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**ROAD SAFETY IN KENYA: A Study of Knowledge, Attitudes and Practices
of Drivers of Passenger Service Vehicles**

BY

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**A thesis submitted to the department of Sociology, University of Nairobi in partial fulfilment
of the requirements for the degree of Masters of Arts in Sociology.**

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Declaration


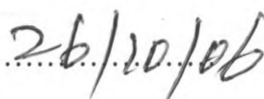
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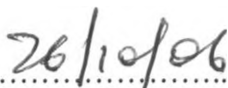
Sign.....

Gladys Moraa M

This thesis has been submitted for examination with my approval as a university supervisor

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Prof Preston Chitere..... Date.....

Prof E. K. Mburugu..... Date.....

Dedications

This work is dedicated to my husband Mwanzo Moseti

And

My Son Joshua Onsongo.

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I sincerely apologize to any person who took part in this work but has not been mentioned hitherto.

Abstract

Kenya has a high rate of fatalities and injuries in relation to personal and public vehicle ownership in the world with an average of 8 deaths from 35 crashes that occur daily. Nearly 3000 people are killed on the Kenyan roads annually. This has serious implication for the nation both socially and economically. The issue of road safety requires serious investigation and research in order to be managed.

Utilizing a sample of 160 drivers of public service vehicles, the study investigated how knowledge, attitudes and practices /behavior of PSV drivers contribute to road crashes. A combination of purposive and random samplings was utilized to select the study sample. Stage selection was done purposively while route and respondents were randomly selected from the list kept by stage clerks. Primary data were collected by use of self-administered open and closed ended questionnaires. Data were analyzed utilizing descriptive statistics organized and presented using tables, charts and opinion scales. The chi-square test was used to test for association between variables.

The study observed that levels of awareness/knowledge about road safety were almost universal but ironically this did not influence the number of accidents that occurred. Also bad driving habits or violation of traffic rules was not found to affect the number of accidents occurring. The PSV drivers were found to have negative attitudes towards law enforcement officers leading to many unnecessary road crashes. They were also found to have negative attitudes towards their work and to be dissatisfied with their work as drivers. The study also found out that driving schools were not being monitored or evaluated and that there did not exist a standard curriculum for all driving schools in Kenya.

Bases on the findings of the study, it was concluded that, drivers need to understand the need to observe all road safety rules if road accidents are to be reduced. There is also need for stakeholders to organize seminars where PSV drivers and traffic police can meet and talk about their problems. In addition, the relationship between traffic law and road safety needs to be given greater emphasis during training of drivers. Monitoring and evaluating driving schools in order to find out if the curriculum is sufficient for the trainees' needs is also necessary. The use of electronic devices such as speed guns to monitor and apprehend traffic violators should be introduced and the fines levied for traffic violators should be increased. Finally it was recommended that a coherent public transport policy to regulate, organize and control the sector is required as a matter of urgency. The National Road Safety Council of Kenya should set national policy on road safety and develop relevant implementation strategies.

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ACRONYMS

PSV-	Public Service Vehicle
NRSCK-	National Road Safety Council of Kenya
TRL-	Transport Licensing Board
GDP-	Gross Domestic Product
IPIFA-	Injury Prevention Initiative For Africa
BAC-	Blood Alcohol Concentration
MTC-	Ministry Of Transport and Communication
MPWH-	Ministry of Public Works and Housing
TV-	Television
GoK -	Government of Kenya
KPH -	Kilometres Per Hour
UK-	United Kingdom
HIV/AIDS-	Human immunodeficiency virus
FINNIDA-	Finnish International Development Agency
RTAs-	Road Traffic Accidents
KIAD-	Kenya Institute of Advanced Driving
MADD-	Mothers Against Drunk Driving
NGO-	Non Governmental Organizations
UNECA-	United Nations Economic Commission for Africa.
NARC-	National Rainbow Coalition
NYS-	National Youth Service
MoT-	Ministry of Transport

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Road transport is the predominant mode of internal travel for most African countries, carrying about 90% of goods and persons (United Nations, 1990). However unlike other modes of travel, road travel is by far the most hazardous and accident prone. In Africa, where the effort to combat the adverse effects of road transport are minimal, the incident and severity of road traffic accidents is worse than the other regions, mainly because policy and decision makers are not sufficiently aware of the magnitude of this serious but preventable menace on the highways and city streets in the world (United Nations, 1990).

Compared with modes of inland transport, road transport has assumed considerable importance in most African countries including even countries like Kenya, Nigeria and Zimbabwe where railways have a present or potential important role to play mainly in the movement of bulk products or import/export traffic. Road transport owes this decisive role in the development of most countries to its ability to create networks more easily than other modes of transport and its provision of door-to-door services (United Nations, 1990).

But unlike rail, air and water transport, which operate on their own somewhat exclusive rights of way and in conditions of very little traffic congestion or conflicts, highway transportation is

hazardous and accident prone. It would be no exaggeration at all to identify road transport as the most dangerous mode of travel.

The growing awareness amongst multi-lateral and bi-lateral aid agencies of the importance of road crashes as a major cause of death and disability throughout the developing world is reflected in the recent establishment of Global Road Safety Partnership (GRSP). This has been set up under the framework of the World Bank's Business Partners for Development Programme and is a partnership of private sectors, civil society and government organizations collaborating to improve the road safety situation in developing and transitional nations (Jacobs and Thomas, 2000).

Every year throughout the world 700,000 people are killed in road accidents, but the death rate in developing countries is proportionately far greater 5 to 10 times higher than in the developed countries. These accidents take a heavy toll on young people, which is obviously disastrous. (Isted, 1999). According to Odero, Garner, Zwi (1997) the incidence of road traffic crashes in Kenya illustrate that more than 75% of road traffic casualties are among economically productive young adults. The consequences are dramatic for the injured that besides the suffering they endure have to negotiate a grueling obstacle course to get community care.

Kenya has a high rate of fatalities and injuries in relation to car ownership in the world with an average of 8 deaths from the 35 crashes that occur daily. (Assum, 1998). Nearly 3,000 people are killed on the Kenyan roads annually. This translates to approximately 68 deaths per 10,000 registered vehicles, which is 30-40 times greater than highly motorized countries (Odero et al 1997). Even the head of state President Mwai Kibaki has echoed the above concern in the World Health Organization's, World Report on Road Traffic Injury Prevention, 2004. The country has

experienced a rapid increase in number of road traffic injuries and their consequences in terms of mortality, morbidity and disability. According to traffic police reports, road traffic crashes rose from 3,562 in 1965 to 14,342 in 1998, and the number of persons killed from 552 to 2,972-increase of 300% and 430% respectively. This means that the number of casualties per crash has increased from 1.3 in 1965 to 2.0 in 1998, partly reflecting the frequent involvement of matatus and buses with high passenger load (Odero et al 2002).

Due to lack of funding there are few significant studies or researches that have been done on road safety and more so, on the contribution of the human factor in road crashes. This study therefore seeks to understand knowledge, attitudes and practices of passenger service vehicles drivers owing to the fact that passengers are the second greatest victims after the pedestrians and at the same time, drivers are ranked the main causes of road crashes in police records. Kenya like many other African countries does not have a specific government run passenger service driving college and neither does it have a standard curriculum for driving school students. It is only Kenya Bus Company that has started driving courses for drivers of public service vehicles. But since this school is private, it is a little expensive i.e. they charge Kshs 12,000 for duration of 10 days that the course takes. Also failure by the government to look into how the other commercial driving schools are licensed, who checks them and how they operate, investigating if they are well equipped and staffed with qualified instructors, makes the situation even worse.

1.2 PROBLEM STATEMENT

According to the World Bank appraisal by Terje Assum in February 1998 on the road safety situation and road safety work in five (5) African countries, Kenya, Benin, Ivory coast, Tanzania and Zimbabwe; it was discovered that between 1968 and 1990 road fatalities in Africa increased by 350 (%) (Assum, 1998). Without some action this increase will probably continue as the number of motor vehicles increases. The rate of those killed and injured is relative to the number of motor vehicles, is extremely high in most African countries (Dhliwayo, M.E, 1997). The main findings from the above World Bank appraisal indicated that fatality per vehicle rates for the five selected countries were alarmingly high compared to countries outside Africa. Pedestrians, passengers of public service vehicles, and possibly drivers and passengers of motorcycles are the main victim groups and that they are likely to remain the victim group for a long time (Assum, 1998).

During the five-year period, 1993-1997, for the five African countries of Benin, Ivory Coast, Kenya, Tanzania and Zimbabwe; the number of motor vehicles increased from 21%-63%, road accidents from 15%-70% fatalities from 28%-57% and injuries from 27%-89%. The pedestrians and public transport passengers are the largest groups among the fatalities, about 30%-40% each. In 1990 the accident risk for buses and taxis in Kenya was four times that of cars and light vehicles (Assum, 1998).

It is estimated that road crashes killed 1.2 million people world wide and injured about 20-50 million in 2002. (Odero William, 2004). Road traffic injuries are currently ranked 9th globally among leading causes of disease burden, in terms of disability adjusted live years lost (Odero, 2004). It is feared that if this trend continues the annual number of deaths and disabilities from road

traffic injuries will rise to 60% by 2020, to be the third leading cause of premature death and disability, ahead of malaria, Tuberculosis and HIV/AIDS in the world. (Ministry of Health, 2004).

Developing countries bear the brunt of fatalities and disabilities from road traffic crashes, accounting for more than 85% of the world's fatalities, and about 90% of the total disability adjusted years lost due to traffic injuries. The problem is increasing in these countries at a fast rate, while it is declining in all industrialized nations like Western Europe, North America, Japan, Australia and New Zealand (Odero, 2004).

Road traffic crashes exert a huge burden on Kenya's economy and health care services. Kenya has one of the highest road fatality rates in relation to car ownership in the world, with an average of 8 deaths from the 35 road crashes that occur each day. The country registers about 3,000 deaths and 30,000 injuries every year. (Odero, Khayesi, Heda, 2003). The majorities admitted to Kenyan hospitals with injuries have suffered road traffic crashes. Road traffic crashes leave many families emotionally and financially devastated. Those close to the injured often live with lost or reduced incomes and increased expenses from funerals and care for the injured. The emotional and financial stress often leads to depression or even suicide. Many families fall into poverty leading to school drop outs juvenile delinquency, crime and vulnerability to HIV/AIDS (Ministry of Health, 2004).

The world wide annual average cost of road crashes is in excess of US \$ 500 billion, and in the developing world the estimated cost is about US \$ 65 billion each year. Due to the scarcity of costing data for African countries, it is difficult to make a precise cost of road crashes in Sub-Saharan Africa (Jacobs and Thomas, 2000).

To Kenya's economy the cost of road crashes is estimated at Kshs 14 billion this is about 5% of the GDP. This is much higher than the average annual cost of road accidents to the economies of the third world countries, which is estimated as between 1-2% of the GDP (National Road Safety Council, 2004).

According to data from the National Road Safety Council of Kenya (NRSCK) on road fatalities in Kenya by class of road user and region 1990, pedestrians were the highest casualties at 41.1% followed by passengers at 36.7%. (NRSC, 1992) The appraisal of road safety initiative in five African counties in 1998 also indicates that in 1995 in Kenya, fatalities among passengers was 34% while pedestrians were 44%. (Assum, 1998). The situation in most African countries is the same with high numbers of pedestrians and passengers affected. But the study focuses on drivers of PSVs because most of these vehicles carry many people and in the event of a crash many are killed or injured as opposed to low capacity vehicles. To illustrate:

Matatus accounted for the majority of vehicles involved in accidents at over 12.7% matatus in 1993, 16.5% in 1998 and 19.15% in 2002. Buses followed them at 8.5%, 8.7% and 8.8% in 1993, 1998 and 2002, respectively. Matatu and bus accidents combined accounted for 17.4%, in 1993, 20% in 1997 and 28% in 2002 thus almost equaling total annual accidents involving all cars and utility vehicles combined. This shows that public passenger vehicles are involved in majority of fatalities. Considering that matatu and bus crashes are almost 3.5 higher than the rest of other vehicles (GoK, MoT, Report, 2004).

Khayesi 1999, says that the "behaviour of Matatu drivers is a matter of concern to other road users and the Government of Kenya. These drivers violate traffic rules with impunity. The typical

behaviour of matatu drivers in Nairobi and Kenya in general endangers the lives of other road users." The drivers' behaviour explains to a large extent, the increasing number of Matatu accidents in Kenya (Khayesi, 1999:9)

Evidence suggests that human factors are often the most important accident cause; driving too fast driving under the influence of drugs and alcohol, other reckless driving inattention to other users, overloading vehicles with goods and people, and driving for too many hours undoubtedly contribute significantly to road accidents (Assum, 1998).

According to the statistical abstract 2003, drivers are ranked highest in the responsibility of causing road accidents in Kenya followed by pedestrians, cyclists and finally passengers. Since in Kenya not many comprehensive studies on road safety have been done, there is a gap to be filled and more knowledge to be generated in the area of road safety in general.

A few studies done in Kenya have focused on other areas other than drivers of Public service vehicles. In 1997 Khayesi did a study on the regional patterns of pedestrian road traffic accidents and also in 1998 he did an analysis of road traffic accidents in relation to selected socioeconomic dynamics and intervention measures in Kenya. Nantulya VM and Muli Musiime F. (2001) did a study of the social determinants of road traffic accidents in Kenya. Odero, Khayesi and Heda (2003) did a study on Road traffic injuries. Odero (1999) did a study on the blood alcohol concentration in a casualty department in Eldoret and Muyia (1995) did a study on the working conditions of Matatu drivers in Eldoret. But this study focuses on the PSV drivers' knowledge, attitudes and practices or behaviour and their contribution to road crashes in Kenya. The study therefore seeks to fill gaps in literature and also generate new knowledge for better understanding of road safety in Kenya.

Kenya is said to be the only country implementing a traffic policy among 48 countries in Africa but still the road safety problems are persistent. A lot has been said about other perceived causes of road crashes especially the physical aspect of roads but the contribution of drivers especially the passenger service driver has not been given much attention. The problem seems to stem from poor training in the overly commercial driving schools without a standard curriculum, a lack of knowledge or appreciation of road safety, a negative attitude towards their work and a bad attitude toward traffic law enforcement leading to non recognition and disrespect for regulations. Therefore the questions guiding the study are as follows;

1. What are levels of awareness of road safety among drivers of public service vehicles (PSVs) in Kenya?
2. What are the attitudes of PSV drivers towards their work?
3. How does violation of traffic rules among PSV drivers contribute to road crashes?
4. Does training determine the drivers frequency of involvement in road crashes.

