gave for finding Value in Switching ON Headlights when driving during the Day Time

The drivers who said there was value in switching on headlights when they drove during the day time gave the reasons in Table 8. Majority of the respondents sighted bad weather (foggy and heavy rains) leading to reduced visibility as the major reason for switching on headlights; this made up 56% and 90% of PSV drivers and ordinary drivers respectively. This was followed by 16% of PSV drivers who cited funerals. The least response was 2% of the PSV drivers who said they did it when greeting fellow drivers.

Table 8: Reasons drivers gave for finding value in switching on headlights when driving during the day time

REASON	PSV DRIVERS	ORDINARY DRIVERS
Bad weather(heavy rains and fog) leading to reduced visibility	56%	90%
Funerals	16%	NR
Emergency situation	14%	10%
Warning other motorists of danger	10%	NR
Greeting fellow drivers	2%	NR
For those drivers who are shortsighted	2%	NR
Colour of car (dark colour)	NR	NR

NR= 'No Response'

#### 4.3.12 Whether Drivers have a Responsibility to Reduce the Number of Road Traffic Accidents

According to Figure 15 all the respondents from all the driver categories said they did have a responsibility to reduce the number of RTA in Kabwe.

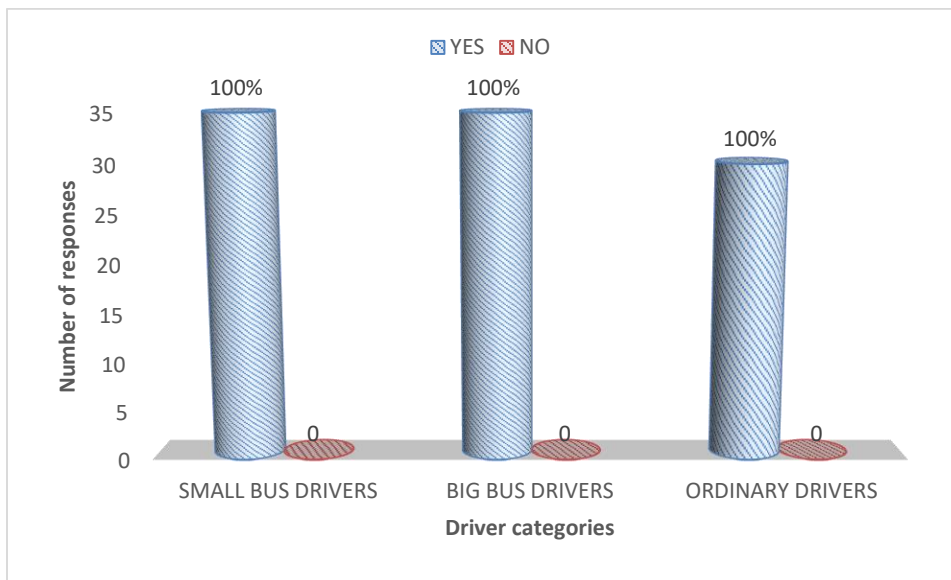


Figure 15: Drivers' responses to whether they have a responsibility to reduce the number of road traffic accidents in Kabwe

**4.4:** Tables 9 and 10 show that the age group that had driven above the speed limit more times and over sped to beat the traffic lights more times is 30-39 years. While Table 11 shows that the same age group had the second highest number of people who drove road unworthy vehicles.

Table 9. Cross tabulation of age of driver and whether drivers have driven above the speed limit

<b>AGE RANGES OF DRIVER * EVER DRIVEN ABOVE SPEED LIMIT Cross Tabulation</b>						
<b>Count</b>						
		<b>EVER DRIVEN ABOVE SPEED LIMIT</b>				<b>Total</b>
		<b>NEVER</b>	<b>1-5</b>	<b>5-10</b>	<b>10+</b>	
<b>AGE RANGES OF DRIVER</b>	0-29	3	5	0	3	11
	30-39	10	10	3	10	33
	40-49	16	13	2	7	38
	50-59	8	4	1	3	16
	60+	1	0	0	1	2
<b>Total</b>		38	32	6	24	100

