IMPACT OF TRAINING BODA BODA OPERATORS AND SAFETY STATUS IN KAKAMEGA COUNTY, KENYA

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Abstract

Motorcycle transportation commonly known as boda boda, is very useful in rural areas of Kenya due to poor infrastructure. Statistics from the Kenya police indicate that this mode of transport accounts for most road accidents in Kakamega County. This leads to injuries, maiming, or death. The research was conducted to evaluate the impact of training levels undertaken by boda boda operators on road safety, accidents, and their awareness levels on safety measures. Four hundred and eighty questionnaires were randomly administered to boda boda operators, health facilities and law enforcement officers. The variables included age, education level, marital status, training level and awareness, ownership, time of operations and number of passengers ferried. It was observed that 64% of boda boda operators had no valid licenses. About 51% of the operators were trained through apprenticeship, 33% through driving school and 16% self-training. An average of 61% did not have any road safety training. There was significant difference between the number of years in operation and accident involvement ($X^2=3.299$, df=3, p<0.05).Those who had worked between 1-5 years had higher accidents than those with over 10 years. The licensed and trained operators had significantly fewer accidents than untrained operators ($X^2=1.172.;$ df=1 p<0.05) accounting for 47% and 53%, respectively. In conclusion, most of the boda boda accidents are due to lack of training and awareness on road safety. Thus, there is urgent need for the operators to go to driving school, and also get awareness training on road safety. The County should provide continuous training and road safety awareness programmes. This will provide knowledge, and change perceptions on road safety practices in Kakamega County. The information could be used in policy development and improvement in Kenya.

Key words: Boda boda operators, accidents, road safety, training
INTRODUCTION
The increase and use of motorcycles as a preferred means of public transport has been significantly attributed to the fact that the transport mode offers certain transport advantages in the form of easy manœuvrability, ability to travel on poor roads, and demand responsiveness. Commercial motorcycle service growth has also led to an increase in road accidents, traffic management problems, pervasive noise and increases in local air pollution and greenhouse gas emissions (Kumar, 2011). Road crashes kill at least 1.3 million people each year and injure 50 million worldwide, a toll greater than deaths from diseases such as Malaria as reported by World Health Organization (WHO) (WBSCD, 2001). Road injury epidemic is a crisis for public health and is a major contributor of poverty (Ward and Billingsley, 2009; WHO, 2009). Motorcyclists are reported to bear over 16 times of Killed and Serious Injury (KSI) rate in the UK, per million vehicle kilometers. Clarke et al. (2004) report informs that although motorcyclists make up less than 1% of vehicle traffic, their riders suffer 14% of total deaths and serious injuries on Britain’s roads. Edson and Tandoc (2007) further add that young motorcyclists below the age of 18 years make up a significant percentage of injuries and fatalities among road users in many countries because of lack of proper training, riding while they are under age and not complying with the traffic rules. Factors such as over speeding, lack of Personal Protective Clothing (PPC), risk-taking behaviour, and drunk-driving contribute to this rising trend. Road traffic crashes and injuries constitute a major health, economic and developmental challenge for many African countries. A research carried out by Chen (2010) indicates that with only 4% of the world’s motor vehicles, African roads witness more than 10% of the world total collision fatalities.

The advantages of Motorcycle transportation “Boda boda” is that it is inexpensive, quick, evades traffic, can use narrow paths in peri-urban areas, available day and night, and can also be fun to ride (Odera, 2009). It is estimated that the number of motorbikes in Kenya increased from 3,759 units in 2005 to 91,151 in 2009 as a result of Zero rating the tax on motorcycles below 250cc in 2008 (Daily Nation 3rd October 2010). The landmark tax exemption slashed the price of Chinese made model from an average of seventy thousand to between thirty and forty thousands.

According to Odero et al. (2003), nearly 3,000 people are killed on Kenyan roads annually, translating to approximately 68 deaths per 10,000 registered vehicles. This figure is interpreted to be 30-40 times greater than in highly motorized countries (Odera et al., 2003).
On average, 10.3% of crash victims die, 32.5% are seriously injured, and 57.2% slightly injured each year. The most severe form of collision is between the vehicle and pedestrians, with the highest case fatality rate (24%) compared to other types of collision which include single vehicle (18%), vehicle-bicycle (17%), vehicle-vehicle (12%), and vehicle-motorcycle (8%) (Odera et al. 2003). In western Kenya, boda bodas are the most popular means of transport especially for short distances hence revolutionised the movement of people and have driven once popular bicycles out of business (Kisia, 2010). However, the new mode of transport has come with its share of misfortunes as they become a common sight, so is the number of accidents (RTIRN, 2010). The accidents are so frequent necessitating many hospitals to establish special wards for boda boda victims, and relevant stakeholders to carry out road safety campaigns. Most of the motorcycle crash patient survivors in Kakamega Provincial General Hospital are in wards two and seven. Majority of the boda boda victims get head injuries and get admitted in ward six (Kisia, 2010).

