

CAUSES AND TRENDS OF PUBLIC TRANSPORT MOTORCYCLE ACCIDENTS IN BUNGOMA COUNTY, KENYA

Brian Wanyama Singoro, Jacob Wakhungu, John Obiri & Edmund Were
Masinde Muliro University of Science and Technology (MMUST), KENYA

ABSTRACT

There has been a drastic increase in the use of motorcycles as a means of transport worldwide due to various reasons. In Kenya, the increased use of motorcycles has been seen over the last decade. This increase has brought forth many challenges, including motorcycle accidents on disproportionate scale comparative to the world statistics. Indeed motorcycle accidents constitute a major cause of death and injuries to thousands of people every year. In spite of this, motorcycle accidents remain a neglected problem in Kenya. This study sought to determine the causes and trends of motorcycle accidents in Bungoma County. The study population comprised 400 people from households of motorcycle riders involved in accidents and those not involved. Key informants in the motorcycle transport industry were interviewed. The study adopted a cross-sectional survey design to establish the causes, incidences/trends, and vulnerability of motorcycle accidents. Descriptive and inferential statistics were used in the analysis of data. The study was anchored on both the crunch model and the wish to die and domino theory. The study found that human error is the leading cause of motorcycle accidents. This is imparted on by poor regulatory and enforcement regimes. Structured and comprehensive training of riders on traffic code and regulations will most likely reduce accidents and associated economic losses. Collective action measures such as motorcycle Saccos for voluntary enforcement and pooling of resources, to aid riders in case of injuries and death, should be explored and pursued. The study provides information and insights on disaster risk reduction for policy formulation on motorcycle accident mitigation. From the results, the proposed strategies that can be employed to curb motorcycle accidents in the order of magnitude are: training of motorcycle riders; observing speed limits; improved roads; not driving while under the influence of drugs/ alcohol; not carrying more than one passenger; improved enforcement by police; proper motorcycle maintenance; wearing protective clothes/ helmets/ boots; wearing reflective jacket; and not driving while tired.

Keywords: Motorcycle, Accidents, Injuries, Disaster Risk Reduction.

INTRODUCTION

There has been an upsurge in the number of motorcycle accidents worldwide that have raised safety concerns. Of the nearly 1.3 million global deaths associated with road accidents on an annual basis to the year 2008, nearly half (46%) occurred among vulnerable road users that comprise pedestrians, pedal cyclists and motorcycle riders (Odero, 2009). The trend in motorcycle accidents in East Africa is worrying. The number of deaths attributed to motorcycle accidents in Kenya has steadily been on the increase, from 427 in 2002 to 1,755 in 2010 (NRSCK, 2011). Motorcycles have become a common means of transport in Kenya. However, sustained increase in the number of motorcycle crashes is a cause for concern. The upsurge in motorcycles is mainly attributed to abolition of import duty in 2006 with the aim of creating employment and easing transport in rural areas. As a result, motorcycle registration increased to 91,151 units in 2009, up from about 3,759 units in 2005 (KNBS, 2010). Attendant to this, recorded motorcycle fatalities in Kenya have increased four-fold from 44 in 2005 to 164 in 2009, with a particularly high growth in 2008/2009 (NRSCK, 2011). The increasing

unemployment among the youth, devolution and livelihood support from motorcycle investment is likely to increase the number of motorcycles on Kenyan roads and more so in Bungoma County, Kenya. This research set to investigate and document the causes and trends of motorcycle accidents in Bungoma County, Kenya.