1.3 STUDY OBJECTIVES

The broad objective of the study is to:

Investigate how knowledge, attitude and practices/behavior of PSV drivers contribute to road crashes.

The specific objectives of the study are to:

- (1) Determine levels of awareness of road safety among PSV drivers.
- (2) Find out the attitudes of drivers towards their work.
- (3) Determine to what extent violation of traffic rules contribute to road crashes

(4) Assess whether training affects the driver's frequency of involvement in road crashes.

1.4 JUSTIFICATION FOR THE STUDY

According to several researches conducted by World Bank, Transport Research Laboratory (TRL) and other development organizations it is evident that Africa as a region has a disproportionate share of global road fatalities relative to its share of motor vehicles. This calls for more research to find out why the situation is the way it is. There is a gap in literature to fill and also generate new knowledge in the area. The study will also throw light on the transport policies in Kenya.

The high level of road crashes has disastrous consequences for the Kenyan economy that is already frail. The average cost of road crashes to the economy is estimated at 14 billion or 5% of the GDP (Jacobs and Thomas, 2000). If the crashes would reduce this money would be invested elsewhere to reduce poverty levels. The straining of health care services would reduce too. There is also loss of working age people who are likely heads of households and responsible for several family members. The study is important because it will help suggest ways of solving the road safety problems in Kenya this will in turn help reduce the loss of the working age people therefore reducing poverty levels.

The study will help in policy making and policy reforms in the transport sector. Since from the look of things road safety is not given political priority, study findings will help in putting weight to the issue and therefore enable proper setting of priorities for the government on road safety issues.

The study will attempt to identify the training needs for PSV drivers and ensuring that those needs are met by establishing formal procedures for regulating driving schools or better still, establishing a training school for public service vehicles.

1.5 SCOPE AND LIMITATIONS OF THE STUDY

The study is focused on the PSV drivers for long and short distance travel. They were either male or female. The study was limited to PSV drivers only even though there are other factors that contribute to road crashes. Time for the study was limited and funds were not sufficient. Getting information from very busy drivers was a serious challenge in terms of time and patience on their part.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

Due to the fact that very few researches on road safety have been done in Africa and more specifically in Kenya, there is a serious Literature gap. Therefore, my main sources consulted for this study mainly include: a few published papers, some conference papers and project reports, and the internet. Other major sources of literature were abstracts and papers produced in the 2nd, and 3rd African road safety congress held in Pretoria, South Africa. The Central Bureau of Statistics and traffic police were also of help as information sources. Literature for the study was organized thematically as follows; Road safety, Road crashes, Public transport in Kenya, Drivers characteristics and training, Knowledge, Attitudes and Practices (KAPs), and Lessons from other countries

2.2 ROAD SAFETY

This section looks at road safety development, activities and research in Kenya and other countries.

2.2.1 Road Safety Development in Africa

Between 1968 and 1990 road fatalities in Africa increased by 350% (Assum, 1998). Without action this increase will probably continue as the number of motor vehicles increases. The number of people killed and injured in road accidents relative to the population in most African countries has not yet reached the same level as Europe and North America; but the rate of those injured and killed relative to the number of motor vehicles is extremely high in most African countries. Pedestrians

and public transport passengers are the largest groups among the fatalities. In 1990 Kenya for example, in the accident risk for buses and taxis in Kenya was four (4) times that of cars and light vehicles (Assum 1998).

A study carried out by Transport Research laboratory (TRL) in Africa comparing crash involvement rate of commercial vehicles with that of their vehicle fleet share in three African countries namely south Africa, Botswana, and Kenya showed that cars did not have a consistent pattern while lorries had a lower crash rate in two countries. The key finding was the high crash involvement of buses. While in South Africa their crash involvement rate was over twice that of their fleet share, in Botswana it was three times and in Kenya buses were three and half time more likely to be involved in a crash than their fleet share (Jacobs et al, 2000).

Table 1 presents comparative data of the situation in the three countries.

Table 1. Vehicle type involvement comparison.

COUNTRY	YR	CARS		LORRIES & VANS		BUSES & MINIS	
		FLEET	CRASH	FLEET	CRASH	FLEET	CRASH
Kenya	1998	47%	54%	36%	12%	8%	28%
Botswana	1997	36%	26%	58%	60%	4%	12%
South Afri	1998	61%	63%	31%	22%	4%	9%

Source: Africa road safety review final report, 2002.

2.2.2 Ministries Responsible For Road Safety in Kenya

Three ministries are involved either directly or indirectly with road safety in Kenya. These are the ministry of Public Works and Housing and the Ministry of Transport and Communication also

Ministry of Education. The main responsibility of the Ministry of Public Works and Housing (MPWH) is road construction and maintenance and road safety is a consideration when roads are constructed and maintained. The road safety unit that is the secretariat of the National Road Safety Council (NRSC) is within the MPWH. The ministry also employs the chairman of NRSC.

The road safety activities and responsibilities of the Ministry of Transport and Communication (MTC) lie within the usage of roads. Activities include education of road users, radio and TV programs and other media. There seems to be a disagreement between the MPWH and the MTC about the main responsibility for road safety work. There is a problem of coordination between these two ministries. The chairman and the secretary of the NRSC report to the permanent secretary (PS) of the MPWH. The PS of the MTC would also like to instruct the chairman and the secretary, but he has to go through the PS of the MPWH. This causes some friction (Assum, 1998). There is a disagreement between the Kenya Revenue Authority (KRA) and the MTC about the registration of motor vehicles department and its annual revenue of about Shs 4.8 million or about 1 million USD. The Ministry of Education is responsible for traffic education. The police report to the Office of the President. In Kenya the Council does not meet until all the twenty-two (22) representatives are able to attend, a rule, which encourages few meetings (Assum, 1998).

2.2.3 The National Road Safety Council of Kenya

The national Road Safety Council of Kenya (NRSCK) was established in 1982 to set national policy on road safety, develop relevant implementation strategies, coordinate the work of all organizations involved in the promotion of road safety, acquire and monitor the use of sufficient resources and personnel for road safety work, and formulate a long-term programme for effective road safety work in the country (Odero, Khayesi, Heda, 2003). Its membership is multi-sectoral and

comprises representatives of 12 government ministries, organizations and institutions involved in road safety work. The membership is as follows; Ministry of Transport and Communication,, Office of the President (Police department), Ministry of Public works and Housing, Ministry of Health,, Ministry of Education, Ministry of Finance, Ministry of Information and Broadcasting, Ministry of Local government, Attorney General's office, Nairobi City Council, University of Nairobi and the Automobile Association of Kenya. (AAK)

The goal set by NRSCCK at inception was to reduce traffic fatalities by 30% from 1515 in 1983 to less than 1000 deaths in 1993. This was not achieved and on the contrary, there was a dramatic increase (Mwasi, 1984). Over the past years emphasis has been on primary preventive measures focused on, public information through radio broadcasts and television programmes; road safety education in primary schools; training of children on safe road use at the specially constructed children's traffic parks in Nairobi and Kisumu; and identification of hazardous road locations. However as in other countries in Africa, these interventions have not received the desired impact. (Assum, 1998).

NRSCCK has several limitations that render it inefficient and ineffective. These include; lack of coordination mechanisms, limited authority and responsibility, lack of resources, qualified personnel and logistical support, and limited capacity for research, monitoring and evaluation of interventions. Nevertheless a number of opportunities exist, such as growing public and political awareness and emerging local and regional initiatives. If utilized these can stimulate improvements in road safety in road safety interventions (Odero et al 2003).

2.2.4 Road Safety Programs

In Africa the road safety programs come in different versions. In Benin and Ivory Coast, the road safety programs are the road safety components of the World Bank restructuring programs for the transport sector (Assum, 1998). In Tanzania an extensive road safety program was presented in 1996. In Zimbabwe there is no National road safety program, but the Zimbabwe traffic safety board has a five-year program for its own activities (Assum, 1998). In Kenya, road safety work was given a low profile up to the late 1970s. There was no programmed, coordinated and countrywide road traffic injury prevention system. A national road safety improvement project was initiated in 1979 when the governments of Kenya and Finland agreed to start a joint road safety project within their development cooperation programme (Ministry of Transport and Communication, Kenya and Ministry of Foreign Affairs Finland, 1985).

The Kenya road safety program of 1980 (Ministry of Transport and Communication, Kenya, 1984) supported by Finland proposed organizational, enforcement, an accident investigation committee, driver training, vehicle inspection, road planning and maintenance, first aid training, information and education and road safety research. The objective of the project was to improve road safety in the country. The program ended in 1991. At the end of the FINNIDA program the National Road Safety Council prepared a cabinet memorandum on measures to enhance safety on Kenyan roads. The memorandum was made up of 24 counter measures. It is a pity that very little has been adopted from that memorandum; most of it has remained a proposal with some people saying that most countermeasures are controversial.

Since FINNIDA left no serious road safety campaign has come up. It is only recently when the Ministry of Transport and Communication tried to give road safety campaign a try by announcing

the Legal Notice 161 that requires public service vehicles to have seat belts, speed governors, be inspected and to have uniformed drivers and conductors.

It is always difficult to assess the effects of road safety programs because in practice it is impossible to know what the number of crashes and casualties would be without them. As the number of motor vehicles or Km driven increase rapidly, an extremely effective program is needed to reduce accidents and casualties. And if the program is effective a reduction in the accident (rate that is, fatalities) or injuries to the number of vehicles or that of Km driven should be expected. The rate of fatalities to 10,000 motor vehicles was not reduced considerably during the Kenya road safety program (Assum, 1998). However, the fatality rates of the years before the program started, that is 1970 to 1980, has not been reached again. The number of accidents per million was reduced from 2.55 to 1.13 from 1983 to 1990, this can be seen as a possible effect of the program.

A possible way of measuring the effects of road safety activities is through changes in road user behaviour. This can include; driving at lower speeds and reduced driving while under the influence of alcohol or drugs. A road safety research program could produce driver behaviour data (Assum, 1998).

2.2.5 Funding of Road Safety Activities

Most road safety activities are traditionally funded from a central government revenue budget. This is then distributed to various sectors of road safety either identified specifically like engineering local safety schemes or as part of the overall activity of a particular sector such as traffic policing or education. Detailed information on spending is rarely documented, but road safety tasks are often

included in more general expenditure, for example with traffic engineering or law enforcement (Ross and Babbie group Limited, 2002).

Where expenditure is explicitly linked to road safety it is mostly to be for remedial works like treating black spots rather than for crash prevention. There are examples of developing countries National Road Safety Councils that have received modest funding from their governments, but separate road safety budgets are not common. Most low-income countries national road safety councils receive very little funding, road safety is provided for as an element of other activities such as road maintenance, education or traffic policing. Ideally Road Safety plans should provide the mechanism for identifying a need to move expenditures between budgets and to track their effect (Ross and Babbie Group Limited, 2002).

In most African countries, financing is inadequate especially for activities outside road construction and maintenance. The paradox is that the road safety activities outside the road-engineering sector are much less expensive than those within engineering (Ross and Babbie Group Limited, 2002). Most African countries Kenya included have a funding problem. The resources are scarce and whatever little is there is used for more "important" things. Evidence suggests that road safety also lacks political priority and this makes the problem worse. In Kenya the Ministry of Finance that finances the Ministry of Public Works and Housing and also the Ministry of Transport and Communication, is not in touch with road safety problems and therefore does not know the magnitude. This leads to lack of separate and proper funding.

In Kenya from 1979 to 1991, Finland supported a road safety program. This was supposedly the first road safety program in Africa to receive foreign assistance. The fifth phase of the program

covering five years 1989 to 1991 totaled the amount of 5.5 million FIM (approximately 1million \$ US) and 3.56 million KES (US\$ 0.7 million) (Finnida, 1992). After FINNIDA pulled out the road safety program that they started which is credited for starting accident recording systems in Kenya died a natural death. This could be attributed to lack of funds and human resources to continue.

2.2.6 The Role of Ngo's in Promoting Road Safety

The nongovernmental sector can play in road casualty reduction (Trican, Johnson, Campbell, Haight, Knight, Marckay, Maclean, Petrucell, 1988). According to Trican et al, (1998), NGOs serve road safety most effectively when they:

- Publicize the true scale of the road injury problem;
- Provide impartial information for use by policy makers;
- Identify and promote demonstrably-effective and publicly-acceptable solutions, with consideration of their cost;
- Challenge ineffective policy options;
- Form effective coalitions of organizations with a strong interest in casualty reduction; and
- Measure their success by their ability to influence the implementation of effective road casualty reduction measures.

An example of a road safety NGO is the Trauma committee of the royal Australasian college of surgeons, set up in 1970. Its objectives include: establishing and maintaining the highest possible level of post-impact care for those injured in crashes; developing undergraduate and post-graduate training programmes; gathering and disseminating hard clinical data that can be used to identify traffic injury problems; actively promoting injury prevention measures; and supporting community awareness programmes (Trinca et al, 1988). Another example is Mothers Against Drunk Driving (MADD).

In the 20 years since its inception, the groups advocacy efforts have had remarkable success. The USA based organization has witnessed the enactment of over 300 excess-alcohol laws between 1980 and 1986, the introduction of random sobriety check points, elimination of plea bargaining for excess alcohol, mandatory prison sentences, and in many states a minimum drinking age now set at 21 years (Allsop, 2001).

In developing countries, it is often difficult for organizations that want to campaign on road safety to obtain funding (Aero-Thomas et al 2002). However, there are several new victims' organizations and advocacy groups that have been set up in developing countries. Examples include: Associations of Families of Victims of Traffic Accidents; Friends for life (India); the Association for Safe International Road Travel in (Kenya and Turkey); the Youth Association for Social Awareness (Lebanon); and Arrive Alive (South Africa). In Kenya a new local NGO called Drive Safe is coming up. It promotes road safety through training of public service drivers on road safety and defensive driving (World Health Organization World Bank, 2004).