Table 10. Cross tabulation of age of driver and whether drivers in that age group has over sped to beat traffic lights

<b>AGE RANGES OF DRIVER * OVERSPED TO BEAT TRAFFIC LIGHTS - Cross tabulation</b>						
<b>Count</b>						
		<b>OVERSPED TO BEAT TRAFFIC LIGHTS</b>				<b>Total</b>
		<b>NEVER</b>	<b>1-5</b>	<b>5-10</b>	<b>10+</b>	
<b>AGE RANGES OF DRIVER</b>	0-29	7	2	1	1	11
	30-39	24	5	0	4	33
	40-49	30	6	1	1	38
	50-59	13	1	1	1	16
	60+	1	0	0	1	2
<b>Total</b>		75	14	3	8	100

Table 11: Cross tabulation of age of drivers and whether driver has driven a road unworthy vehicle

<b>AGE RANGE OF DRIVERS * DRIVEN ROAD UNWORTHY VEHICLE OR NOT Cross tabulation</b>				
<b>Count</b>		<b>DRIVEN ROAD UNWORTHY VEHICLE OR NOT</b>		<b>Total</b>
		<b>YES</b>	<b>NO</b>	
<b>AGE RANGE OF DRIVERS</b>	0-29	2	9	11
	30-39	11	22	33
	40-49	15	23	38
	50-59	8	8	16
	60+	1	1	2
<b>Total</b>		<b>37</b>	<b>63</b>	<b>100</b>

# CHAPTER FIVE

## 5.0 DISCUSSION

### 5.1 INTERPRETATION OF KEY FINDINGS

The main aim of this chapter is to critically reflect on some of the important features emerging from this study. In proceeding, the discussion will be done in line with the objectives that were set as well as the research questions that were asked. This discussion will be based on the responses given by the respondents as well as the observations obtained from the cross tabulations and analyses done by the researcher concerning certain independent and dependent variables.

When a driver undergoes a driver's education course, they get exposed to information that is long and tested more than once and it is the same information that they are required to put into practice when they go out on the road with their instructor and how they interpret that information on the road is what will determine whether they get a driving license or not. According to Despres (2016), at driving school, the focus mostly is to teach the learner defensive driving this helps to promote safety. Furthermore, the driver's course teaches the learner to have a sense of personal responsibility when operating a car and when drivers have a sense of responsibility to self, then they are more likely to extend the same to other road users and the resultant effect is more safety on our roads.

According to a ministerial Statement made by Hon. Brian Mushimba (Minister of Transport and Communications) in Parliament on *Measures to Reduce Road Traffic Accidents in Zambia*, (Feb, 2017), the Minister stated that many drivers in the country lack the necessary driving skills needed to avoid accidents, as it is not mandatory for drivers to undergo formal training in Zambia. Given this fact, the results found in this research reveal the contrary, according to this study, Majority of the drivers have attended driving school (76%) meaning that more and more drivers are becoming responsive to the need to undergo formal training and majority are making concerted efforts to get formally trained. Based on this finding, it can be argued that there is an upward trend in the need to get trained by many PSV drivers.

Similarly, the study also revealed that a high number of PSV drivers had a driving license compared to the ordinary drivers. By implication, this result shows that more PSV drivers have undergone the Drivers' Test at RTSA and are driving legally, in addition, it also means that contrary to popular assertions by certain authorities that PSV drivers are generally lawless, the responses given by the PSV drivers go to show that many of them are becoming more aware of their requirements as drivers and are gradually becoming compliant to the need to get trained in order for them to learn skills and have knowledge that will increase their safety and that of their patrons on the road.