To curb this menace, the Tuktuk boda boda motorbike Welfare Association has come up with an initiative to reduce motorcyclist casualty in Kenya which is referred to Tukbodabike safe. It works towards Government casualty reduction targets in an effort to reduce the number of people killed and seriously injured in road collisions. The main strategy is to engage with the post riders in a conflict free environment to consider and analyze why motorcycle crashes are happening, which will include the attitudinal and motivational issues (www.tukbodabike.com). As the government continues to develop ways and means of dealing with the situation, boda boda population continue to register drastic increases with a relative increase of death and injury incidences. However, there is inadequate training and awareness programmes’ being rolled out to educate the youths and individuals involved in the boda boda industry.

MATERIALS AND METHODS

Sampling

The study was carried out in the Kakamega County, situated between latitude 00 17’ 18” North and 34045’19” East, covering an area of 1,395 km². It has a population of 1,660,651 according to 2009 census. The County has seven divisions namely Kabras, Navakholo, Shinyalu, Lurambi, Ikolomani, Ileho, and Municipality. Average population density is 495 persons per km². The
county lies within altitude 1250 -2,000 m a.s.l with average annual rainfall ranging from 1250 - 1750 mm. The average temperature in the county is 22.5°C most of the year.

A sample unit was represented by an individual motorbike transport operator. The census report (2009) stated that there were about 8,925 motor cycles in Kakamega County. Time and cost factors contribute to determination of sample size. Purposive sampling was used in order to get the sample size. Israel, (1992) in his study says there are number of factors that influence the sample size that is required for any study. These are; the purpose of the study, population size, the risk of selecting a “bad” sample, and allowable sampling error. Different approaches can be used to determine the sample size like using a census for small populations, imitating a sample size of similar studies, using published tables, and applying formulas to calculate a sample size (Israel, 2009). The study sought to identify the impact of training boda boda operators and safety status in kakamega county, Kenya. The required data to meet the study objectives was continuous and a margin of error of 0.03 was seen as appropriate. Bartlett, Kotrlik and Higgins’ (2001) published tables for a population size of 1,000 at an alpha level of 0.05 for continuous data gives a sample size of 536 which was used in this study.

**Data analysis**

The data on social demographics, number of accidents, customers ferried and training was analyzed using Statistical Package for Social Sciences (SPSS) Version 16.0. Chi- square tests were also conducted to the results were represented using tables, graphs.

**RESULTS AND DISCUSSION**

**Possession of valid Driving licenses**

The Traffic Act of Kenya (2009) states that ‘No person shall ride a motorcycle unless that person has a valid driving licence issued in accordance with the provisions of the Act’ (The Traffic Rules Cap 403, 2009). When probed on the validity of boda boda operator’s licences at the study area, the following observations were made:
Most of the respondents (64%) of the *boda boda* operators did not have driving license, while (36%) of them had a valid driving license.

From the research most of the operators within the county do not have driving licenses which is illegal according to the traffic Act 2009. Valid driving licenses are indications that operators have gone through requisite training at recognised training schools and passed their classes of motorcycles. Further, the OSHA, 2007 Act section 55 states that “all machinery, whether fixed or mobile for use either at workplace or as workplace shall only be used for the work which it is designed for and be operated by a competent person”. This helps in ensuring that one understands the rules and procedures in place when using the machine.

**Age of Boda boda operators**

It was important to probe *boda boda* operators on their age factor since this bears a potential bearing on road safety levels. Age distributions among those interviewed were as shown in figure below
It was observed that 50.9% of the respondents were between 18 – 28 years, 39.6% were 29 - 39 years and 22.33% were between 40 – 50 years, while 2.7% were under 18 years of age and 0.4% were above 50 years (Figure 2). Glaiza et. al. 2011 explained in their research that young riders are usually involved in speeding which increases the risk of getting into accidents. Further, older drivers, aside from being less risky are generally more experienced than young drivers. Glaiza concludes that they might have encountered riding problems in the past, which imparted learning on the value of being cautious on the road. This case is likely to be as observed in Kakamega County. Most riders in the study area are young and have attained low levels of education.

**Mode of training**
Mode of training refers to the various means a ridder acquired his or her training experience before engaging in the *boda boda* industry. The figure below shows how respondents were distributed according to their respective modes of training.