2.2.7 Road Safety Research

The recent review of road safety in five African countries (Assum, 1998). concluded that research was being conducted but only in a sporadic manner without any programme or coordination. There are some initiatives to improve awareness and documentation of road crashes in Africa. The Injury Prevention Initiative for Africa (IPIFA) was formed in 1997 by a team of researchers is a very good example. IPIFA is a non-profit organization with membership from 12 African countries; Uganda, Kenya, Ghana, Nigeria, Egypt, Ethiopia, Eritrea, Zambia, Zimbabwe, Mozambique, South Africa and Mauritius. The aims of IPIFA are to conduct research in injury control and promote safety,

develop and conduct training programs in injury epidemiology, prevention and acute care; undertake advocacy for the prevention and control of injury; facilitate the exchange of knowledge in Africa, and act as a liaison between Africa and international and continental stakeholders in injury control. This organization has taken on the challenge of injury control in a continent where the problem is largely unrecognized and where the magnitude of the problem is huge (Odero, 2004). Despite the existence of IPFA, only south Africa has a long established and well respected research organization that has decades of experience in road safety research; other countries appear unable to maintain a road safety research programme.

Research on road safety problems unique to Africa is needed. An independent research institution like a university should undertake this research. However, while the capacity for road safety research in most African countries exist, but funding and organization are major problems. Although there have been research initiatives, like UNECA's research into pedestrian safety, most donor agencies do not fund road safety research (Odero, 2004).

2.3. ROAD ACCIDENTS/CRASHES IN KENYA

In Kenya, the rising number of road crashes in the country and the magnitude of associated deaths and injuries have raised public awareness and concern. The human factors, the physical environment and the vehicle factors have been cited as contributing to road crashes.

2.3.1 Young Reckless Drivers

A study conducted in Kenya by Nantulya et al (2001), showed that the routine police statistics recorded that driver error was the most common cause of road traffic accidents. About 77% of the traffic police respondents apportioned the blame for accidents to drivers' especially young men. One

percent (1%) of the accidents involved vehicles that were being driven by under age drivers and of these, one third was ferrying passengers. In the road user survey, 69% of the traffic police respondents reported that drivers aged 20-30 years generally behaved in a manner that threatened road safety (Natulya et al, 2001).

2.3.2 Profile of People Affected by Road Traffic Crashes

Although all types of road users are at risk of being injured or killed in a road traffic crash, there are notable differences in fatality rates between different road user groups. Several studies have revealed marked differences in fatality rates between various groups of road users, as well as between road users in high-income countries and those in low-income and middle-income countries. A review of 38 studies found that pedestrian fatalities were highest in 75% of the studies, accounting for between 41% and 75% of all fatalities (Odero, et al 1997). Passengers were the second largest group of road users killed, accounting for between 38% to 51% of fatalities. In Kenya, between 1971 and 1990 pedestrians represented 42% of all crash fatalities; pedestrians and passengers combined accounted for approximately 80% of all fatalities in the country each year (Odero, et al 2003). In several low-income and middle in-come countries, passengers in buses and other informal public means of transport also constitute a significant group at high risk of road traffic casualties.

2.3.3 Spatial Distribution of Road Crashes in Kenya

There are considerable variations in numbers and consequences of road traffic crashes by geographical region and road location (rural or urban). For instance, of the 96,927-road traffic crashes reported in the period 1986-1994 over 30% occurred in Nairobi. Central, Rift Valley and Coast provinces each recorded between 10 and 20% of the total while Nyanza, Eastern and Western provinces had 5-10% each, with North Eastern reporting the lowest proportion (Odero, 2003). Of

the total road deaths reported in 1990, 55% occurred in Nairobi, Central and Rift Valley provinces, while Eastern (9.2%) and North Eastern (1.3%) provinces reported the lowest numbers. The category of road users killed also varied by region: 68% of fatalities in Nairobi were pedestrians whereas in North Eastern, Rift Valley and Eastern provinces, the majority killed were passengers. (Odero, 2003).

Statistics published by the National Road Safety Council show that 60% of all injury producing crashes occur on roads in rural areas, mostly intercity highways, whilst 40% take place in urban areas. On average, the number of casualties per motor vehicle crash occurring in rural roads (1.8) is greater than on urban roads (1.2). Case fatality rate is also 5.4% higher for crashes on rural roads than those in urban areas. Of those injured on rural roads, Central (32%) and Rift Valley (28%) provinces had the highest proportion of all road traffic injuries occurring in rural settings (National Road Safety Council, 19992). This can be attributed to the greater number of buses and matatus that are involved in crashes: 62% of all reported crashes involve public transport vehicles (Odero, 1995). It may also reflect the effect of underreporting of non-fatal crashes occurring on rural areas.

It is evident that most road traffic crashes; fatalities and injuries occur in Nairobi, Central, Rift Valley, Coast and Eastern provinces. The provinces have a high concentration of human population and socioeconomic activities that demand considerable mobility. They also have high road network density and connectivity. About 145 dangerous road locations have been identified on Kenya's main rural road network, found primarily in the Central, Rift Valley, Western and Nyanza provinces (Republic of Kenya, 1983).

2.3.4 Causes of Road Crashes in Kenya

The main category of causes of motor vehicle-related traffic injuries, based on the Accident Cause Code classification used by the Kenya police, are human factors (85%), vehicle defects (5.1%), road environment (2.9%) and other factors (6.4%). (Odero et al, 2003) The relative contribution of these factors has remained unchanged over the years. Table 2 presents the courses and type of crashes for the periods 1990 and 1985-1990. Based on the table, drivers errors such as losing control, speeding, misjudgment and improper overtaking accounted for the greatest proportion (44.4%) of all causes attributed to human error. Among the human factors, alcohol has been established to be associated with increased incidence of motor vehicle crashes. A survey involving patients hospitalized for injury treatment in Eldoret showed that 40% of drivers and 20.2% of pedestrians were intoxicated at the time of the crash (Odero, et al 2003).

Surprisingly, alcohol is almost never reported as a contributing factor in the police accident reports, partly because of lack of technologies and facilities to measure it, and the difficulties in getting doctors to examine crash involved drivers and take their blood samples for Blood Alcohol Concentration (BAC) analysis at a government forensic laboratory.

Table 2. Causes and types of traffic crashes in Kenya, 1990 and 1985-90.

Causes	Particulars	1990	1985-90
1. Human	Drivers & motorcyclists	44.4	44.3
	Pedestrian	27.1	27.4
	Passengers	6.8	6.7
	Pedal cyclists	7.2	5.9
Subtotal		85.5	84.3
2. Vehicle	Tyres or wheels	2.5	2.2
	Other defects	2.6	3.9
Subtotal		5.1	6.1
3. Traffic Environment	Road defects	1.3	1.4
	Animals	0.7	0.9
	Obstruction	0.5	0.8
	Weather	0.4	1.4
Subtotal		2.9	4.5
Other causes		6.4	6.2

Source: Odero. 1997. Based on data from NRSCK, 1992.

2.3.5 Efforts to Control Road Traffic Accidents

In the fight for safer roads in Kenya, Muyia (1995) notes that the control of road traffic accidents has not been systematic and neither has it been emphatic. According to him nothing is left to be desired in a sector that is characterized with chaos, disorder and road accidents. In response to the situation, the government has responded with a number of initiatives. For example, in 1987, the government wanted speed controllers to be fitted in all public service vehicles. The PSV operator

lobbied and the plan was shelved. In 1988 the government also came up with a requirement that all vehicles must be fitted with safety belts. This did not also materialize because motorists thought that that was going to be expensive. In March 1996; the government recommended that all PSVs be fitted with speed recording devices (SRD). This was also rejected and therefore the plan was shelved because the government gave in to the demands of the matatu lobbyists. As an alternative the government ordered the speed governors to be brought back (Muyia, 1995).

It is only after the National Rainbow Coalition (NARC) government came to power that the transport sector has shown some semblance of order. The Legal Notice 161 that came to effect on 1st of February 2003 was responsible for all the reforms in the sector. All public service vehicles were required to be fitted with speed governors limiting their speeds to 80 kph. All PSVs were to be fitted with seat belts; a certificate of good conduct was required from the drivers, among other things.

2.3.6 Speed Control

There is evidence that speed on roads in developing countries is higher than is safe and that reducing these speeds would reduce the number and severity of crashes. One major opportunity to control speed in developing countries is for the vehicles to be fitted with devices that would warn drivers of their speed exceeding the limit applicable to the road on which they are driving. It is possible to equip vehicles to prevent their being driven faster than is being permitted by the highest speed limit. It is believed that such physical limitations may offer a realistic prospect for achieving safer speeds on highways in developing countries (Afukaar, 2003).

Drivers choose speeds of individual vehicles according to their circumstances, and the prevailing road and traffic conditions in which they find themselves. These choices are self-motivated

according to criteria that are person- and situation-dependent. (Afukaar, 2003). One benefit from the use of currently available information technology would be the posting of speed limits that would vary according to weather traffic conditions and time of day. This would ensure that posted speed limits were responsive to the road traffic demand and prevailing environment (Afukaar, 2003). Passenger safety can be enhanced by speed regulation through the use of speed governors and the installation and use of seat belts in buses and minibuses. Certainly the problem of speeding is not a matter for the police alone. Involvement of civil society is essential in the creation of awareness on the importance of speed control in reducing road traffic crashes, injuries and fatalities in developing countries.

2.3.7 The Economic Cost of Road Crashes

Transport in general and road traffic in particular have significant cost to societies in the form of delays, health and environmental damages from pollution and not least, through injuries and loss of life from traffic accidents. (Hansen, 1997). Road crashes are the number one cause of death among under 40 year olds and thus responsible for the greatest loss in terms of years of life. On average road crash fatality represent forty (40) lost years (Hansen, 1997). It is estimated that global cost of road crashes in 1999 was in excess of US \$ 500 billion and the cost in the developing world was estimated to be about US \$ 65 billion. Road crashes therefore are costing developing and transitional countries huge sums each year that they can hardly afford (Jacobs et al, 2000).

Detailed studies undertaken in the UK and elsewhere in the developed world indicate the high rates of return that can be obtained from the application of low cost traffic management techniques at sites where significant numbers of crashes take place. Results from studies undertaken in the developing world are now showing similar results (Baguley, 1995). Thus apart from the essential

task of reducing road deaths and injuries in developing countries, a strong case can be made for reducing road crashes in African countries on economic grounds alone. As for Kenya road crashes are currently the third major killer after malaria and HIV/AIDS. The high level of road carnage has disastrous consequences for the economy. The annual average cost of road crashes to Kenya's economy is estimated at 14 billion or about 5% GDP (Ministry of Health, 2004). This is by all standards a very high cost for a poor economy like Kenya to burden itself with.

Traffic safety measures curbing the number of accidents could free up human and physical capital resources to investments and operating activities in other productive sectors of the economy (Hansen, 1997). Somehow everybody is affected by these costs either directly or indirectly, the victims pay directly or relatives pay. The private and public sectors are also involved. The most serious cost is life lost and reduced health quality for the injured. Because most crashes claim the working age and mostly the household heads, incomes are reduced and the already poor people fall deeper into poverty.

2.4. PUBLIC TRANSPORT IN KENYA

2.4.1 The Informal Public Transport in Kenya

The key to understanding the determinants of road traffic accidents (RTAs) in Kenya may be in recognizing the dynamics of the matatu industry and culture. The original nature of the matatu industry has changed considerably, while the requisite regulations and policies have not kept pace. In Kenya there is no public transport system equivalent to those found in most developed economies. The system for transport service to the public is by means of privately owned vehicles of various types, including conventional buses, minibuses, covered pick-up trucks, and midi buses. The

private means of transport include saloon cars, bicycles and motorcycles, while trucks and trailers carry freight.

The other form of public transport, private conventional buses (privately operated public service vehicles) is better regulated and considered a safer mode of transport. Privately owned saloon cars are the main means of transport for the affluent. In a 1982 study, Kapila and colleagues found that Nairobi residents who had not attended school were far more likely to walk (27%) or use public transport (55%) rather than to use a private car (9%), while those with more than secondary education traveled in private cars (81%) and none walked. Now as then the poorer populations walk or ride matatus the most dangerous forms of transportation (Nantulya, et al 2001).

The matatu is equivalent to the light buses of Hong Kong, the minibuses of Singapore, the jeepneys of Manila, the colt of Jakarta, and the dolmus-minibus of Istanbul, the dala dala of Tanzania, the tro tro of Ghana, the Haitian tap-tap, the molue (locally known as "moving morgues") and danfo ("flying coffins") in Nigeria, taxis of South Africa and Uganda. This mode of transport falls between the private car and the conventional bus transport system, described by Rao (1978) as an "intermediate transport mode." Khayesi (1999) calls it a small-scale public means of transport. The main features being the convenience of stopping anywhere to pick or drop off passengers, unfixed time schedules, and lower fares. Worldwide, the informal unregulated nature of these forms of transport connotes greater risks to the passengers.

The term matatu is derived from a Kikuyu word "Mang'otore matatu" which means "thirty cents," the then standard charge for every trip made (Aduwo, 1990). From the time it was officially recognized, the matatu industry has become very important in transporting people, goods and services in most parts in

Kenya. Historically, Kenya did not have a reliable means of public transport during colonialism. It was not until 1934 that Kenya Bus Service was introduced which dominated the public transport world until 1973 when through a presidential decree matatus were given the right to operate (Ogonda, 1992). The new matatus operators were exempted from taxation, insurance and were not subjected to any forms of regulation. Therefore, the industry got used to lack of control and at the same time the government did nothing about it (The East African Standard Nov 3rd '03). That is the origin of the present matatus industry chaos and governance crisis in Kenya today. That notwithstanding, the sector has grown to compete and compliment the public bus companies in towns and rural areas in the both medium and long-distance passenger transport (Ogonda, 1992).

The matatu industry is very significant in the Kenyan economy but it is in chaos due to lack of a coherent policy and also non recognition and respect for regulations which are supposed to govern the industry. As a result, there have been huge social and economic losses. Originally relatively low-income people operated matatus but the profile of ownership has changed and matatus now belong to the well to do in the society. With this shift in ownership came the practice of hiring drivers, conductors and "turn boys" to operate the matatus (Nantulya et al 2001).

2.4.2 Protecting Public Transport Passengers

The public transport operators and drivers are limited groups to which special attention should be paid, if not already there. Requirements should be introduced about the drivers age, training, blood alcohol content and hours of driving as well as to the organization of public transport (Assum, 1998). The requirements should be enforced and fines should be high enough to counter the profit made by overloading and maximizing the number of trips. However the economic incentives making unsafe illegal public transport profitable should be examined and possibly changed. More

frequent regular inspection of public service vehicles, as well as random road side inspection to avoid special spare parts being used for inspection only, may also help. Construction requirements for public service vehicles should also be made (Assum, 1998).