Another important theme emerging from this study was drivers having Defensive Driving skills (a set of driving skills that allows one to defend themselves against possible collisions caused by bad and drunk drivers as well as bad weather.) DriversED.com. Many drivers indicated that it was important that drivers acquire this skill. Despres (2016) argues that; defensive driving specifically makes drivers to learn how to spot aggressive drivers on the road and teaches them to know how to avoid crashes and when to pull off the road. A study done by Guruva (2002) revealed that defensive driving course graduates had fewer traffic violations and crashes proving that education for the driver improves performance on the road and consequently the possibility of car crashes. However, Ker et al, 2005's systemic review of a randomized control trial showed that post driver license education has no significant effect on reducing crashes, O'Neil and Mohan, 2012 emphasised that enforcement of traffic safety has an impact on reduction of RTA as compared to driver education which may give good knowledge without leading to any behavior change. It is believed that law enforcement is more effective when it is highly visible, publicized, enforced selective and sustained for a long period (WHO, 2004).

Road Safety according to WHO (2009), is having knowledge about the methods and measures used to prevent road users from being killed or seriously injured. One of RTSA's primary duties is to conduct Road Safety Education by way of publicity campaigns and also undertaking and assisting in the dissemination of information on Road Safety for the benefit of the community. The Road Traffic and Safety Agency has an Education Department whose role is to disseminate information through road shows, visiting schools and conducting programmes like road safety week, further the agency has Partnered with TEVETA to come up with a school curriculum on



Road Safety and it has also developed a program in which schools have a School Patron that can educate them on Road Safety related issues.

Knowledge levels among the PSV drivers regarding road safety were found to be very low in this study. Knowledge levels are thought to be crucial in changing attitudes, fostering good road user behaviour among drivers and consequently decreasing traffic injuries and deaths. The fact that some drivers revealed that they had no idea what Road Safety is all about raises a red flag! It speaks volumes about the gaps that exist in the methods responsible institutions are utilizing to disseminate this important message. Further, it is also indicative of how little they have invested in ensuring that this message reaches everyone that is of eligible age to operate public transportation. The nature of the work and work environment of PSV drivers requires that RTSA and other partner institutions continue to stress the message of Road Safety on a constant basis and this can be done by; road safety slogans by the road side, mobile tones, SMS reminders and so on. Information dissemination for this category of road users has to be innovative as most of them particularly in developing countries like Zambia are ignorant. (Peden *et.al*, 2004)

Furthermore, WHO recommends that there should be awareness of road safety among the general public and all categories of road users regarding planning (particularly in many developing countries) of new road networks, incorporation of safety features in the design of new roads, safety improvements to existing roads, remedial action at sites as this would go a long way in improving road safety (WHO, 2006)

The behaviour of road users is an important factor in accident causation and in this study, it was revealed that, behaviour among this category of road users still remains bad: over speeding, driver fatigue, drunken driving and poor vehicle maintenance are some of the issues that patrons and the general public continue to grapple with on a constant basis.

### **5.1.1 Speeding**

Some PSV drivers reported that they were forced to over speed in order to make cashing for that day failure to which, they would be underpaid by their bosses. Given this state of affairs, it can be said that some of the behaviour displayed by the PSV drivers is not because they are reckless but could be the result of them working under duress to meet their employer's demands. Moreover, some also stated that they sometimes over sped because of pressure from customers. This

revelation indicates that, the general public as well have bad attitudes towards road safety. However, a reduction in travelling distance may help to reduce crashes that are passenger related. Measures to reduce trips according to WHO (2004), would also go a long way in preventing people from rushing from one place to the next and this can be done by; making people live close to where they work, better management of vehicles and the use of travelling timetables.

The above finding correlates with results obtained in a study carried out in Zimbabwe where it was found that despite over speeding being a violation of traffic laws, drivers driving for long distances over sped because over speeding was used as a criterion for employment while for those driving locally; it was for purposes of maximizing profits (Muvurungi,2012). This result implies that drivers have a positive perception on the benefits of speed. However, the chances of crash occurrence and severity of the crash are directly related to increase in average speed which simply put means that, the higher the speed the greater the stopping distance and the higher the risk of RTA (Nilsson, 2004)