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**Figure 2: Percent of boda boda respondents in different age groups**

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**Mode of training**
Mode of training refers to the various means a ridder acquired his or her training experience before engaging in the *boda boda* industry. The figure below shows how respondents were distributed according to their respective modes of training.
Most of the *boda boda* operators were trained through apprenticeship (51%). The *boda boda* operators who attended driving school accounted for (33%) while those who learned how to ride by their own initiative were (16%) (Figure 3). The findings indicate that majority of *boda boda* operators mainly received informal training. Study carried by Wilson et al show that over 90% of the motorcycle riders involved in an accident do not have formal training instead rely on family, friends or being self-taught. Occupational Health and Safety Act, 2007 states all plants, machinery and equipment whether fixed or mobile for use either at the workplace or as a workplace, shall only be operated by a competent person (OSHA, 2007).
Causes of accidents

It was observed that the majority of the accidents were due to careless driving from the operators which accounted for 54%. Over speeding has also contributed to the increase in number of accidents with 52% of the responders agreeing that over speeding is a big problem this can be attributed to the operators who rush so as to make extra money. Overspeeding can also be attributed to the age of the riders who are still in their teenage and want to experiment with the machine. The operators who drive under influence of alcohol also contributed to the accidents in the county by 45%. Drunk driving can make operators to make wrong judgements thus putting themselves and other road users in danger. Poor roads in the county also contributed to accidents of the boda boda operators 19% have suffered due to the bad state of the roads. Traffic rules and regulations not being followed has also contributed to accidents 12% while overloading 4% have also contributed to accidents on the road.

Figure 4: Percent response on the causes of accidents
Therefore careless driving can be attributed to boda boda operators not undergoing the required training hence not understanding the hazards and risks involved with the operation, hence the control measures needed in order to avoid accidents.

**Personal Protective Equipment used while riding**

![Graph showing the usage of Personal Protective Equipment](image)

Figure 5: Percent respondents who use Personal Protective Equipments

Most of the operators were aware of the need to use the Personal Protective Equipment (PPE) while riding. Majority of the operators 89.2% use helmets while riding, 75.3 % use reflective jackets, 74.7% use boots, 60.2% use gloves, and 4.4% of the respondents did not use any PPE while riding. However 0.9% used other safety measures while riding like use of carton boxes to protect their chest from wind (Figure 5). From the study it can be noted that the operators understands that they need to use PPE daily. However they need to be trained on the importance so that they can have all the required PPE rather than having one or two of the required PPE. The Traffic Act Cap 403 states that “a person who rides a motor cycle shall provide a helmet and a jacket that has reflectors to be worn by the passenger. Passengers shall wear a helmet and a reflective jacket” (The Traffic Act, 2009).
Common motorbike accidents

![Chart showing percentages of different types of accidents.]

- Motorbike: 32%
- Vehicles: 41%
- Pedestrian: 15%
- Livestock: 5%
- Self-causing: 7%

Figure 6: Response on the common motorbike accidents

Most of the accidents were between the boda boda operators and the vehicles which accounted for 41%; followed by between the motorbikes 32%, motorbikes versus pedestrians 15%, Motorbike versus livestock accounts of 5% and lastly self-causing accidents 7% (Figure 6).

Number of passengers carried per trip

![Chart showing percentages of passenger carried per trip.]

- One passenger: 35%
- Two passengers: 60%
- Three passengers: 5%

Figure 7: Percent response on passenger carried at a time
It was observed that most of the operator’s ferried two passengers per trip which accounted for 60% and 35% complied with traffic rules by ferrying one passenger per trip. In some cases three passengers were also ferried per trip accounting for 5% (Figure 7). Ferrying more than one passenger easily compromises the stability of the motorcycle and renders those aboard vulnerable to accidents. The traffic Act demands operators to ferry only one passenger per trip.

**Training versus passengers being carried**

![Bar chart showing the percentage of trained boda boda operators who carried one, two, or three passengers per trip.]

Figure 8: Percent response of trained boda boda operators to law compliance

Among those who were trained in driving schools, 34% carried one passenger, 34% carried two while 22% carried three passengers per trip. Among those who were trained by other *boda boda* operators, 54% ferried one passenger, 49% ferried two and 48% ferried three passengers per trip. However, those who trained themselves, 12% ferried one passenger, 17% ferried two while 30% ferried three passengers per trip (Figure 8).
Most of the *boda boda* operators who went through training do not practice what they were taught considering their lack of adherence to certain traffic rules. A statistical significance relationship demonstrating the training mode for boda boda operators and the number of passengers they were permitted to ferry per trip \( (X^2 = 6.368, \text{df} = 4, p > 0.05) \) proved lack of relationship. Training needs programmes are therefore presented as important gaps to be filled in order to ensure all boda boda operators understand the number of passengers they need to ferry per trip.