Tanzania introduced mandatory speed governors for public service vehicles in March 1997 (Assum, 1998). Zimbabwe failed at the same measures because the speed governors are too easily manipulated. Better speed governors could be developed or better still, only vehicles with a certain maximum speed limit should be approved as public service vehicles (Assum, 1998).

In Kenya the story resembles that of Zimbabwe. As reported in the Sunday Nation March 21st, after the Legal notice 161 was put to effect in February 2004; "almost every bus and matatu has now found a way of by-passing its speed governor. The process has not been difficult and has not taken very long. Methods may vary but the effect is universal. The first week after fitting of speed governors set to 80 kph became compulsory for PSV, open road traffic was noticeably 'calmer' all buses and all matatus were conspicuously and measurably cruising within the limit. One week after, some were going a bit faster and a week after that; the few had become many and then most."

The government has been trying to mount roadside spot checks and has found out that the speed governors have been tampered with. In curbing excessive speed the speed governor system does not therefore seem to be having an extended effect. From the way things are, the law enforcers must work extra hard to deal with this problem.

2.5 DRIVER'S CHARACTERISTICS AND TRAINING

2.5.1 Driver's Training

In Kenya it is only Kenya bus Service Company and the Automobile Association of Kenya (AAK) that are attempting to give public service drivers training. The Kenya Institute of Advance Driving (KIAD) also offers training to drivers but this is not specific for public vehicles drivers.

In the developed countries, for example United Kingdom, driver-training campaigns have been done for fleet cars, public service vehicle (buses) and trucks (Ross and Babbie Group Limited, 2002). A number of training courses exist, such as IAM and RoSPA Advanced Driving tests in the UK. The latter includes a graded test, written report and mandatory refresher training. RoSPA also carries out the National safe driving Award Scheme. Similar competitions exist in a number of countries.

PSV drivers training in Kenya is monopolized by commercial colleges (Chitere, 2006). Although there are very many commercial driving schools and many more are coming up every day, the driving schools are generally uncontrolled by the government; they are neither monitored nor evaluated. The criterion of licensing them is not known either. Evidence suggests that driving candidates are taught only for the sake of passing the tests. And the corrupt examiners are there to make them pass even where it is clear that the candidates are not competent.

The drivers from such schools are bound to be ignorant of the road safety rules and may not have any knowledge of defensive driving. Such drivers are bound to be careless on the road with disregard for the Highway Code therefore causing road crashes. Surprising enough, some people drive without ever going to a driving school. How can such drivers be entrusted with the lives of so many passengers?

In a study by Chitere (2006) key informant information from several managers from driving schools in Nairobi showed that a majority of drivers in Kenya obtain their driving licenses after attending a driving school course. He further notes that there 100-150 driving schools in Kenya and that the syllabus used by the schools is fairly uniform but it is not mentioned in the Traffic Act cap 403 and other regulations of the Ministry of Transport.

2.5.2 Driver's characteristics

Compliance with traffic rules: In a study conducted by Chitere (2004), on Matatu Industry in Kenya, of the 111 drivers and conductors studied about 88% of drivers did not observe traffic rules such as using designated stages and termini and speed limits and not carrying excess passengers. About 38% of drivers reported having been involved in accidents. In another study by Muyia, it was observed that 97% of the drivers reported having been involved in road accidents once of several times. Chitere (2006), points out that there is a high rate of non-compliance whose causes need understanding if road safety is to be improved. He further adds that, although drivers had received basic training in driving, the training was short and not able to impart in them adequate know how about the Highway code and discipline required on the roads.

Age and occupation: In a study by Kapila, Manundu, and Lamba (1982) on the characteristics of PSV drivers, the study found that 63% of metro- Nairobi matatus were operated by employed drivers. The remaining 37% were owner driver. These owner drivers had other occupations besides being PSV drivers. In terms of age, majority (59%) of the drivers were aged between 21-30. In a study by Chitere (2006), of the 125 drivers interviewed, 23% were below 29 years, majority (71.2%) were aged between 30-39. the remaining 5.6%, were more than 40 years. Chitere points out that, drivers are not as young as usually thought.

Education: In a study conducted by Muyia on drivers of PSVs in Eldoret town found that, half of the 143 PSV drivers interviewed had some secondary education while 34% had some primary education. The study also found that about 69% of the drivers in the study had attended formal driving schools like AAK, commercial schools, National Youth Service (NYS) armed forces, the rest were not trained but learnt on their own the study found that majority of the drivers were employed and did not own the vehicles. The reasons the drivers gave for joining the industry were lack of employment and that the job was easy to get, among other reasons.

Experience/length of service: In a study by Chitere (2006) it found that as a characteristic of drivers their length of service as PSV drivers was important in their compliance with traffic rules. The study reported that 31.2% served for less than 4 years, 36.0% for 5-9 years, 13.6% for 10-14 years and 19.2% for more than 15 years.

2.6 KNOWLEDGE, ATTITUDES AND PRACTICES (KAP)

Specific literature on KAPs is generally lacking especially in this particular type of study. The study utilized the limited literature from other countries.

2.6.1 Knowledge and Attitudes of Commercial drivers in Ghana.

A study was done in 2002 on understanding the knowledge and attitudes of commercial drivers in Ghana regarding alcohol impaired driving. The knowledge and attitudes of the commercial drivers as regards alcohol impaired driving were investigated. They utilized focus group discussions whereby 43 bus and minibus drivers were involved. This was done in the capital city, Accra. They

used a structured discussion guide to capture information related to value, risk perceptions, leisure time activities and attitudes on alcohol impaired driving.

The study found that majority of drivers expressed an understanding that drunk driving was a significant risk factor for crashes. There was a significant under-appreciation of the problem, however. Most believed that it was only rare, extremely intoxicated drivers who were the problem. The drivers almost had a minimal understanding of the concept of blood alcohol concentration and related legal limits. Despite these factors, there was wide spread support for increased enforcement of existing anti-drunk driving laws. It was concluded that in Ghana commercial drivers understand the basic danger of drunk driving and are motivated to assist in anti drunk driving measures. There were misconceptions and deficits in knowledge (Asiamah, Mock, Blantari 2002)

2.7 LESSONS FROM OTHER COUNTRIES

2.7.1 Ugandan Safety Issues in Public Transport

The leading cause of accident is poor driver behaviour. Drivers do not hold carriers' driving permits and most of them train on the job. Moreover drivers' daily wages often represent the differential between the vehicle owners' expected daily revenues and any additional amount generated after deducting fuel costs, police fines and brokers and parking fees. Therefore to maximize their daily wages, drivers tend to over speed and overload their vehicles in order to make additional trips regardless of passenger safety and traffic regulations (Uganda Revenue Authority, 2000).

Other causes of accidents are low level safety awareness, poor elementary driving schools, absence of driving syllabus and lack of road safety awareness campaigns. The government has attempted to address the traffic safety problem and has addressed the legal framework gap. It enacted a new traffic and road safety act in 1998. However the recent withdrawal of the traffic police from roads has created concerns

about the effective implementation of the law. Following the liberalization and the deregulation of the transport sectors in the 1990s, transport services are largely in private sector hands.

2.7.2 The Senegalese Experience in Driver Training

The Senegalese experience in driver training is highly instructive, as the problems encountered such as the exceedingly heavy involvement of public transport vehicles in accidents- tend to be the same throughout the sub-region. Before the reform, there was considerable opposition to the driving test as it was not considered to be objective or guarantee safe driving behaviour. The Senegalese authorities therefore decided that priority should be given to restoring credibility and transparency of the driving test (Jacobs et al, 2000). Driving school instructors and driving license inspectors were the first to benefit from this training, through hands-on courses organized with the help of French experts. A driver-training programme was, therefore, drawn up for these sessions and the programme led to a reform in the driving test. This was first experimented in some regions and later extended to the entire country in 1998. The Senegal drivers training is now working on a new test designed for illiterate and/or non-Francophone people. (Isted, 1999)

2.8 THEORETICAL FRAMEWORK

A critical overall theory for road safety is lacking. If future policies and actions are to be successful, a comprehensive theoretical basis for road safety is needed. But other theories can be used to understand problems of road safety better. This study utilizes structural functionalism and rational choice theory as guiding theoretical frameworks.

2.8.1 Structural functionalism

Structural functionalism is a theory based on organic analogy. Structural functionalists believe that societies are held together by common values. They see society as an integral system whereby its different parts work together to maintain a balance. The organic analogy compares society to a living organism (Wallace, 1995). Society is seen as a bounded, self-maintaining system that maintains its equilibrium in the face of a hostile environment. To ensure a society's survival, its various social processes must mesh smoothly together to meet the systems needs. Each process, institution and practice is seen as performing a function that meets a societal need and thereby helps to maintain the society's structure or equilibrium. Societal processes and institutions are understood in terms of their contribution to an ongoing social whole (Wallace, 1995)

In road safety there are many institutions involved, for example the Ministry of Education under which driving schools fall, the traffic Police Department, Ministry of Public Works and Housing, Ministry of Transport and Communication, Ministry of Finance and Ministry of Health. All these have a role to play in order for the whole to be at equilibrium. If the training schools do not do their work well the drivers are not well trained and, therefore, road crashes increase. This costs the government through health care and loss of labor. If traffic department does not enforce traffic rules e.g. ensure speed governors are in working order, and discourage impaired driving then crashes will

also increase. This will in turn affect families, health care services, among other institutions. If the Ministry of Finance does not finance road safety activities, fatalities and injuries will increase leading to other social problems like poverty and crime.

The theory, therefore, helps us to understand the road safety situation in terms of institutions that are not functioning accordingly, hence causing disequilibria in the social whole. By the government failing to give road safety a political priority many social problems have come in that could not have been there in the first place. For example, having a special PSV driving school to protect passengers and other road users could prevent road crashes therefore keeping the many social problems at bay.

2.8.2 Rational choice theory

Rational choice theory begins from the viewpoint of an individual rather than of several individuals acting together. The individual is the basic unit of the rational choice theory. It is noted that it is only individuals who ultimately take actions and social actors are entirely concerned with their own welfare (Ritzer, 1990). These actions are also optimally chosen given the preferences of the individual and given the opportunities or constraints the individual faces. That is the individual as a social actor attempts to achieve the best given his/her circumstances.

Optimality is defined as taking place when no other course of action would be preferred by the individual over the chosen course of action –this must not be necessarily the best action but the individual could be acting in his/her own best interest as far as he/she perceives them. (Ritzer, 1990). One possibility is that the individual does not have complete information, may lack many resources, or may have preferences that others may consider unusual or misguided. The theory assumes that individuals do the best they can, given their circumstances as they see them. It also

assumes that people base decisions and actions on preference, even if they do not consciously calculate the decision before each action (Ritzer, 1990).

Concerning road safety it may be argued that, individual drivers are engaged in a commercial activity whereby the goal is maximizing profits for their own good i.e. their welfare, If they meet the target the extra money made will be theirs also wages will be guaranteed. As they work, they have to make choices that from their points of view are rational, (e.g. overloading) However, most of the time they do not consider the consequences of actions they make. For example in an attempt to make more money a driver may allow overloading without thinking of the consequences if he is arrested for overloading by the traffic police. Since the driver is only thinking of his welfare he sees his course of action as the best among alternative choices under the circumstances.

Michael Hechter (1983) in his view says that, no matter how powerful the normative or structural constraint, the actor still has some ability to make choices. Hechter (1983), recognizes that norms and structures determine the constraints under which individuals act. However these constraints represent limits; they do not determine individual behaviour. Thus we must take into account the consequences and intentions of the individual action. According to Hechter (1983), the actors must select between alternative choices of action in pursuing these ends and that their selection of course will be rational i.e. efficient (Hetcher, 1983).

According to rational choice theory, the constraints represent limit. For example, one is not supposed to drive beyond 80kph for PSVs. This speeding rule does not determine if the driver will follow it or not hence it does not determine how a driver will behave if faced with a choice of over speeding or otherwise. Drivers as stipulated in this theory go against the norm; that is, they fail to

obey traffic rules therefore causing road crashes. All the while they are doing what they see as the best thing to do and for their own welfare. They do not think they are endangering the passengers' lives or other road users. Other constraints that drivers must deal with are environmental, e.g. poor weather, bad roads (narrow with potholes) or a hilly terrain with sharp corners. These constraints do not mean that the drivers will behave in a certain manner. For example, if it is foggy it is not given that a driver will have his headlights on, put hazards and drive slowly. It is possible that even with the poor visibility; one can just drive as fast as he sees right and as a result cause an accident or crash. An important assumption in rational choice theory is that the actor, who is the driver in our case, is not well informed about the future consequences of his present action. The fact that no matter how powerful the constraints, one has the ability to choose, brings us to appoint where we have to look at the attitudes of drivers because these will determine how they will behave under given circumstances.

To summarise, rational choice attempts to explain the emergence of social outcomes by the actions of purposive agents who are subject to a variety of possible institutional and environmental constraints (Hetcher, 1983). These social outcomes are the road crashes and their consequences. Any event created by two or more agents is a social outcome. Purposive agents have a set of preferences that enable them to pursue goals or ends. The constraints that purposive agents face can arise either from their individual opportunity cost or from existing institutional structures to which they are subjected.

2.8.3 Knowledge, Attitude And Practices (Kaps) Perspective

To know is to have something in one's mind or memory as a result of experience, learning or being given information. And knowledge is information, understanding and skills that a person has acquired through experience or education. For example, PSV drivers like any other drivers, are supposed to acquire road safety knowledge through learning or being given information in a driving school. They are therefore, expected to be knowledgeable in road safety issues. For those who do not get to know while learning in a driving school for whatever reason, they are expected to learn through experience.

According to the Penguin dictionary of sociology, attitude is a relatively stable system of beliefs concerning some object and resulting in an evaluation of that object (Abercrombie, Hill and Turner, 1984). Attitudes are measured by use of attitude scales that consist of sets of standardized statements with which people are to agree or disagree.

We would naturally think that knowing what people's attitudes are may help to explain or predict their behaviour or rather, attitudes are generally thought to influence behaviour; for example people who favour a given candidate or political position are expected to vote for that person or that, the PSV drivers attitudes towards the law enforcement officer will determine whether or not they will obey traffic rules; but this is not always the case, sometimes people act or behave contrary to their beliefs and that can depend on different situations (Adam and Jessica Kuper, 1985).