Context of Motorcycle Transport

While the urban motorbike taxi is a relative newcomer, its rural predecessor, the bicycle taxi already existed as far back as the 1930s in the Senegalese city of Kaolack and the 1960s in Kenya, Uganda and Benin where it was used to carry both people and goods. Motorbike taxis appeared in Nigeria in the 1970s, but their true rise seems to have started in the mid-1980s in Niger, Cameroon, Togo, Benin, Uganda and Kenya as a development from the bicycle taxi (Mutiso and Behrens, 2011). While the motorbike taxi is very popular in Uganda and Kenya under the name of *boda-boda*, its use has above all developed in West and Central Africa under a variety of different local names: *zemidjan* in Benin and Togo, *bendskin* in Cameroon, *kabukabu* in Niger, *okada* or *alalok* in Nigeria, *oleyia* in Togo (Mahlstein, 2009). The commercial use of motorized two-wheelers can be explained by the combination of three factors: the shortage of urban transport supply, the availability of factors of production and the loose regulatory framework (Olvera, *et al.*, 2012).

The motorbike taxi is a “bottom-up” response to a shortage of transport affecting private vehicles, road infrastructure and public transport. As the purchase and use of motorized personal vehicles is too expensive due to the population’s low income levels, household vehicle ownership rates are extremely rare and low. The majority of the population is thus dependent on public transport for the motorized trips it needs to make. The lack of roads and their poor condition make it difficult for motor vehicles to travel and transport operators are unable to provide the whole urban area with a dense network of services, particularly in unplanned peripheral zones. Moreover, while public transport is inadequate in major cities, there is usually none at all in smaller ones (Goodfellow and Titeca, 2012).

Inadequacies of Public Transport Policy

Transport plays a key role in a country’s development. Because of the inherent inadequacies in public transport, in both urban and rural, there has been a witnessed upsurge in the use of motorcycles for public transport. Frequent gridlocks and jams, especially in cities like Nairobi have made motorcycle transport lucrative as it is faster and convenient. The rise in the use of motorcycle accidents can be explained by the shortage of transport supply, availability of factors of production and the permissiveness of the regulatory framework. Motorcycle taxis extend access to motorized mode of transport to larger groups of population, whose travel needs are not met by other modes of transport (Olivera *et al.*, 2010). The *Boda Boda* motorcycle taxi system has become a fairly reliable, rapid and relatively cheap service which can pass on dirt roads that are too difficult for car, and go longer distances and into steeper and rugged terrain that would be possible with a bicycle.

Functionally, *Boda Boda* are used for children and teachers to go to school, workers and employees to go to work and, in the villages, it facilitates travel to markets and health facilities. Motorcycle taxi driving, however, is not an easy job and it is currently only the work of young men (Rizzo 2011). Every day they travel around 50 kilometres, and this factor, together with accidents and the dust they inhale, lead to illnesses and general body weaknesses. A further indication that the *Boda Boda* job is dangerous comes from citing police reports, which reveal

that between 2008 and 2012, the injuries among drivers increased from 1795 to 3043 (Gamberini, 2014). From the foregoing, the increase in the number of motorcycle accidents can be attributed to inadequacies in the provision of transport as well as weak enforcement legal framework. The government enforcement machinery appears overwhelmed by the robust upsurge in motorcycles on the roads today. This is in line with the research objectives seeking to determine the causes and trends of motorcycle accidents, and to evaluate the strategic options that have been adopted to manage motorcycle public transport in Bungoma County.

Vulnerability of Motorcyclists to Accidents

Motorcyclists have an especially poor safety record compared to other road user groups. They are killed and serious injury (KSI) rate per million vehicle kilometres, is approximately twice that of pedal cyclists and over 16 times that of car drivers and passengers. Motorcyclists constitute less than 1% of vehicle traffic but their riders suffer 14% of total death and serious injuries on UK roads. (DETR, 2000).

Road Crashes Involving Motorcycles in Kenya

Motorcycles have become a common means of transport in Kenya. However, an increase in the number of crashes involving the motorcycles is emerging as a public health challenge (Muguku, 2010). Tables 2.1 and 2.2 provide statistics on crashes and fatalities involving motorcycles and general road traffic accidents in the country between 2002 and 2010. The statistics depict a fourfold increase in road crashes and fatalities between the two periods, with 427 incidents in 2002 and 1755 cases in 2010. (MoT, 2009). However, the statistics may not be inclusive of unreported minor accidents that occur off road.

