Analyzing the Causes of Road Traffic Accidents in Kumasi Metropolis

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Abstract – The study analysed the causes of road traffic accidents in the Kumasi Metropolis in Ghana. Random sampling technique was used to select a sample of 137 drivers of commercial vehicles in the metropolis. Data collection was through a self completion questionnaire, interview and observation. Descriptive statistics and percentages were used to analyse and interpret the data. The findings showed that reckless driving; bad nature of roads and unfavourable weather conditions accounted for the major causes of road traffic accidents in the metropolis. Driving under the influence of alcohol and the use of cell phones while driving came out as minor causes of road traffic accidents. The study also showed that about 30% of the drivers were fully aware that driving under the influence of alcohol leads to road accidents while nearly all drivers admitted to the use of cell phones whilst driving. The drivers were generally satisfied with the roles played by the National Road Safety Commission (NRSC), Motor Traffic and Transport Unit (MTTU) of the Ghana Police Service and Driver and Vehicle Licensing Authority in curbing road traffic accidents.

Keywords – Ghana, Road Accidents, Road Traffic Fatalities, Causes of Road Accidents.

I. INTRODUCTION

Road accidents in Ghana is known to be the second major cause of death after malaria and it is reported that there is an average of 1,909 people who are killed through road accidents annually[1]. There are many factors that lead to the numerous cases of accidents in the country. Whilst some attribute the causes to negligence and indiscipline on the part of both pedestrians and drivers, others attribute spiritual causes to it. Some other causes of most road traffic accidents in the country include gross indiscipline on roads, drivers parking at unspecified bus stops to pick up passengers, drivers receiving calls whilst driving, over-loading, fatigue driving, drunk driving and over-speeding. The poor nature of some roads, non-observance of traffic rules and regulations by most drivers, poor maintenance of vehicles and indiscriminate use of the road by some pedestrians are some other causes of motor and car accidents in the country. Statistics show that 60% of road accidents are due to human factors (errors) which include pressure on drivers from passengers to speed up, passengers fighting and arguing on the top of their voices destructing drivers’ attention and drunk driving[2]. The statistics further revealed that other human factors such as over speeding by drivers, over loading of vehicles, fatigued or stressed up driving, listening to music on radio or tape recorder whilsts driving, making or receiving phone calls whilsts driving, incorrect overtaking and dangerous driving as also causes of road accidents[3][4]. About 40% of road traffic accidents are attributable to mechanical, natural and lack of road sign factors. In spite of the fact that modern technology has made it possible for vehicles to be manufactured to meet certain safety standards, the incidences of vehicle mechanical faults resulting in accidents appear to be pervasive. Mechanical faults such as brake failure, tyre burst, engine seizure, poor lighting system and faulty steering continue to be cited as causes of road traffic accidents [5]. A Road Traffic Accident (RTA) is when a road vehicle collides with another vehicle, pedestrian, animal or geographical or architectural obstacle. The RTAs can result in injury, property damage and death. RTA results in the deaths of about 1.2 million people worldwide each year and injures about four times this number [6]. Road traffic accidents or collisions are grouped into five categories or types. In one type known as head-on collision, the front ends of two vehicles crash head-on and the cause of this is normally due to over speeding while negotiating a curve or running into an oncoming vehicle when over taking another vehicle. Road department is a type of single vehicle collision that occurs when a vehicle leaves the roadway and hits a person or object. The contributing factors to such accidents include; loss of vehicle control, misjudging a curve, attempting to avoid colliding with other road users or an animal. Rear end collision involves a traffic collision where the front of a rear vehicle hits or crashes the rear part of a front vehicle. Another type of traffic collision is side collision which is where an incoming vehicle hits or crashes the side of a moving or stationary vehicle. Such accidents mostly occur at T junctions or cross roads. The last type of traffic accident is roll over in which the vehicle tips over onto its side or roof on the road or off the road [7][8]. In order to curb the incidence of these collisions, road traffic signs are used to inform drivers about the hazards (dangers) ahead. Samples of road regulations and traffic signs are regulation signs, which include stop, and yield (give way); prohibition signs which order drivers not to do something some of which are; No U turn, No right turn and no left turn no parking and no overtaking. Mandatory signs order drivers to do something and include; stop, turn left ahead, turn right ahead, turn right, turn left, keep right and keep left[9].

II. STATISTICS OF ROAD ACCIDENTS IN GHANA

Figure 1 (a) illustrates the trend of road traffic fatalities from 2000 to 2007. Road traffic fatalities refer to the
number of deaths resulting from road traffic accidents, with the deaths being those occurring within 30 days after the crash. The total number of road traffic deaths recorded in 2007 was 2,043, an increase of 29.5% over that of year 2000. This indicates that road traffic deaths have gone up by 29.5% from 1,578 in 2000 to 2,043 in 2007[10].

III. STATISTICS OF ROAD ACCIDENTS ON REGIONAL BASIS

Figures 2.1 and 2.2 represent statistics of road traffic accidents for 2012 and 2013 respectively as provided by the NRSC.