Many studies have found only weak, unreliable relationships between attitudes and everyday behaviour. Part of the difficulty here derives from the fact that behaviour is always dependent on

situational factors that may override the influence of the individual's preferences. For example, a driver may hold positive views towards law enforcement officers but he may sometimes break traffic rules in order to make money on a day that the returns have not been good. On the other hand, attitudes may be associated with everyday actions if a broader view of hours and tracking an individual's reactions in a wide range of settings other than just one is done. (Adams and Jessica Kuper, 1985).

One of the most firmly established phenomena in contemporary attitude research is the fact that behaviour may have a causal impact on attitudes rather than simply reflecting the actor's previously held views. Another approach suggests that, our attitudes, pro and con derives from our beliefs. For example if a PSV driver learns that there is a crackdown of unroadworthy vehicles on a certain route, they may change their behaviour and try to avoid that route. While it is clear that attitudes can be influenced by changes in belief (knowledge) there is also evidence for the reverse proposition, that is; attitudes may not only be influenced by beliefs but they may also contribute to the things that we believe. (Rosenberge, Hoveland, Mcguire, Abelson, and Brehm, 1960).

The three variables: Knowledge, Attitudes and Practices, interact in that, knowledge affects attitudes while practices are affected by one's attitudes and knowledge of something. Attitudes may help us predict what one is likely to do but this is largely affected by the situation one is faced with at that moment. For example in one situation a PSV driver will obey traffic rules and in another break the same rules. Different situations may cause a driver to go against their preference or the driver may be lacking knowledge in some areas, .e.g, safe driving and therefore, cause a crash. This perspective attempts to show the interplay between the three variables and makes us understand that the situation one is in also plays a big role in determining how one will behave.

2.9 CONCEPTUAL FRAMEWORK

A model that attempts to summarize the proposed study by highlighting key variables and their interconnections or interactions, is presented in figure 1.

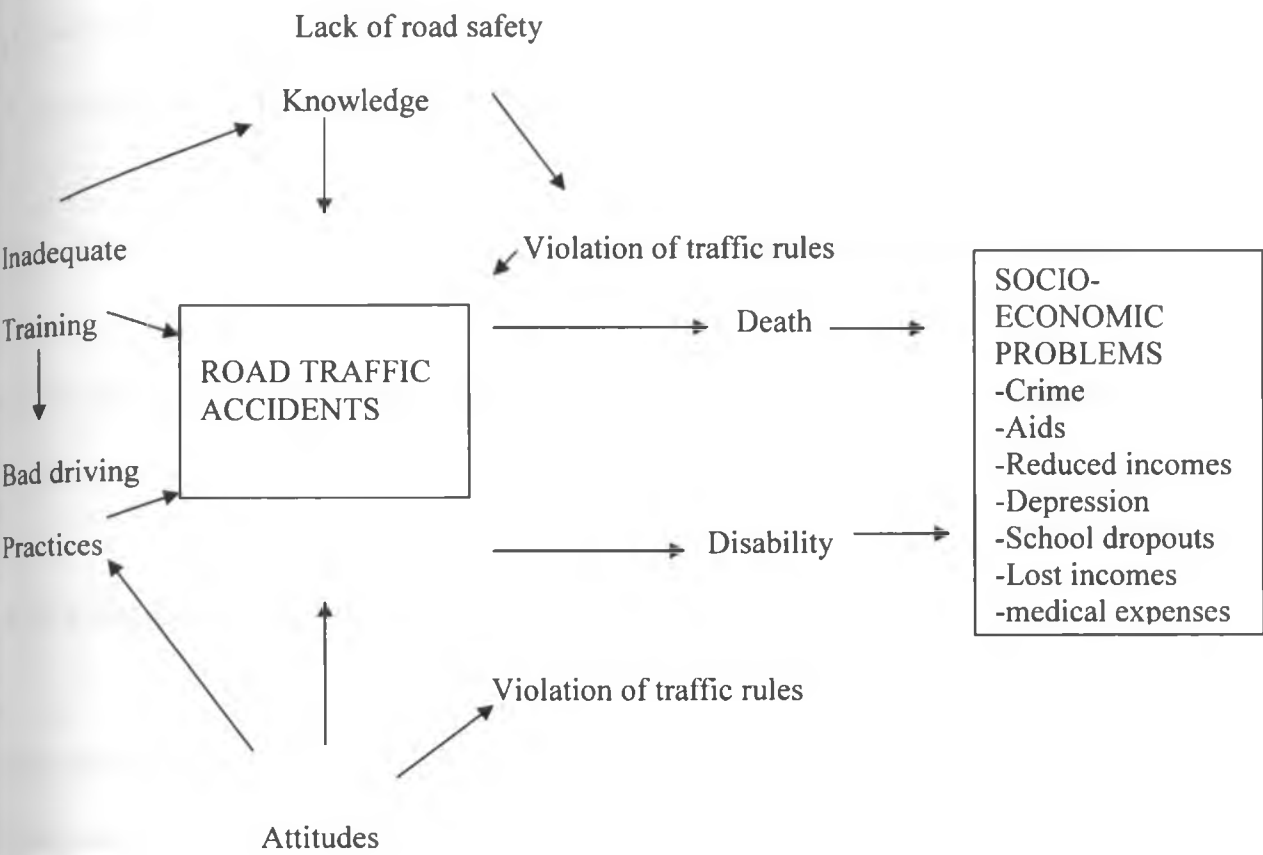


Figure 1: Interconnections between study variables.

2.10 STUDY HYPOTHESES

Based on the literature presented earlier, the following hypotheses were developed for testing by the study.

- (1) Lack of awareness/knowledge of road safety among PSV drivers contribute significantly to road crashes in Kenya.
- (2) Bad driving practices among PSV drivers are responsible for road crashes in Kenya.
- (3) The negative attitudes of PSV drivers towards traffic law enforcement officers is a contributing factor to road crashes in Kenya.

2.11 VARIABLE SPECIFICATION

Hypothesis one;

Independent variable: it is the awareness of road safety and is revealed through the knowledge of the effects of alcohol and drug use, over speeding, overloading of PSVs, fatigue, and unroadwothy vehicles on the road.

Dependent variable: it is road crashes manifested by the actual number of accidents/crashes and their severity in terms of causing death, serious injuries, or slight injuries.

Hypothesis two;

Independent variables: the bad driving practices of drivers this will be manifest through the presence or absence of the acquired habits e.g. driving under the influence of drugs.

Dependent variable: it is road crashes manifested by the actual number of accidents/crashes and their severity in terms of causing death, serious injuries, or slight injuries.

Hypothesis three;

Independent variable: attitudes of PSV drivers toward law enforcement officers. Will be measured by respondent's response to attitude measuring statements and the final score on the attitude scales.

Dependent variable: it is road crashes manifested by the actual number of accidents/crashes and their severity in terms of causing death, serious injuries, or slight injuries.

2.12 OPERATIONALIZATION OF TERMS

Road safety- a term that refers to all activities geared towards reducing the number and consequences of road crashes or to encourage prevention of road crashes.

Attitude- the term shall refer to, a consistent tendency to react in a particular way, either positively or negatively to an object, event, person or situation. Scores on the attitude scales shall measure it.

Knowledge- the term shall refer to the information gained through training and/or

experience. This shall be measured by the degree of awareness of road safety i.e. effects of alcohol, drivers vision and vehicle maintenance to road safety, among other things like knowledge of road signs.

Practices - the term shall refer to behavior patterns and it shall be measured in terms of presence or lack of acquired habits and actions.

Road crash/accident-shall refer to event causing damage or injury or death
Involving motorized means of transport. Shall be measured
by the actual number of crashes/accidents.

Training- shall refer to instructions and teachings given theoretically and/or practically to driving trainees by their instructors. Shall be measured by ability to identify road signs and ones understanding of road safety.

Traffic law- Shall mean all the rules contained in the traffic act of Kenya aimed controlling and regulating traffic on the roads in order to promote road safety.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

Singleton; Straits and Straits, (1993:66) defines research as “the planning, execution and interpretation of scientific observation. In this section the study’s research design will be discussed. Kerlinger (1964) defines research design as the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and control variance. This chapter looks at the study site, and units of analysis, sampling procedures, sources of data, methods of data collection, and data analysis techniques among others.

3.2 RESEARCH SITE AND DESCRIPTION

The study was carried out in Nairobi. Nairobi is one of the eight provinces of Kenya. It is also the capital city of Kenya. Nairobi has an area of 693 sq Km and lies approximately 490 Km by road from Mombasa. The city lies on the edge of the Kenya highlands at a height of 1,700m above sea level. The area of study serves as a political administrative, regional and international centre as an industrial and commercial city it attracts people from all over Kenya and elsewhere.

The selection of Nairobi was purposive because it was easily accessible to the researcher and there was no language barrier. The researcher was also familiar with the area hence there was no need for a guide, thus reducing costs. Also, a good share of PSV drivers are found here; that is those who

operate the city routes and those who drive to other parts of Kenya that are either urban or rural. In addition Nairobi was conveniently chosen because it would save time and resources for the researcher.

3.3 SOURCES OF DATA

Both primary and secondary data were utilized in this study.

3.3.1 Driver survey

Primary data was obtained from the PSV drivers survey were 160 PSV drives were interviewed. Self-administered questionnaires were utilized.

3.3.2 Key informants'

Key informants were also a good source of primary data whereby the chairperson of the National Road Safety Council (NRSC), traffic police commandant and managers of driving schools were interviewed.

3.3.3 Desk review and internet

Secondary data was obtained from published and unpublished works, project reports, conference papers, and newspapers from libraries and resource centers. The Internet was also of importance.

3.4 SAMPLING DESIGN

This study adopted both non- probability and probability sampling. Singleton et al (1988) defines non-probability sampling as a process of case selection other than random selection. Non – probability sampling does not involve random selection at any stage, meaning that each case in the population does not have an equal chance of being included in the sample. The study proposed to use non-probability sampling because it was very hard to construct a complete sample frame; that is, a list of all public service drivers in Nairobi.

The study was conducted in the city centre where most public service vehicles have their terminals. This made it easy for the researcher to select drivers who were at the stages as respondents. Because it was hard to study the entire population or all the stages in Nairobi due to financial and time constraints, four (4) stages were purposely chosen for the study. These included Railways, Tearoom, Kenya Bus Station and Country Bus Station. This is due to their proximity, size and security for the researcher.

While at the Railways stage the study targeted drivers, who drove short distance low capacity public service vehicles, at Tearoom the targets were drivers long distance low capacity public vehicles. On the other hand, Kenya Bus Station and Country Bus Station provided drivers for short distance high capacity public service vehicles and those driving long distance low capacity public service vehicles, respectively.

For each stage, four (4) routes were selected for the study using systemic random sampling. This consists of selecting the Kth case from a complete list of the population, in this case, the complete list of the routes in that stage. This starts with a randomly chosen case from the first K case on the list. Such a procedure has two requirements- a sampling interval K and random start. The sampling interval is the ratio of the number of cases in the population to the desired sample size. A random start refers to the process of using a table of random numbers or some other device to select at random the initial case between 1 and K. These are the routes that were selected;

For Railways stage routes: 46, 105, 4, and 125 were selected.

For KBS stage, routes: 111, 126, 102 and 119 were selected.

For Tearoom, routes: Embu, Nanyuki, Nyeri and Isiolo were selected.

For country bus, routes: Eldoret, Kitui, Kisii and Machakos were selected.

From each route ten (10) vehicles were selected using simple random sampling. A table of random numbers was used. The drivers of the randomly selected vehicles then constituted the study sample. In all, 160 PSV drivers were interviewed for the study. The table below represents the distribution of the drivers by stage and type of vehicle operated.

Table 3: Distribution of drivers by stage and type of vehicle operated.

Stages	Target drivers	Target routes	Number of drivers from each route	Total Number of respondents
RAILWAYS	Short distance low capacity PSV	46,4,105, 125.	10	40
KBS	Short distance high capacity PSV	111,126, 102,119.	10	40
TEAROOM	Long distance low capacity PSV	Embu, Nanyuki, Nyeri, Isiolo.	10	40
COUNTRY BUS	Long distance high capacity PSV	Eldoret, Kitui, Kisii, Machakos.	10	40

The study also interviewed four key informants. These were selected purposely and included two managers from driving schools, the chairperson of the National Road Safety Council, and the traffic police commandant.

3.5 METHODS OF DATA COLLECTION

Due to its nature, an exploratory study often employs a wide range of research strategies. The main data collection tool for the study was questionnaires, which had open and closed ended questions. Open-ended questions enabled the researcher to capture the respondent's personal view that would be hard to capture while using closed ended questions. An interview guide was used for key informants. The guide helped the researcher remain focused on the research objectives. The key informants interview guide focused on certain selected areas prepared beforehand.

3.6 UNITS OF ANALYSIS AND OBSERVATION

According to Singleton et al (1988:69) a unit of analysis is "what or whom is to be described or analyzed". The researcher's unit of analysis is therefore the knowledge, attitudes and practices of drivers of public service vehicles.

An observation unit is the aggregation of elements from which information is collected. Hence in this case, drivers of public service vehicles together with key informants will form the unit of observation. Key informants will help get a better perspective or point of view of the road safety problems in Kenya.

3.7 DATA ANALYSIS

The study generated both qualitative and quantitative data. Both descriptive and inferential statistics were employed. According to De vause (1986), descriptive statistics is a way of categorizing variable by summarizing patterns in the response of people in the sample. Descriptive statistics include frequency distribution, percentages and measures of central tendency. Inferential statistics, for example, were used to make generalizations from data used to test hypotheses. Data presentation was done by use of cross-tables and pie charts. Qualitative data from key informant interview was described and summarized.

CHAPTER FOUR

DATA PRESENTATION AND INTERPRETATION

4.1 INTRODUCTION

This chapter deals with data presentation, description and interpretation. Data is presented in terms of pie charts, bar charts, tables; frequencies and percentages where applicable. This chapter is divided into three sections; data presentation and description (quantitative data), qualitative data analysis and statistical inference.

4.2 DATA PRESENTATION AND DESCRIPTION

This section specifically deals with data description and presentation. Here, data is presented in a way that it can be easily understood. Limited explanations and discussions are given to justify the frequency distribution. It should be noted that cases in all the tables in this chapter are validly distributed.