**Years of operation against accidents**

Table 1: Proportion of operator’s years of experience

<table>
<thead>
<tr>
<th>No of years of operation</th>
<th>Have you had an accident</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Under one year</td>
<td>42</td>
<td>13</td>
</tr>
<tr>
<td>1-5 years</td>
<td>271</td>
<td>104</td>
</tr>
<tr>
<td>6-10 years</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Over 10 years</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>326</td>
<td>124</td>
</tr>
</tbody>
</table>

The number of years of operation was seen to influence the accidents rate. The more the number of years the boda boda had operated the less the number of accidents caused. According to Table 1 above, 83.9% of the boda boda operators who had accidents had operated the motorcycle between 1-5 years. This can be attributed to being over confident and taking higher risks in their jobs; 10.4% *boda boda* operators who had accidents had operated the boda *boda* for less than a year. This can be due to lack of experience; being unfamiliar with the machine or roads and not
knowing the risks involved with the operations, 4.8% of the operators had accidents due to the fact that they have reached maturity level and are not over confident, while those over 10 years in the business only have the experience and they are cautious in how they do their business, 0.8% had an accident.

There was significant statistical relationship between the number of years in operation of the boda boda and involvement in an accident ($X^2 = 3.299$, df= 3, p < 0.05). The significant statistical relationship observed in boda boda operators involved in accidents and number of years in operation may be related to:

a) The experience and cautiousness the boda operators gain as they ride for many years.

b) The more experienced one gets, the more confident he/she become in the operation of the business.

c) Overconfidence, thus making the operators to take higher risks has caused many accidents hence training will help the operators to understand how to handle motorcycle as a machine and ensure they take utmost risk control measures to prevent accidents.

**Causes of accidents against where learned riding**

Causes of accidents were compared to the mode of driving undertaken by bodaboda operators in order to determine causes against the various modes identified. The graphs below indicate the findings.
Figure 9: Percent response for causes of accidents against where they learned riding

From the indications in the graph above, it came out that there is relationship between the place where the bodaboda operators trained their driving and causes of accidents. According to the graph, careless driving was majorly caused by those who trained from other people 47% while those from driving school contributed 35% and self-trained drivers recorded 18%. Analysing ignorance to traffic rules, it was found that majority were operators who had gone to driving school at 49%, those trained by other 42% and those who trained themselves 9%. This could possibly have been contributed to the fact that there are no refresher courses for the bodaboda operators. As a result, most of them tend to ignore or forget their learned instructions during driving lessons. Most attend driving courses with a major objective of obtaining a license for operating the boda boda. Drunk driving, overloading, over speeding and poor roads have also contributed to road accidents.
Licensed against accident

![Bar chart showing the percentage of boda boda operators who had an accident and whether they had a license or not.

Figure 10: Percent response for license against had an accident.

From the figure above it can be seen that most of the boda boda operators who have had accidents did not have driving licenses (16%) while (11%) of the operators who were licensed had been involved in accidents. The figure also shows that (48%) of the operators who did not have a licence did not cause accidents while (25%) of the operators who had licenses did not cause any accidents.

There was significant statistical difference between the boda boda operators who are licensed and if they had been involved in an accident ($\chi^2 = 1.172.; \text{df} = 1 \ p < 0.05$). The licensed and trained operators were aware of the risks and hazards involved with riding the boda boda hence being more careful when operating the boda boda. The ones who have not undergone the training take more risks because they are not aware of the hazards involved with the riding of the motorcycle.

**CONCLUSION AND RECOMMENDATIONS**
Majority of the *boda boda* operators have not undergone road safety training thus are not aware of the risks involved with the *boda boda* operations which contributes to accidents in the County. The study results indicated that the main causes of accidents to the *boda boda* operators is careless driving and over speeding which has led to casualties and fatalities in the hospital. The study found out that most of the *boda boda* operators ride their motorcycles when they are under influence of drugs or alcohol; however it was noted that most of the operators did not know that they should not ride when they are under the influence of alcohol. The study found out that majority of the *boda boda* operator carry two passengers which is against the traffic rules and regulations.

The study recommends that Safety training, workshops and awareness to all *boda boda* operators. The operators needs to be taken through safety of using motorcycle as a mode of transport so as they are equipped with the knowledge of the hazards and risks involved with the operations and the measure they need to observe.

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