Table 1: Injuries and fatalities attributed to road accidents in Kenya 2002-2010

Accident outcome	2002	2003	2004	2005	2006	2007	2008	2009	2010
Killed	49	33	54	44	34	35	152	164	260
Seriously injured	141	145	154	171	151	219	449	585	1029
Slightly injured	237	225	276	236	229	227	415	394	466
Total	427	403	484	451	418	481	1016	1143	1755

Table 1.1 depicts an increase in motorcycle-related deaths between 2005 and 2009. The increase was from 44 motorcycle deaths, which was 1.7% in 2005 to 164 motorcycle deaths in 2009, making a 6.1% increase. This increase was approximately five folds, a trend that warrants urgent measures to reverse. Whereas information on motorcycle incidents is available for Kenya as a country, that on Bungoma County is scanty or unavailable, hence the need for this study.

Table 2: Trends in deaths associated with motorcycle accidents in Kenya 2005 – 2009

Year	Total road deaths	Motorcyclists excluding passengers
2005	2,531	44 (1.7%)
2006	2,714	34 (1.25%)
2007	2,893	35 (1.2%)
2008	3,633	152 (4.2%)
2009	2,669	164 (6.1%)

Theories Relevant to the Current Study

The occurrence of motorcycle accidents has cast a dark shadow on an otherwise noble project targeted at easing transport problems in the country. A number of authors have come up with various theories on causation of accidents; Domino theory (Heinrich, 1931) and ‘Wish to Die Theory’ (Roy, *et al.* 2004). This paper will however not analyze these theories in their finer details.

Conceptual Framework

The causes and trends of motorcycle accidents and related consequences are seen in the independent and dependent variable domains. The causes of motorcycle accidents are illustrated in the conceptual framework under the intervening variables; namely the state of infrastructure, levels of enforcement, road traffic governance, technological errors, lack of training and the culture that conforms to ‘The Wish to Die Theory’ (Roy *et al.* 2004).

Study Area

The study area is Bungoma County, Kenya. The observation points consisted of accident hot spots/pressure points within the County. The county lies between latitudes 0o 30’ and 0o 40’ North of the Equator and longitudes 34o 20’ and 34o 40’ East of the Greenwich Meridian. Bungoma County is the third largest in the country, in terms of population, after Kakamega and Nairobi (KNBS, 2010). It consists of Bungoma East, Bungoma South, Bumula, Bungoma West, Bungoma Central, Kimilili, Bungoma North, Kapsokwony and Cheptais sub- counties with a combined population of 1,630,934 (795,595 males and 835,339 females) people, according to the 2009 census (KNBS, 2010). Bungoma County was purposely chosen for the study because of its strategic location on the Great North Road, implying heavy vehicular traffic as well as increased motorcycle transport. The County being 3rd largest in Kenya in terms of population as per the 2009 Population census (KNBS, 2010), makes it appropriate for the research because of very many potential clients to *bodaboda* bicycles and motorcycles. The County’s proximity to Uganda means a lot of borrowing of various activities from across the border. Uganda embraced bicycle and motorcycle transport ahead of Kenya. It is, therefore, logical that Bungoma County residents embrace motorcycle transport from next door neighbours, hence making the County appropriate for study. The diverse landscapes of Bungoma County, especially the hilly Mt Elgon District, inform a decision for the use of motorcycles as a means of transport.