4.2.1 Demographic Profile of Respondents

A total of 160 PSV drivers were interviewed for the study. Of the PSV drivers majority, (98.8%) were male while only 1.3% was female. This shows that driving PSV vehicles is a male dominated occupation in Kenya as in many other countries. This is mainly because this occupation is associated with roughness and hence deemed not fit for women. But things are slowly changing.

An examination of the respondents are showed that 20.6% of the respondents were young adults aged 30 years and below. Whereas, 50.0% of the respondents were aged 31-39 years. The remaining 29.4% included those aged 40 years and above. These results show that the bulk of the respondents were middle aged adults.

4.2.2 Road Safety Knowledge among PSV Drivers

The study revealed that majority of drivers (93.8%) were knowledgeable about road safety (see table 4). That is, they understood the effects of fatigue, over speeding, overloading and use of drugs on road safety. The remaining 6.2% were not knowledgeable. The results indicate that knowledge about road safety is almost universal among PSV drivers in Kenya.

Table 4: Percentage distribution of respondents by knowledge of road safety

Road Safety Knowledge	Frequency	Percent
Knowledgeable	150	93.8
Not Knowledgeable	10	6.2
Total	160	100.0

4.2.3 Driving School Attendance for PSV Drivers

Of the 160 PSV drivers interviewed, the majority (88.1%) reported having attended driving school for whatever duration. Only (11.9%) indicated that they had never attended driving school. This is contrary to the common belief that many PSV drivers have not attended driving school, a reason always cited to explain the drivers' bad driving habits.

Table 5: Percentage distribution of respondents by driving school attendance

Driving school attendance	Frequency	Percent
Attended	141	88.1
Did not attend	19	11.9
Total	160	100.0

This suggests that many drivers engage in bad driving practices for reasons other than not having attendant driving school. Despite the majority the drivers having attended driving school, the study found that only 25% of the PSV drivers were adequately trained. The remaining majority (75%) was inadequately trained (see table 6). The study required the PSV drivers to identify at least three of the five road signs presented, namely, caution or hazard sign, dangerous change in the road direction, a quay or unprotected bridge, a section of the road frequented by wild animals and a multiple level crossing. Only 25% of the respondents were able to identify at least three of those road signs. This suggests that either the respondents were never actually trained as drivers or they soon forgot all that they learnt in driving school. Alternatively they may have trained for too short a period of time to have been able to grasp much. (see table 7). Understanding road signs is an important part in training for a driver and if one cannot identify simple road signs, then one is likely to cause accidents or be a nuisance to other road users.

Table 6: Percentage distribution by whether training was adequate

Adequacy of Training	Frequency	Percent
Adequate training	40	25.0
Inadequate training	120	75.0
Total	160	100.0

The analysis of the duration of time drivers had spent in driving school revealed that the majority had one brief stint of training. Table 7, presents the duration spent in driving school for the respondents. Based on the table, 50.7% of the drivers either had not been to driving school or had only trained for about a month. Whereas 36.2% had trained for 2-3 months, only 13.1% had trained for four (4) months and above. Given the short training duration reported by the majority of the respondents, it may be concluded that drivers mostly trained in order to pass driving tests and not necessarily to understand driving and road safety.

Table 7: Percentage Distribution of Respondents by Training Duration

Training Duration	Frequency	Percent
Did not attend or attended for about a month	81	50.7
2-3 months	58	36.2
4 months or more	21	13.1
Total	160	100.0

The study also showed that the majority 50.6% of all drivers interviewed had short experience.

While 34.4% had an average experience of 11-20 years, 12.5% had above average experience of 20-

30 years and 2.5% had along experience of 30 years and more. The fact that majority (50.6%) of the respondents had a short experience of less than 10 years is a function of age given that a large proportion of the drivers were mid aged (31-39 years)

Table 8: Percentage distribution by strength of experience in driving

Experience in Driving in years.	Frequency	Percent
Long experience (30 and more)	4	2.5
Above average (20-30)	20	12.5
Average experience (11-20)	55	34.4
Short experience (10 and below)	81	50.6
Total	160	100.0

4.2.4 Bad Driving Habits or Violation of Traffic Rules among PSV Drivers.

The study also sought the respondents view concerning the violation of traffic rules 43.1% of the respondents had not been involved in bad driving practices such as, smoking while driving, driving under the influence of alcohol, Chewing miraa before or while driving, using mobile phone while driving, and overtake from the wrong side. The remaining 56.9% reported having been involved in bad driving practices. Bad driving practices have always been cited to cause road crashes in the developing countries. This is because a driver endangers the lives of other road users when he violates traffic rules. Involvement in bad driving habits could be due to lack of knowledge of traffic rules or simply due to disrespect for traffic rules and those who enforce them. It could also be a result of drug abuse, which is common among many drivers who have to drink, smoke marijuana

(bhang) or chew miraa (khat) in order to 'work well'. The danger with the above drugs is that the drivers concentration is reduced significantly which in turn increases the risk of causing a crash.

Table 9: Percentage distribution of respondents by violation of traffic rules

Violation of traffic rules	Frequency	Percent
Non-violators	69	43.1
Violators	91	56.9
Total	160	100.0

4.2.5 Accident Rates among PSV Drivers

Asked to indicate the number of crashes/accidents they had been involved in during the last 24 months prior to the study, 37.5% (60) of the respondents reported not having had any accidents/crashes in the last 24 months. Whereas 26.9% reported having had in 1-2 accidents in the same period, 35.6% of the respondents reported having been involved in 3 or more accidents. These results show that the crash rates are high and involve close to 63% of all drivers in the study.

The nature of accidents drivers had been involved in varied according to the outcome. As evident from Table (10), 57.0% of the 100 drivers who reported having been involved in an accident during the 24 months prior to the study were involved in minor accidents without any injuries, while 32.0% were involved in accidents resulting in injuries. The remaining 2.0%, 2.0% and 7.0% were involved in accidents occasioning no deaths, leading to deaths, or causing both injuries and deaths, respectively. The reason for such findings could be that after a fatal accident/crash either the driver dies or is maimed meaning that a researcher cannot get details of such accidents from the driver involved (who is supposed to be the respondent). This is one limitation for the study.

Table 10: Percentage distribution of nature of injury

Nature of injury	Frequency	Percent
Accident with deaths	2	2.0
Accident with injuries	32	32.0
Accident with both injuries and deaths	7	7.0
Accident without deaths	2	2.0
Accident without injuries	57	57.0
Total	100	100.0

4.2.6 The expected concentration of a driver while driving

Concerning the expected level of concentration of a driver while driving, (70.6%) of the respondents were of the opinion that a driver's concentration rate should be 100%. Whereas 26.9% said 75% concentration would be ideal, only 2.5 % said 50% concentration would be appropriate. None of the respondents preferred less than 50% level of concentration by a driver while driving. These findings imply that, the respondents were well aware of the importance of driver concentration when driving. However given the number of crashes reported, it is clear that they did not practice what they said. This is the reason why there are many crashes occurring on the roads. Lack of adequate concentration and high speed is a combination that can be tragic on the roads.

Table 11: Percentage distribution of respondents by expected concentration rate

Expected concentration rate of a driver	Frequency	Percent
50%	4	2.5
75%	43	26.9
100%	113	70.6
Total	160	100.0

4.2.7 Driver's Attitudes Towards their Work

In order to gauge the attitudes of drivers towards their work, the respondents were asked to rate certain items on a 5-point opinion scale ranging from strongly agreed to strongly disagree. Table 11, presents the results for the rating of all items analyzed. Based on the table, only 40.0% drivers interviewed agreed that they were satisfied with their work as a driver. Whereas, 53.75% said they were not; the remaining 6.25% included those who were neutral. Concerning the number of hours worked per day, majority, (66.85%) disagreed with the statement meaning they were not comfortable, and 28.75% were comfortable, 4.4% were neutral. Majority (61.27%) of the respondents were satisfied with the condition of the vehicles they drove. About (35.10%) of the respondents were uncomfortable with the road conditions while also a large number (40.02%) were comfortable with the road condition.

A good number of respondents (64.38%) thought that passengers did not behave accordingly. while 26.88% thought that passengers behaved well. About (55%) of the respondents reported being treated well by their employers, (17.5%) were neutral while (27.5%) were treated badly.

The issue of other road users did not vary greatly between those who were in agreement and those who did not agree with the statement in Table 11. On the issue of traffic officers harassing drivers unnecessarily, (76.25%) reported that there was unnecessary harassment from traffic police officers. About (13.75%) did not report unnecessary harassment while (10%) were neutral.

Generally, the results tend towards dissatisfaction, as can be observed. **SA** has a percentage cell score of 16% while **SD** has a percentage cell score of 27%. This suggests that PSV drivers are not satisfied with their work as drivers.

Table 12: Cell representatives of drivers attitude towards theirs work

Statement (variable)	SA	A	U	D	SD	Total
I am satisfied with my work as a driver	26 (16.25)	38 (23.75)	10 (6.25)	44 (27.5)	42 (26.25)	160 (100)
I am comfortable with the number of hours I work per day.	14 (8.75)	32 (20)	7 (4.4)	46 (28.75)	61 (38.1)	160 (100)
I am satisfied by the condition of the vehicle I drive.	71 (44.4)	27 (16.87)	7 (4.4)	46 (28.75)	9 (5.6)	160 (100)
Road conditions are good enough for my driving.	7 (4.4)	57 (35.62)	11 (6.88)	12 (7.5)	73 (45.6)	160
Passengers behave according to my expectations.	22 (13.75)	21 (13.13)	14 (8.75)	66 (41.25)	37 (23.13)	160 (100)
My employer treats me fairly	48 (30)	40 (25)	28 (17.5)	32 (20)	12 (7.5)	160 (100)
Other road users behave responsibly on the road.	9 (5.6)	58 (36.3)	17 (10.63)	35 (21.88)	41 (21.65)	160 (100)
Traffic officers do not harass me unnecessarily.	6 (3.75)	16 (10)	16 (10)	54 (33.75)	68 (42.5)	160 (100)
Total cell score	203	289	105	335	348	1280
Cell representative	15.85%	22.58%	8.20%	26.17%	27.28%	100%

Figure in parenthesis are in percentage.

SA=Strongly Agreed= 1; A=Agreed= 2; U=uncertain=3; D= Disagree=4; SD= Strongly Disagree=5

When the values of all the responses for each attitude variable are added down the column, a total cell score is obtained. For example SA has a total cell score of 203 and SD has a score of 348. To get the percentage cell representative, the total cell score is divided by the expected cell score and the multiplied by 100. For example, for the cell strongly agreed $203/1280*100$ this gives us 15.85%, the expected cell score is 1280. The same procedure is repeated for all the cells.

4.2 QUALITATIVE ANALYSIS

In this section, the generated qualitative data from key informants in the study was summarized. The data presents views on major issues concerning the road safety situation in Kenya and what the main stakeholders are doing about it.

a) Road safety fund.

It was reported that Kenya did not have a road safety fund. It operates on an annual budget and special project allocations. This money is used for road safety promotions for example posters, books, and road rehabilitation especially black spots.

b) Careless drivers.

On being asked why there so many careless drivers on the roads, the response was that indiscipline was the main problem. Indiscipline was sited as a Kenya specific problem. Ignorance, that is, lack of awareness of road safety was also said to contribute to the big number of careless drivers.

Another key informant sited lack of practice and lack of new information as a reason why there are many careless drivers on the roads.

c) The major cause of road accidents.

On answering the question about the major cause of road accidents; bad road networks i.e. some sections of the road are too narrow to comfortably accommodate two vehicles moving in the opposite direction, bad lightings, lack of traffic signs and out of practice drivers were sited as the major causes of road accidents on the Kenyan roads. Other respondents cited human error e.g. over speeding and wrong judgments as the main cause especially in public transport.

d) How road accidents can be reduced.

Several suggestions were given they are as follows;

- ❖ Re-train drivers- educate them on the latest issues in road safety
- ❖ Improve road networks
- ❖ Install more road signs
- ❖ Adherence to the highway code
- ❖ Driving in a careful manner

e) The traffic act.

In explaining why drivers of public service vehicles break the traffic rules with impunity, it was reported that the traffic Act is not given any emphasis during training of drivers. It meant it was actually never referred to.

f) The general problems facing road safety in Kenya.

Due to being dormant, the NRSC, the main team dealing with Road Safety did not accomplish much in the past. Also the problem of poor or lack of co-ordination between the main stakeholders was

making the situation worse. Road safety activities were sporadic, not properly organized and unsustainable.

g) The criterion used in licensing and monitoring driving schools.

The government was reported to be aware of the procedures followed in licensing driving schools, but there was a major problem in the areas of monitoring and evaluation of what was going on in those institutions generally.

h) Matatu owners association

The association reported to be seriously involved in the Campaign for safer roads. The association work together with other stakeholders to realize their goal of safer roads. The other organizations involved were; Blue shield insurance, an NGO- Drive Save and Kenya Institute of Advanced Driving (KIAD). The association organizes road safety activities like refresher trainings/courses for matatu drivers. The key informants from the matatu owners association were in agreement that, human error was the main cause of accident hence they worked towards re-training the driver's through seminars and workshops. They were sponsored by Blue shield insurance; Drive Safe on its part facilitated the trainings while KIAD provided with training facilities.

g) Direct Observation

Through the direct observation method, the researcher set out to investigate the driving practices of PSV drivers. The following were the findings;

Most short distance drivers drove recklessly and carelessly overtaking at any point and from any direction. They often carried excess passengers. They even drove on the pedestrian pavements. They

did not respect the zebra crossings at all. Some long distance passenger service vehicles, were over speeding only reducing to 80 km per hour when approaching a known police check point or road block. Other drivers smoked cigarette while driving.

4.3 STATISTICAL INFERENCE

In this section, data is interpreted and general statements made concerning the relationships between the variables of concern. Chi-square tests are the main techniques of making inference.

4.3.1 HYPOTHESIS TESTING

Hypothesis one is stated as follows:

Three hypotheses were tested by the study. The first stated that;

“Lack of awareness/knowledge of road safety among PSV drivers contributes significantly to road crashes in Kenya.” This null hypothesis was tested using chi-square technique in order to confirm if there was indeed a relationship between the number of crashes caused, and the road safety knowledge possessed. The cross-tabulation of road safety knowledge and number of crashes a driver was involved in yielded a chi-square value of 0.938 with a significance of 0.625 at 2 degree of freedom. Using the customary 0.05 significance level, we can say that there is no statistically significant relationship between road safety knowledge and the number of crashes/accidents caused by a driver. The chi-square value therefore, shows that the roads safety knowledge has no influence on the number of accidents or crashes that a PSV driver causes. Therefore the null hypothesis of association is rejected.