#### **5.1.2 Vehicle Maintenance and State**

Findings in this research indicated that most PSV drivers drove road unworthy vehicles, this finding is line with the findings reported by the Traffic police. They reported among many other factors that driving of road unworthy vehicles was one of the leading causes of RTA in Zambia especially among PSV drivers. However, it must be noted that; majority of these PSV drivers do not own the buses that they drive and therefore, the responsibility to repair any damage is not theirs. Like the case is in Zambia, Dube and Mawere (2011), argue that vehicle road-unworthiness is also cause for concern in Zimbabwe as about 10% of RTA is attributed to vehicle factors. Most of the vehicles are imported from Japan with ages ranging from about three to twenty years. Most Zimbabweans cannot afford to buy new cars and therefore end up buying these cars which are no longer road worthy. As a consequence, the cost of maintenance of these vehicles is very high and most mechanics are not even qualified to handle these vehicles.

#### **5.1.3 Driver Fatigue**

Driving long distances according to TAC (2016), is suspected to be the primary cause of 20% of RTA, it is believed that most fatigue related accidents occur during normal sleeping hours i.e. 22:00 -05:00 hours . According to Peltzer (2008), driver fatigue in many developing countries is

very common as there is heavy reliance on motorized road transport. Fatigue comes as a result of drivers working long hours and travelling long distances. A study done in South Africa showed that about 24 per cent of accidents involving commercial vehicles were associated with sleeping while driving (ibid). In addition, the Research and Innovative Technology administration (RITA) and Bureau of the Transportation Statistics(BTS) conducted a review of road safety in Africa and found that drivers cited economic pressure and high cost of living as factors pushing them to drive long hours resulting in exhaustion.(RITA/BTS, undated). However, the introduction of SI 76 in Zambia (Lusaka Times, 2016) will go a long way in preventing fatigue related RTAs as it bans the travel of vehicles whether passenger or goods during the hours classified as ‘normal sleeping hours’. The above revelations are some of the lacunas that exist in the work environment of the drivers that need to be addressed urgently before more lives are lost

On the road, it is very common to spot differences in the levels of aggressiveness by PSV drivers, this kind of behaviour can lead to dangerous situations which can threaten the health and life of patrons. It is also a well-known fact that demographic characteristics like age of driver have an effect to what extent a driver will comply with road safety regulations. Section 64 of the Road Traffic Act No. 11 of 2002 prescribes the minimum driving age of a PSV driver as 25 years. Additionally, a PSV is also required to have at least two years prior experience in driving. In this study, results indicate that there was no underage driver in the category of PSV drivers (those that fell below age 25, were all ordinary drivers, the youngest PSV driver was 30 years old), it was an important factor to point out because, in a study done in Tanzania by Makuu (2010), it was found that majority of the bus drivers were below the legal driving age. In addition, many were reported to be ignorant of road safety rules, over sped unnecessarily without taking care of passengers and whenever an RTA occurred, they ran off and abandoned the vehicle.

When age of driver was cross tabulated with bad road user behaviour such as over speeding and cutting the red light, the age group 30-39 was found to have flouted this road service regulation more than the other age groups, this finding ties in with past studies showing that younger drivers are more likely to demonstrate greater propensity to take risks and break road traffic regulations compared to the older ones. One driver in this study cited thrill seeking as the reason why he over sped and in like manner, age related personality factors such as sensation seeking, (the willingness to take physical and or social risks to fulfill a need for novel and complex sensations)

aggressiveness and egocentrism have been found to affect the crash risk of younger drivers (Bates *et. al*, 2014). Furthermore, risky driving behaviour such as exceeding the speed limit was linked to 50% of increased risk of crashing. (ibid)

## **5.2 CONCLUSION AND RECOMMEDATIONS**

### **5.2.1 CONCLUSION**

To conclude therefore, the objective of this research paper was to determine factors influencing Road Safety compliance levels among PSV drivers in Kabwe. Before recommendations could be made, a conclusion was drawn based on a review of Road Traffic information obtained in Kabwe as well as other studies done in other countries around the world. This research shows that Zambia has in place the legislation that ensures Safety on the road and a regulatory body in place whose mandate is to manage transportation and ensure safety on the road. However, there are low knowledge levels among PSV drivers on Road Safety, there is also poor attitudes towards road safety and bad road user behaviour, and there is also a general negligence of road safety regulations by PSV drivers, bad road infrastructure, poor law enforcement and corruption.