Figure 1 (b) presents the annual distribution of crashes from 2000 to 2007. The total number of road traffic crashes in 2007 was 12,038, representing an increase of 3.2% over the 11,668 recorded in 2006 and 5.9% over the 2005 figure of 11,328. The NRSC indicated that the numbers increased dramatically in 2000 and 2004 because they were election years, when more accidents occurred because of increased political activity which caused movement of vehicles with political party supporters from one place to another.

IV. MATERIALS AND METHODS

The study was conducted in Kumasi Metropolis of the Ashanti Region of Ghana. The metropolis has a population of 2,035,064 people as at the last population census of the country in 2010. The population is made up of 972,258 males and 1,062,806 females. The number of registered
commercial vehicle drivers operating under the auspices of
the Ghana Private and Road Transport Union (GPRTU) was 10,000 located in about 100 lorry and taxi terminal
stations in the metropolis. Simple random sampling
 technique was used to select a sample of 137 drivers who
operate in Kejetia the central business area of Kumasi and
Neoplan lorry station, a popular lorry station where many
passengers board vehicles for the nation’s capital Accra
and other parts of the country. Questionnaires, interview
and observation were the instruments used for the study.
The questionnaire was used to seek information from
literate drivers who could read and understand the
questionnaire items and in the case of illiterate drivers, a
semi-structured interview was conducted using a local
language which all the drivers speak and understand.

The drivers were also observed as they went about their
duties. The observation enabled information to be gathered
on how the drivers drive, whether they visited ‘blue
kiosks’ before driving or were speaking on cell phones
while driving. All the data collected was analysed and
interpreted using percentages and conclusions were drawn
based on responses with highest percentages.

V. RESULTS AND DISCUSSION

Table 1a: Background of drivers

<table>
<thead>
<tr>
<th>Age Distribution</th>
<th>Number (%)</th>
<th>Gender</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-27</td>
<td>20 (14.6%)</td>
<td>Female</td>
<td>137(100%)</td>
</tr>
<tr>
<td>28-37</td>
<td>39 (28.5%)</td>
<td>Male</td>
<td>137(100%)</td>
</tr>
<tr>
<td>38-47</td>
<td>58 (42.3%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48 and above</td>
<td>20 (14.6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>137(100%)</td>
<td>Total</td>
<td>137(100%)</td>
</tr>
</tbody>
</table>

Table 1b: Background of drivers

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Number (%)</th>
<th>Marital Status</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary – JSS/JHS</td>
<td>60 (43.8%)</td>
<td>Single</td>
<td>49 (35.8%)</td>
</tr>
<tr>
<td>WASSCE/SSCE</td>
<td>30 (21.9%)</td>
<td>Marriage</td>
<td>60 (43.8%)</td>
</tr>
<tr>
<td>Technical school</td>
<td>20 (14.6%)</td>
<td>Divorced</td>
<td>10 (7.3%)</td>
</tr>
<tr>
<td>‘O’ level</td>
<td>15 (10.9%)</td>
<td>Widowed</td>
<td>18 (13.1)</td>
</tr>
<tr>
<td>Others</td>
<td>12 (8.8%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>137 (100%)</td>
<td>Total</td>
<td>137(100%)</td>
</tr>
</tbody>
</table>

Table 1c: Background of drivers

<table>
<thead>
<tr>
<th>Religious Denomination</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christian</td>
<td>60 (43.8%)</td>
</tr>
<tr>
<td>Islamic</td>
<td>50 (36.5%)</td>
</tr>
<tr>
<td>Atheist</td>
<td>8 (5.8%)</td>
</tr>
<tr>
<td>Traditionalists</td>
<td>19 (13.9%)</td>
</tr>
<tr>
<td>Total</td>
<td>137 (100%)</td>
</tr>
</tbody>
</table>

Table 1a shows that all the commercial drivers were
males and that 71% were within the adult age bracket of
28-47 which presupposes that the drivers are mature
equipped to drive commercial vehicles. The results in Table
1b clearly shows that 88% of the drivers have obtained at
least basic education and for that matter can read and
interpret road signs and signals.

5.1 Major Causes of Road Accidents in the Kumasi Metropolis of Ghana

Figure 3 shows the major causes of road accidents in the
Kumasi metropolis of Ghana.

Fig.3. The causes of road traffic accidents

The information in Figure 3 shows that 19.7% of the
sample representing 27 drivers intimated that road
accidents were caused by absence of road signs on roads
and 5(3.6%) drivers agreed that unfavourable climatic
conditions were responsible for road accidents. The study
further revealed that careless driving accounted for 36.5%
of road accidents, faulty vehicles for 16.8% and the nature
of roads 23.4%. Drivers’ carelessness and nature of roads
were found to be the major causes of road traffic
accidents in the municipality.
5.2 Minor Causes Of Road Accidents In The Kumasi Metropolis

Table 2 shows the perception of drivers about the influence of alcohol on their driving abilities.