Table 13: Number of crashes in the last 24 months by road safety knowledge

Number of crashes	Road safety knowledge		Total
	Knowledgeable	Not Knowledgeable	
No crash	57	3	60
1-2 crashes	39	4	43
3-& above crashes	54	3	57
Total	150	10	160

$\chi^2 = 0.938, df=2, p=0.625$

The results suggest that factors other than the road safety knowledge influence road crashes. Earlier it was documented that road safety knowledge was almost universal a good majority (94%) of all drivers interviewed had road safety knowledge. They had a good understanding of the effects of over speeding, drug abuse, un roadworthy vehicles and fatigue on road safety. Despite this, still relatively high rates of road accidents were reported. The study also showed that the respondents knew that high concentration while driving was important but the number of crashes still remained high implying that even with that knowledge their concentration while driving was low and not as they reported. This is calls for further study to try and find out why accident rates are high despite levels of road safety knowledge. That is, there is need to identify the other factors responsible for road crashes other than lack of road safety knowledge. Could it be, that PSV drivers refuse to use the knowledge they have in ensuring that the roads are safe?

A possible explanation of the above scenario could be economic factors affecting the drivers. Most of them are relatively poor such that even with the knowledge of the dangers of over speeding and over loading, they still cannot resist the urge to over speeding in order to make more trips and hence more money.

Another issue is choice; the ability to decide on one option given a number of options from which to choose from, as suggested by the theoretical framework informing this study. Based rational choice theory, man has the capacity to choose and no matter what constraints in terms of rules are given to him, he will be the ultimate decision maker i.e. he/she will either chose to obey or break the rules depending on the benefits he/she thinks will accrue from such actions. The preferred action may not be the best, but as long as it serves his best interest he/she will go for it. This is why PSV operators tamper with speed governors and overload even if they know it is against the traffic rules they do so in order to make more money to meet the required amount for the day and have the extra money for themselves.

Also factors like attitudes of drivers towards their jobs (see Table -) and pressure contribute to road crashes. The study findings reveal that PSV drivers understand the importance of road safety but they do not practice what they know. They also may not be aware of the rules of the road owing to the fact that about all driving schools give no emphasis (in way of teaching) to the Traffic Act while training drivers . Worse still they could be driving under the influence of alcohol even though they know the dangers that come with that as seen in their level of awareness of road safety.

Hypothesis of the study states that;

“Bad driving practices of PSV drivers contribute significantly to road crashes in Kenya.” The null hypothesis was tested using chi-square to find out if there existed a relationship between the two variables of study.

Based on Table- the cross-tabulation of driving practices and road crashes yielded a chi-square value of 1.050 with a significance of 0.592 at 2 degree of freedom. Based on the customary 0.05 level of significance there was no relationship between the two variables statistically. That is, bad driving practices have very little influence on the number of crashes caused for the last 24 months prior to the study. We therefore reject the null hypothesis of association. Further analysis showed that contrary to expectations, more violators 34 (21%) reported no involvement in crashes, compared to 26 (16%) non-violators. This means that means that violators were having less or fewer crashes relative to non-violators. Non-violators 21 in number (13%) had 1-2 accidents in the last 24 months while 22 (13.75%) violators had the same number of accidents for the same period of time. It is only where the number of crashes is three and more that we see a slight difference between violators and non-violators in crash involvement. About 22 (13%) of non-violators were involved in 3-above crashes compared to 35 (22%) violators involved in the same number of crashes for the same period of time. Generally this indicates that no significant difference in crash involvement among violators and non-violators. There is a contradiction as other scholars see it differently.

Table 14: Number of crashes in the last 24 months by Bad driving practices.

Number of crashes	Bad driving practices/violation of traffic rules		Total
	Non-violators	Violators	
No crash	26	34	60
1-2 crashes	21	22	43
3-above crashes	22	35	57
Total	69	91	160

$\chi^2=1.050, df=2, p=0.592$

The study findings indicate that bad driving practices do not contribute to road crashes. These results could be a reflection of dishonesty on the part of the respondents during data collection. This view emanates from the fact that other scholars have associated the problem of bad driving practices with road crashes, see e.g., Khayesi, 1998. according to Khayesi (1998), the “behaviour of Matatu drivers is a matter of concern to other road users and the Government of Kenya. These drivers violate traffic rules with impunity. The typical behaviour of matatu drivers in Nairobi and Kenya in general endangers the lives of other road users.” The drivers’ behaviour explains to a large extent, the increasing number of Matatu accidents in Kenya. Similarly, the Uganda Revenue Authority (2000) considered poor driver behaviour as the leading cause of accidents. According to the authority drivers do not hold carriers’ driving permits and most of them train on the job.

The final hypothesis test by the study stated that;

“PSV drivers have negative attitudes towards law enforcement officers.” To assess such attitudes the respondents were asked to rate certain items on a 5- point likert scale ranging from strongly agree to strongly disagree. The results are presented in Table- The rating in the table is generated through the following procedure: All the six variables are placed in a general matrix in which all raw data are entered for each variable and the maximum scores are calculated from the matrix . The scores are obtained after the rating of the five scale measures of attitude are multiplied by the number of responses. SA is given 5 points, A =4 points, U=3, D=2, and SD is given 1 point. In this type of attitude scale, the most favorable response is given the highest marks or points. An example can be given based on one variable, namely, traffic officers following the rules strictly. Total responses for SA were 10, for A = 16, U=15, D=32 SD=87. Therefore 10 is multiplied by 5, then 16 by 4, 15 by 3, 32 by 2, and 87 by 1. Adding the results of the above gets the maximum score. That is, $10*5=50$, $16*4=64$, $15*3=45$, $32*2=64$, $87*1=87$.

The possible maximum score is got by the total responses multiplied by the highest score, which is $160*5=800$. The total percentage score for the variable is given by $310/800*100=38.75\%$. The ranking used places the PSV drivers on a continuum showing how much they feel about the said issues in terms of variables. The same procedure is carried out for the remaining five (5) variables.

Table 15: PSV driver's attitudes towards law enforcement officers

Attitude variable	SA	A	U	D	SD	Total	%	Rank
Traffic officers follow the law/rules strictly.	10	16	15	32	87	160		
	10*5	16*4	15*3	32*2	87*1	310	38.75%	1
The traffic officers play a big role in reducing traffic offences.	5	20	13	34	88	160		
	5*5	20*4	13*3	34*2	88*1	300	37.5%	2
The traffic officers take no bribes.	0	0	7	31	122	160		
	0*5	0*4	7*3	31*2	122*1	205	25.62%	6
Traffic officers apply the law the same way for everyone. (No favouritism)	6	10	7	42	95	160		
	6*5	10*4	7*3	42*2	95*1	270	33.75%	5
The traffic officers are always available when needed to help with some traffic problem.	10	9	10	28	103	160		
	10*5	9*4	10*3	28*2	103*1	275	34.37%	4
Traffic officers act promptly in case of problems on the road.	5	20	9	40	86	160		
	5*5	20*4	9*3	40*2	86*1	298	37.32	3

Key; SA=Strongly Agree, A=Agree, U=Undecided, D=Disagree, SD=Strongly Disagree

*= multiplication

The ranking shows how the PSV drivers think about issues concerning the law enforcement officers on the roads.

From the Table- , a good number of drivers of PSV vehicles are of the opinion that traffic police do not follow the rules strictly while at work. Indeed 38.75% score (the highest in the range of variable) indicates that traffic police do not follow the rules strictly. This suggests that the drivers think that the traffic officers do not know their work well hence a negative attitude towards them. Apart from thinking that traffic officers do not know their work well, the PSV drivers also feel that the traffic officers do not play a significant role in reducing traffic offences. This variable had a score of 37.5% and was ranked second (2nd). This therefore suggests dissatisfaction, which eventually affects one's perceptions.

A good majority of the respondents reported that most traffic officers take bribes. The response to this question had the highest strong disagreement response among all the other responses in the Likert scale and therefore the lowest score. It scored 25.62% and was ranked sixth (6th). The PSV drivers also indicated that favourism among traffic officers was a common occurrence. This is evident from the score for the variable which is 33.75 % and rank fifth (5th). This suggests that traffic officers do not use the law in the same manner for every offender.

The respondents also confirmed that the traffic officers are not always available when they are needed on the road to help with traffic problems. This had a score of 34.37 % and is ranked fourth (4th). The respondents also feel that the officer's reaction to a problem is not prompt. They feel that the officers take too much time to get to the site of a traffic problem. This variable had a score of 37.32% and was ranked number three (3).

From the above, we can safely and correctly conclude that most PSV drivers have a negative attitude towards the traffic police officers and this translates to many of the drivers not following the Highway Code and other traffic rules and therefore causing accidents. The dissatisfaction that the drivers have toward the people who are supposed to take care of them on the road leads them to having a don't care attitude. Many a times we have heard of drivers or matatu operators staging a demonstration against the traffic police for harassment or going on strike because of the same. This also explains the hard feelings known to exist between PSV operators and traffic police. Such feelings can be attributed to, the frustrations both the traffic officers and the PSV drivers experience in the course of their work. The traffic officers are not well equipped to deal with the challenges that come with their work in terms of equipment or gadgets e.g. speed guns to detect those who are over speeding at a distance. They are also paid low salaries. On the other hand, drivers are working under pressure to reach the target amount of money for the day. When these two meet they show no respect for each other. This manifests in the way they behave or treat each other. For example, drivers will break traffic rules as the traffic officer's watch and the officers will harass the PSV drivers unnecessarily as reported by respondents in the attitude scale.

Bad communications between the two parties, also contribute to the already bad situation. It is also common to find police officers asking for bribe even when the vehicle or the driver has no problem that would warrant impounding or arrests. The negative attitude of drivers towards traffic law enforcement officers is, therefore, seen to contribute to crashes in our Kenyan roads as drivers of public service vehicles break the law with impunity therefore causing many unnecessary crashes.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMENDATIONS

5.1 INTRODUCTION

This chapter presents a summary of the findings of the study. Conclusions are drawn from the findings to explain the implications of the PSV driver's knowledge, attitudes and practices with respect to road safety. Recommendations that are relevant are drawn from findings and conclusions.

5.2 SUMMARY OF FINDINGS

Kenya has a high rate of fatalities and injuries in relation to car ownership in the world with an average of 8 deaths from the 35 crashes that occur daily (Assum, 1998). Nearly 3,000 people are killed on the Kenyan roads annually. This translates to approximately 68 deaths per 10,000 registered vehicles, which is 30-40 times greater than highly motorized countries (Odero et al, 2003)

Evidence suggests that human factors are often the most important accident cause, (Assum, 1998).

According to the statistical abstract 2003, drivers are ranked highest in the responsibility of causing road accidents in Kenya followed by pedestrians, cyclists and finally passengers. Since in Kenya not many comprehensive studies on road safety have been done, there is a gap to be filled and more knowledge to be generated in the area of road safety in general.

Literature for the study was organized thematically and focused on the following areas; Road safety, road crashes, public transport and driver testing, Knowledge Attitudes and Practices (KAPs), and locally, lessons from other countries.

Data was collected by use of open and closed ended questionnaires that were self administered. Interview schedules were used for key informants. Systematic and simple random sampling were utilized together with non- probability sampling. Data was analyzed and presented in terms of tables, frequencies and percentages. Chi square was used to test the hypotheses.

In seeking to establish the level of awareness/knowledge on Road Safety among PSV drivers, the following were the findings; the study findings indicate that PSV drivers have very high levels of awareness about road safety, that is, drivers understand very well the adverse effects of over speeding, over loading, fatigue and use of drugs on road safety. The Road safety knowledge is almost universal at 93.8%. But ironically, with such high levels of awareness there were still high numbers of accidents with about 26.9% of drivers having 1-2 accidents and 35.6% having 3 and above accidents during the last 24 months preceding the study. The study found that levels of awareness of road safety did not influence the number of accidents caused. This suggests that there are other factors that come into play. For example economic factors such as poverty may push drivers to engage in unconventional and risky behaviours with the aim to earn more cash from their jobs.

From the study, it is evident that PSV drivers understand the importance of road safety and issues that affect it. Yet Kenya is still registering very high rates of accidents in relation to car ownership. However, the situation has improved since the ministry of Transport came up with some reforms for the industry. Nevertheless, working under pressure (from employers and traffic officers) for the PSV drivers may be contributing to their negligence on the roads. PSV drivers may also lack the knowledge of traffic rules. This could be the case because, as the study found out, the Traffic Act is

not given any emphasis during the training of the would-be drivers. The training may also be questionable owing to the fact that only 25% of the respondents could identify three of the five road signs presented to them during interviews.

The general problems facing road safety in Kenya may be as a result of the team dealing with road safety being dormant, in the past and, therefore, failing to accomplish much. Also the problem of poor co-ordination between the main stakeholders contributed to lack of any good results in the transport sector that has been very disorderly. The study found out that the National Road Safety Council (NRSC) did not exist or rather it is dead for many years now. Hence the duty of setting national policy on road safety, developing relevant implementation strategies, coordinating the work of all organizations involved in the promotion of road safety, acquiring and monitoring the use of sufficient resources and personnel for road safety work, and formulating a long-term programme for effective road safety work in the country is left undone.

It was reported that Kenya does not have a road safety fund. It operates on an annual budget and special project allocations. This money is used for road safety promotions for example posters, books, and road rehabilitation especially black spots. But from the look of things the money is hardly enough to ensure road safety promotions and road maintenance and rehabilitation. Badly maintained roads with potholes could be a contributing factor to road crashes. This can explain why with a very high understanding of road safety accident rates are still high.

Major causes of road accidents were cited as, bad road networks i.e. some sections of the road are narrow to comfortably accommodate two vehicles moving in opposite directions, bad lightings

by the road sides, lack of traffic signs and poorly trained drivers, and human error e.g. over speeding and poor judgments as the main cause especially in public transport.

In seeking to find out how bad driving practices contribute to road crashes, the following were the findings; although the study findings indicate that bad driving practices do not contribute to road crashes, other scholars have associated the problem of bad driving practices to road crashes. Khayesi (1998), for example points out that the behaviour of Matatu drivers is a matter of concern to other road users and the Government of Kenya. According to him drivers have no respect for traffic rules or the law. This has led to an increasing number of Matatu accidents in Kenya.