Table 2: Materials and methods

Study population units	Sampling Method	Size	Data Collection Instrument
Household	Multistage random	400	Questionnaire
Accident victims	Snowball	50	Interview Guide
Public	Quota	50	Interview Guide
Motorcycle owners	Purposive	50	Interview Guide
Motorcycle riders	Purposive	50	Interview Guide
Hospital administrators	Purposive	5	Interview Guide
Police	Purposive	5	Interview Guide
Insurance	Purposive	5	Interview Guide
Driving Schools	Purposive	5	Interview Guide
FGD from stakeholders	Quota	3 FGDs	FGD Guide
Observations	Purposive	40	Check list

The study employed Fishers (1983) formula in the determination of households multi-stage sample size. The formula is given as:

$$n = \frac{z^2 pq}{d^2}$$

Calculation for sample size

$$n = \frac{z^2 pq}{d^2}$$

Data Collection

Data collection was done using both primary and secondary sources of data.

RESULTS

Table 1: Causes of motorcycle accidents in Bungoma County, Kenya

Cause	N	Minimum	Maximum	Mean
Lack of training and negligence (inexperienced riders)	388	1.00	5.00	4.7113 ± 0.68137
Poor roads/muddy/potholes	386	1.00	5.00	4.5959 ± 0.65456
Drunk riders	388	1.00	5.00	4.4536 ± 0.81359
Overloading/ carrying more than one passenger	388	1.00	5.00	4.3454 ± 0.95874
Mechanical fault on motorcycle itself	384	1.00	5.00	3.8281 ± 1.07019
Passenger sitting position	388	1.00	5.00	3.5000 ± 1.13324
Drunk passengers	388	1.00	5.00	3.4691 ± 1.24994

From the results, the causes of motorcycle accidents, in rank order were lack of training and negligence (inexperienced riders), poor roads/muddy/potholes, drunk riders, overloading/ carrying more than one passenger, mechanical fault on motorcycle itself, passenger sitting position and drunk passengers. The causes are mainly technological and human error. From FGDs, the causes of motorcycle accidents were summarized in the table 2.

Table 2: FGD results on causes of motorcycle accidents in Bungoma County, Kenya

Cause	Riders FGD	Owners FGD
Unlicensed riders	1	1
Drunk riders	2	2
Poor roads	3	4
Overloading/ carrying more than one passenger	4	3
Mechanical fault on motorcycle itself	5	5
Passenger sitting position	6	6
Drunk passengers	7	7

Spearman's rank order correlation was carried out on the results to establish whether there were similarities or differences in the rankings with $r = 0.96 \pm 0.07^{**}$ being obtained. The rank order correlation shows that there were significant (p is less than 0.01) similarities in rankings on causes of motorcycle accidents between riders and owners of motorcycles.

DISCUSSION

From the results, majority (78.9%) of respondents were on a motorcycle during the accident occurrence, 19.4% were on foot while 1.7% were on other means. Majority of the victims (85.0%) interviewed also indicated that they were on a motorcycle when the accident occurred when they were being carried on a motorcycle. From the results, 29.2% of respondents indicated that there was one passenger on the motorcycle when the accident occurred, 35.2% had two passengers, 30.6% had three passengers while 4.9% had four passengers. This indicates that majority of motorcycle riders were in the habit of carrying excess passengers. The results show that majority of respondents either agreed or strongly agreed that mechanical fault on the motorcycle itself was a cause of motorcycle accidents. The results show that majority of respondents either agreed or strongly agreed that lack of training/ negligence/ inexperienced riders were a cause of accidents. Data obtained from driving schools (Budget Driving Schools) indicated that they were receiving very few customers to train as motorcycle drivers; despite the high number of motorcycle in the County and Country at large. Further the study show that majority of respondents either agreed or strongly agreed that passenger sitting position was a cause of motorcycle accidents.

CONCLUSIONS

The study sought to establish causes and trends of motorcycle accidents in Bungoma County, Kenya. The results depicted a tremendous increase in public transport motorcycle accidents in Bungoma County. The study established that human errors are the leading causes of motorcycle accidents and are imparted on by poor regulatory and enforcement. The causes of the accidents include technical and human errors such as poor/ muddy/ roads with potholes, carrying excess passengers, mechanical fault on the motorcycle itself, lack of training/ negligence/ inexperienced riders and drunken riders.

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