Driving recklessly and violation of Road Service regulations are behaviours that remain rampant among PSV drivers. Driver related fatigue and over speeding have been identified as some of the main factors contributing to increased RTA rates in Zambia. Inadequate road safety features such as road markings and sign posts on the roads and highways. Road signs indicating hazardous areas such as densely populated areas, school ahead, pedestrian crossing, barrier ahead and humps were not displayed in order to calm traffic. Further, warning signs showing curves, narrow roads and bridges were found to be equally not in place. The main highway and township roads have been found lacking in terms of safety measures which are associated with a lot of road traffic injuries and in some cases death. Most of them are characterized by poor technical design and construction of the highway, narrow roads that cannot accommodate high traffic volumes, potholes, poor signage, bushes surrounding the roads and stray animals found in the road environment. In addition, there is no separation such as cyclist lanes and pedestrian crossing; all these are factors that contribute significantly to increased RTA rates in Kabwe.

The problem of road unworthy vehicles gives us a lot of cause for concern. In this study, it was discovered that the number of drivers driving road unworthy vehicles is quite high. With the

corrupted law enforcement inherent in our Road Traffic system, overloaded, damaged and unregistered vehicles have become an acceptable trend on our roads.

It is true that RTSA has in the recent past paved the way for proper road user behavior and increased knowledge among drivers particularly PSV drivers. However, we cannot say that these efforts have led to a proportionate decline in the number of RTA in the country. This study has revealed low knowledge levels on Road safety by PSV drivers. The Road Transport and Safety Agency also has a lot to do in educating the public on Road Safety as well as its mandate. From this study, it also appears that, more drivers seem to perceive the agency as an enemy and not a service provider and partner. With this in place, more and more drivers as well as other categories of road users will perceive them in a positive way and will therefore be more compliant to all road service regulation and as a nation we will attain the simultaneous goals of safe roads and reduction in road traffic accidents.

### **5.2.3 RECOMMENDATIONS**

#### **a. Road Network Expansion**

There is need for government and all stakeholders involved to look into a massive road upgrading and expansion programme. It is not only about having roads that are in good condition but ensuring that the roads are built with all the necessary safety features that will guide motorists and all other road users at every mile of the way. It also means; ensuring that the roads are able to accommodate the volume of traffic in the country and that coming from outside the country. There is also need for relevant authorities to define and identify 'Black Spots', this step will help in coming up with appropriate measures to curb future crashes at such spots.

#### **b. Alternative Modes of Transport**

Government should also look into revamping the railway system which can serve as the other alternative to road transport. This can be done in order to reduce the volume of traffic on the road. Heavy goods and equipment coming into the country can be transported by rail, commuter busses can also be supplemented by commuter trains.

### **c. More Sensitisation**

The issue of driver education and community sensitization cannot be overemphasised. RTSA and all partner government wings need to come up with more and more innovative and effective ways of communicating these messages to members of the public as only education can change the attitude of people. If need be, they can partner with other organisations in order to publicise the message far and wide

### **d. Image Building**

The Road Transport and Safety Agency need to do some image building as far as their work is concerned. The public view them as enemy and an unnecessary inconvenience. Doing this will drive home the message of road safety more easily and will ultimately make their work easy. In addition, government should look into investing more funds into the agency to enable them employ more staff and procure more equipment that will lessen their burden.

### **e. Mandatory Attendance of Driving School**

A deliberate policy to make attendance of driving school will also go a long way to ensure that only people with the right skills are allowed on the road.

### **f. Follow-up Measures**

The Road Traffic and Safety Agency has put in place a number of measures aimed at reducing RTA in the country therefore, there is need for the agency to come up with deliberate follow-up measures to ascertain whether measures and interventions put in place are yielding their intended objective.