In a study that was done in Eldoret by Muyia (1995) the vehicle owners identified five factors responsible for road traffic accidents, careless driving (33 %), poorly maintained roads (25%), driving while drunk (22%), police harassment 16 percent and poor maintenance of vehicles (5%).

This indicates that careless driving which is a violation of traffic rules is actually a major cause of road crashes/accidents in Kenya. This was evident from direct observation made by the researcher during the data collection stage of the study. It was observed that most short distance drivers drove recklessly and carelessly overtaking at any point and from any direction and often carried excess passengers. They even drove on pedestrian pavements and did not respect zebra crossings at all. Some long distance passenger service vehicles, were over speeding only reducing to 80 km per hour when approaching a known police check point or road block. Other drivers smoked cigarette while driving.

Some drivers may not have reported their true involvement in bad driving practices or violation of traffic rules. And this most probably explains the rejection of the null hypothesis of association

between violation of traffic rules and the occurrence of road traffic accidents/crashes. From the key informants, indiscipline on the roads was the main problem among PSV drivers; it was cited as a Kenya specific problem.

The government was aware of the procedures followed in licensing driving schools, but there was a major problem in the areas of monitoring and evaluating these driving schools to know what the training materials are like and other details. It was also evident that there did not exist a standard curriculum for all driving schools. Yet type of training given to driving school trainees is important in coming up with drivers that are competent in their work and who understand the Highway code well. Without a standard curriculum it is hard to tell whether all the trainees in different driving schools are getting the required training that will empower them to be good drivers.

The contradicting findings on the relationship between violation of traffic rules or bad driving habits and the number of crashes caused by drivers may be explained in terms of the integrity of the respondents i.e. in giving the correct information on their involvement in traffic rules violations during data collection. Due to fear of being arrested and "saving face" most respondents may not have given the correct information on their involvement in traffic rules violations.

In investigating the attitudes of drivers toward law enforcement officers the following were the findings; that drivers of PSV have a negative attitude towards the law enforcement officers. As a result of the negative attitude towards law enforcement officers, drivers are bound to break traffic rules with impunity. The negative attitudes could be as a result of frustrations faced by drivers at work. This is because they are subjected to a great degree of pressure by having to deal with constant harassment from the traffic officers, arrogant passengers and other road users together with

the fact that they must make the target amount of money required by employers. This is why as the study found, the PSV drivers did not like their work. These results are consistent with those from another study done by Muyia (1995) in Eldoret town, which found the problems faced by drivers to include low salary, poor terms of service, lack of job security, and very little time for the families and personal things. Drivers also reported experiencing fatigue due to long hour of driving and the high-risks involved in driving work. Due to pressure from traffic officers, drivers see traffic officers as their worst enemies especially when there is a crackdown and many drivers and conductors are arrested and fined. In the earlier cited Muyia (1995) study conducted in Eldoret, the results showed that the traffic policemen harassed drivers by mounting abrupt stops at any part of the road, intimidating the drivers with charge sheets, and demanding bribes.

5.3 CONCLUSIONS

The main objective of this study was to investigate how knowledge, attitude and practices/behavior of PSV drivers contribute to road crashes in Kenya. Road transport is the predominant mode of internal travel for most African countries, carrying about 90% of goods and persons. However unlike other modes of travel road is by far the most hazardous and accident prone (United Nations 1990). Road transport for a developing country like Kenya is of great importance; it ensures the movement of goods and people therefore facilitating economic activity. But for a long time road damage in Kenya has been a big problem both socially and economically. This has been attributed to many things among them drivers themselves.

The results of the study have useful implications to understanding Road Safety issues in Kenya.

Road safety knowledge is an important variable when it comes to road safety. Given that majority (94%) of the drivers in the study had road safety knowledge- that is, they understood the adverse effects of over speeding, drug abuse, fatigue, and un roadworthy vehicles- but road traffic accidents

are still high there is need to find out why road safety knowledge does not seem to affect or influence the occurrence of road accidents. Now that the drivers are well aware of what road safety means, they could be investigated to see why their road safety knowledge has no influence on their involvement in road traffic accidents. There is also need to investigate other factors like economic ones to find out what actually leads to road accidents.

Although this study did not find a statistically significant relationship between bad driving practices or violation of traffic rules and the number of accidents by drivers, many studies have been done on the relationship between bad driving practices and road traffic accidents and have shown that indeed bad driving practices was responsible for the many accidents on the roads. There is need to find a very good approach to this question in future studies so as to avoid biased responses.

The study found that only 25% of the drivers could identify three out of five road signs given. This shows that majority (75%) were inadequately trained. Also the training duration for those who went through driving school was somewhat short, meaning that they did not learn a lot in the short period of time that they attended driving school. Such under trained drivers are likely to be involved in bad driving practices.

Public service driver's attitude toward law enforcement officers or traffic police is an important variable in understanding road safety. The study found that drivers have a negative attitude toward law enforcement officers. This situation explains why the drivers break the law with impunity. If the driver's attitudes toward traffic police were more favorable we would expect to see fewer road traffic accidents on the roads. This would in turn reduce the adverse social and economic consequences of accidents.

From the qualitative data, the study found that there does not exist a road safety fund which explains why there are no road signs, roads are not marked, some black spots are not identified road safety campaign are not carried out and also road safety researches are not done etc due to lack of enough funds. As for the major causes of road accidents the study found that it was due to careless driving and poor road networks. The study also found out that the traffic act is not given any emphasis during training of drivers in the driving schools meaning that most drivers do not know the consequences of their actions.

The study also found that driving schools were neither monitored nor evaluated even if this is a traffic police requirement. The study also discovered that there was lack of proper coordination between the main stakeholders in road safety.

5.4 POLICY RECOMMENDATIONS

From the findings and conclusions of the study, the following recommendations are put forward to guide the traffic police department, the National Road Safety Council (the government of Kenya), the Matatu Associations, the driving schools management and all other stakeholders in road safety.

While these may not offer solutions to the road safety problems in Kenya, they can help a great deal in combating the road carnage problem in the country. In any case, road safety cannot adopt a problem solving approach because an accident free society does not exist. Rather what can be adopted is management of accidents approach involving curbing or reducing the road accidents and their consequences.

Knowledge and practice

Drivers need to understand the need of putting to practice all they know about road safety if road accidents are to be reduced. Since drivers know a lot about road safety but they do not practice what

they know, there is a need to train PSV drivers to put to practice that which they know e.g. not to over speeding because it is dangerous to road safety.

Reconciliation seminars

There is need for stakeholders to organize seminars where the two - PSV drivers and traffic police can meet and talk about their problems. Police are frustrated in performing their work and so are the PSV drivers who were reported to have negative attitudes towards their work. This will reduce the 'bad blood' between them.

Traffic law and road safety emphasis during training

The relationship between traffic law and road safety needs to be given a lot of emphasis during training of drivers. To ensure that drivers know what is right and what is wrong and the consequences of their actions. The relevant elements of the Traffic Act need to be emphasized during such training of drivers.

Stakeholder participation

There is need to promote public road safety through stakeholders participation and involvement in order to build public awareness and mobilize public action. Unless this is done, nothing much will be accomplished. The stakeholders need to be part of all road safety activities.

The National Road Safety Council (NRSC)

The National Road Safety Council of Kenya (NRSCK) is supposed to set national policy on road safety, develop relevant implementation strategies, coordinate the work of all organizations involved in the promotion of road safety, acquire and monitor the use of sufficient resources and personnel for road safety work, and formulate a long-term programme for effective road safety work in the country. This council unfortunately, has been dormant for along while now and the Ministry has not

alone much to revive it, its membership is multi-sectoral and comprises representatives of 12 government ministries, organizations and institutions. There is need therefore to get this council to participate for proper coordination and meeting its objectives.

Funding

Instead of having only the annual budgets and special program allowances, a road safety fund needs to be established so that there is enough in terms of funds to facilitate media campaigns and conduct road safety research among other things.

Political priority

There is need to have sufficient political priority and interest in road safety management. Although the recent road safety reforms have reduced accidents to a certain level, unless the government and the relevant ministries remain active in this direction, nothing much will be accomplished in the long run.

Monitoring and evaluating driving schools

There is need to monitor and evaluate driving schools in order to find out if the curriculum is sufficient for the trainees needs.

Public transport policy

A coherent public transport policy to regulate, organize and control the sector is required. This has been lacking for a long time and the results have been poor or no coordination between the major stakeholders.

5.5 SUGGESTION FOR FURTHER RESEARCH

- 1) This research was limited to PSV drivers. Therefore, there is need to carry out another study that includes even the other drivers where knowledge, practices, and attitudes of drivers will be studied.
- 2) A similar research should be done using a bigger sample. This is in order to allow the use of a variety of statistical computations.
- 3) Other studies should be done to investigate personality profiles of professional PSV drivers.
- 4) There is need for a study to find out why road safety knowledge seem to have no effect on road accident occurrence.
- 5) Further research can be done to investigate factors other than human that influence road accidents.
- 6) Studies to investigate driving school curriculum should be done. In order to find out in details what is actually taught and how it reflects on the road safety problems in Kenya.
- 7) There is need to find out how economic factors influence the drivers involvement in road accidents.
- 8) There is need to conduct a study focusing on needs assessment for driving trainees in order to find out their actual training needs.

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Appendix A

QUESTIONNAIRE FOR A STUDY ON ROAD SAFETY

Hello, I am conducting a study on Road Safety. This information will be important in determining how road safety can be improved in Kenya

SECTION A : BACKGROUND INFORMATION

1. Sex (1) Male (2) Female

2. Age (1) under 30 (2) 30-39 (3) 40 and above

3. Number of years as a driver.....

SECTION B: ROAD SAFETY AND ACCIDENTS

4. How do you think the following affect Road Safety?
 - (1) Over speeding.....

 - (2) Drug abuse.....

(3) Un roadworthy vehicles.....

(4) Tiredness.....

5. Have you ever had a traffic accident (1) Yes (2) No

6. If yes, what was their nature?

- (1) Without injuries (4) With death (s)
(2) Without deaths (5) with injuries and death (s)
(3) With injuries

7. Have you had any accidents in the last 24 months (1) Yes (2) No

8. If yes how many? (1) None (2) 1-2 (3) 3-4

SECTION C: ATTITUDES TOWARDS WORK

9. For each of the statements below, please indicate the extent of your agreement or disagreement by placing a tick (✓) in the appropriate column.

Strongly Agree (SA), Agree (A), Uncertain (U), Disagree (D) Strongly Disagree (SD)

Statement	(1) SA	(2) A	(3) U	(4) D	(5) SD
I am satisfied with my pay as a driver.					
I am comfortable with the number of hours I work per day.					
I am satisfied by the condition of the vehicle I drive.					
Road conditions are good enough for my driving.					
Passengers behave according to my expectations.					
My employer treats me fairly.					
Other road users behave responsibly on the road.					
Traffic officers do not harass me unnecessarily.					

SECTION D: PRACTICES AND ATTITUDE TOWARD TRAFFIC POLICE

10. Do you engage in the following practices while at work? Tick (✓) applicable.

- (a) Smoking Yes No
- (b) Drinking Yes No
- (c) Chew miraa Yes No
- (d) Using mobile phone Yes No
- (e) Overtake from wrong side Yes No

11. In your view, how much should a driver concentrate while driving?

- (1) 25% (2) 50% (3) 75% (4) 100%

12. For each of the statement below on traffic law enforcement officers, Please

indicate by a tick (✓) whether you strongly Agree, Agree, Uncertain, Disagree or you Strongly Disagree


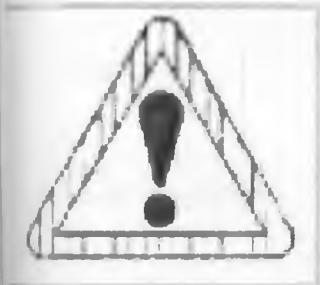

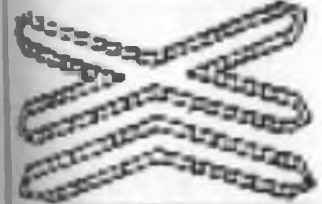
Statement	(5) SA	(4) A	(3) U	(2) D	(1) SD
Traffic officers follow the law/rules strictly.					
The traffic officers play a big role in reducing traffic offences.					
The traffic officers take no bribes.					
Traffic officers apply the law the same way for every one. (No favourism)					
The traffic officers are always available when needed to help with some traffic problem.					
Traffic officers act promptly in case of problems on the road.					

SECTION E: TRAINING

13. Did you attend driving school? (1) Yes (2) No

14. If yes, for how long?

(1) 1-2 weeks (2) 3-4 weeks (3) 2-3 months (4) 4 months and above. 14. Identify the following road signs.

ROAD SIGN	MEANING
	
	
	
	



Appendix B

AN INTERVIEW GUIDE FOR KEY INFORMANTS

Matatu Associations

1. How much weight is given to Road Safety issues in your Organization?

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.....
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2. What are you doing to ensure that Kenyan roads are safe?

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.....
.....

What are the general problems facing road safety in Kenya?

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.....
.....
.....

Do you think the government is giving enough attention to road safety?

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.....
.....
.....

What are some of the factors that contribute to road crashes in Kenya.

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.....
.....
.....

6. From the above what is the main contributing factor to road accidents?

.....
.....
.....

Suggest how you think road crashes can be reduced.

.....
.....
.....
.....
.....

Driving school Managers

Under which ministry are driving schools.

.....
.....

What do you think is the major cause of road accidents?

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.....
.....

Suggest how you think road crashes can be reduced.

.....
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.....
.....

Is it mandatory to train for the full duration to get the driving license?

.....
.....
.....

Why do you think there are so many careless drivers on the roads?

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.....
.....
.....

How much attention is given to the traffic Act while training drivers

.....
.....
.....

.....
.....

What major problems do driving trainees experience under your
Training?

.....
.....
.....

Any other comment?

.....
.....

...

The chairperson NRSCK

Does Kenya have a road safety Fund? If yes how does it operate?

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.....

Does the government know which criterion is used to license driving schools and does it monitor or evaluate them?

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.....

Why don't we have a standard curriculum for driving schools?

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.....
.....

Why do you think there so many careless drivers on the roads?

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.....
.....

What is the government doing about driving schools?

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Is there any form of control for driving schools in Kenya?

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Any other comment?.....

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