Table 2: The influence of alcohol on driving

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you drive under the influence of alcohol?</td>
<td>92(67%)</td>
<td>45(33%)</td>
<td>137(100%)</td>
</tr>
<tr>
<td>Do you think that driving under the influence of alcohol can cause road accidents?</td>
<td>86(63%)</td>
<td>51(37%)</td>
<td>137(100%)</td>
</tr>
<tr>
<td>Have you ever crashed your vehicle in an accident due to drunk driving?</td>
<td>75(55%)</td>
<td>62(45%)</td>
<td>137(100%)</td>
</tr>
<tr>
<td>Do you know some drivers who drive under the influence of drinks?</td>
<td>120(86%)</td>
<td>17(14%)</td>
<td>137(100%)</td>
</tr>
</tbody>
</table>

The results in Table 2 shows figures related to drivers driving under the influence of alcohol. The results indicate that 67% of the sample admitted driving under the influence of alcohol while 63% also agreed that driving under the influence of alcohol could lead to road traffic accidents. The results also indicated that 55% of the drivers have ever been involved in road accidents as a result of drunk driving. The results strongly show that drivers generally drive under the influence of alcohol and for this reason; cause road traffic accidents.

Table 3: Use of cell phone while driving

<table>
<thead>
<tr>
<th>Use of the Phone While Driving</th>
<th>No. of respondents.</th>
<th>Have you been involved in an accident while using the phone</th>
<th>Number of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you make calls while driving?</td>
<td>130</td>
<td>NO</td>
<td>132 (96.4%)</td>
</tr>
<tr>
<td>Do you receive calls while driving?</td>
<td>132</td>
<td>YES</td>
<td>5 (3.6%)</td>
</tr>
<tr>
<td>Do you receive calls through the mouth piece?</td>
<td>121</td>
<td>Total</td>
<td>137 (100%)</td>
</tr>
<tr>
<td>Do you receive calls through an ear or Bluetooth piece?</td>
<td>17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: field work

Table 3 shows that almost all the drivers agreed that they used phones while driving with only 3.6% of them who indicated that they did not use phones because they have been involved in road accidents as a result of the using the phone while driving.

5.3 Drivers’ Perception About The Roles Of DVLA

The Driver and Vehicle Licensing Authority (DVLA) is the body charged with the responsibility of examining and issuing roadworthiness certificates and driving licenses to drivers. Figure 4 shows some of the checks that staff of the DVLA inspects and what drivers think of the work done by the DVLA.

![Driver Vehicle and Licensing Authority (DVLA)](image)

Fig. 4. Drivers’ perception of checks conducted by the DVLA

Figure 4 shows views of drivers on the nature of inspection carried out by the DVLA to help curb road traffic accidents. The results indicated that the DVLA paid more attention to the lighting systems of vehicles, the sight of drivers and the braking systems. The least inspected parts of the vehicle were tyre speed ratings, tyre tread wear patterns and test driving of vehicles.


5.4 Drivers’ Perception About The Roles Of MTTU

The Motor Traffic and Transport Unit (MTTU) is a branch of the Ghana Police Service responsible for enforcing traffic rules and regulations. Figure 5 shows the perception of drivers about the performance of the MTTU.

![MTTU Performance Graph](image)

**Fig.5.** Drivers’ perceptions about the performance of the MTTU

Figure 5 shows drivers’ perceptions on the roles and performances of the MTTU in reducing road accidents. The results as shown in the figure indicated that the MTTU carries out some amount of checks on vehicles for all the quantities listed to ensure whether they are worthy to be used for commercial purposes. The findings, however, revealed that the MTTU pays little attention to the inspection of seat belts’ use by passengers and space intervals between successive seats which were found to be too close such that passengers did not feel comfortable in their seats.

5.5 Drivers Perception About The Roles Of NRSC

![NRSC Performance Graph](image)

**Fig.6.** Drivers’ perception about the roles of NRSC

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VI. CONCLUSION

The results of the study revealed that most of the road traffic accidents were caused by the carelessness of drivers, poor vehicle maintenance, inadequate road traffic signs and markings, and unfavourable climatic conditions. The findings also indicated that the influence of alcohol and use of phones while driving constituted the minor causes of road traffic accidents. A little over 50% of the drivers perceived that the DVLA, MTTU and NRSC played their roles well in curbing road traffic accidents.

RECOMMENDATIONS

Based on the results of the study, it was strongly recommended that the NRSC should embark on continuous vigorous road safety campaigns to educate drivers on the need to be very careful while driving and the Ghana Highways Authority and Department for Urban Roads which are responsible for maintaining highway and urban roads respectively should rehabilitate all bad roads. The MTTU of the Ghana Police Service should check, arrest and prosecute all careless drivers, those who drive under the influence of alcohol and passengers and drivers who do not wear seat belts.

REFERENCES


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