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## **APPENDICES**

## **APPENDIX ONE: Interview Guide for RTSA Officers**

1. What are the main functions of RTSA?
2. Do you think RTSA is carrying out its functions to the fullest?
3. What programs has the institution put in place to communicate road safety awareness and proper road user behavior to the general public?
4. Do you think the general public especially motorists is responsive to these messages?
5. In the last five years, would you say the number of RTA has gone up or gone down?
6. What measures has RTSA put in place in the last five years to help reduce RTA?
7. What have been the results so far?
8. What are some of the biggest challenges you face with regards to PSV drivers?
9. What are you doing about it?
10. Which is the most common road traffic offence committed by PSV drivers?
11. Why do you think this is so?
12. What are the main challenges that you face as an institution in your mandate of managing transport and ensuring road safety in the country?
13. What can be done to make drivers more compliant to road traffic rules and regulations?
14. What do you think is the most effective method to help bring down RTA rates in the country?
15. What are your last words to the general public with respect to road safety?

**THANKYOU FOR YOUR TIME!**

## **APPENDIX TWO: interview guide for Zambia police officers**

1. What is the main purpose of the Zambia police traffic division?
2. To what extent is the division carrying out its mandate?
3. What according to you are main causes of RTA in the country?
4. Which age groups/group commits the most traffic misdemeanours?
5. What have you done as a division to reverse this trend?
6. It is believed that in most developing countries; there is poor enforcement of road traffic laws, why do you think this is the case?
7. What measures have you put in place to ensure maximum enforcement of road traffic rules and regulations?
8. It is believed that there is a general late response by the police when called to an accident scene, is this true?
9. Why is this case?
10. What are the greatest challenges you face as a division with regards to road safety among motorists particularly PSV drivers?
11. What can be done to improve the situation?
12. What are your concluding remarks to the general public on road safety?

**THANKYOU FOR YOUR TIME!**

## **APPENDIX THREE: Questionnaire for Bus Drivers/Ordinary Drivers**

### **To investigate the Effect age has on Drivers compliance to Road Safety**

1. What is your age range?
2. What is the highest level of education you have attained?

### **To investigate the number of PSV drivers who undergo formal training in driving**

3. Do you have a driving license?
4. Did you go to a driving school before you started driving?
5. If No, how did you learn how to drive?
6. Give reasons for your answer in 5 above
7. Do you think it is necessary to attend driving school before one can start driving?
8. If No, why not?

### **To ascertain knowledge levels among PSV drivers regarding what constitutes road safety**

9. What is your own understanding of road safety?
10. Based on your answer in 9 above do you think that enough measures have been put in place by the relevant authorities to ensure road safety?
11. If your answer is No, what more needs to be done?

### **To assess road user behavior among PSV drivers**

12. Are concerned about the rising number of accidents in the country?
13. Have you ever driven a vehicle which, in your opinion was not road worthy?
14. If yes, why did you drive such a vehicle?
15. How many times have you driven over the speed limit?
16. If yes, what was the reason?
17. How many times have you over-spiced in order to beat the traffic lights?
18. If yes, what was your reason?
19. Have you ever dozed off while driving?

20. If yes, what could have caused that?
21. Do you switch on your headlights when you drive on the highway during day time?
22. Is there any value switching on headlights when you drive during day time?
23. Give reasons to 17 above.
24. As a driver, do you have a responsibility to reducing the number of accidents?

**THANKYOU FOR YOU COOPERATION!**

## **APPENDIX FOUR: Interview Guide for Driving Schools**

- 1) How long have you been operational?
- 2) What is the main theme of your training syllabus?
- 3) What is your main objective for every student that you graduate?
- 4) What are your general observations regarding your students attitude towards road safety when you take them out on the road
- 5) Do you ever fail your students?
- 6) If yes, on what grounds
- 7) What exactly do you look for in order to graduate a student?
- 8) What is the greatest advice you can give an aspiring driver?
- 9) What do you think is the number one cause of accidents in Zambia?
- 10) Do you think your syllabus adequately equips your students to be good and careful drivers?

**THANKYOU FOR YOUR COOPERATION**