



## HELMET USE AMONG COMMERCIAL MOTORCYCLISTS: A SURVEY OF TWO MUNICIPALITIES IN UGANDA

David Mwesigwa

**To cite the article:** David Mwesigwa (2019). Helmet use among commercial motorcyclists: a survey of two municipalities in Uganda, *South Asian Journal of Development Research*, 1(2): 81-97

**Link to this article:**

<http://aiipub.com/journals/sajdr-190721-021009/>

**Article QR**



**Journal QR**



# HELMET USE AMONG COMMERCIAL MOTORCYCLISTS: A SURVEY OF TWO MUNICIPALITIES IN UGANDA

David Mwesigwa

Senior Lecturer, Department of Public Administration and Management, Faculty of Management Sciences, Lira University  
P.O. Box 3105 Lira, Uganda  
Email: [david.mwesigwa@lirauni.ac.ug](mailto:david.mwesigwa@lirauni.ac.ug)

## ARTICLE INFO

**Article Type:** Short communication

**Received:** 17, June. 2019.

**Accepted:** 21, July. 2019.

**Published:** 12, Aug. 2019.

### **Keywords:**

*Helmet usage, Boda-boda motorcyclists, Lira Municipality, Hoima Municipality*

## ABSTRACT

There is a worldwide apprehension that present-day motor driving schools are not producing drivers with the kind of awareness and abilities that they need to be useful on the road. This inadequacy has placed growing stress on authorities in the traffic management to improve the safety of motorcyclists by guaranteeing that road use transforms into a gratifying journey between destinations. Given the numerous complications and the proof of increased road carnage in Uganda, the emphasis of this article is on how authorities in Uganda can reduce on the road carnage for the road users on this century. The study adopts a desk appraisal method, supported by observations, as the means to interrogating hands-on interventions aimed at reducing road carnage on the Ugandan roads. For practical application of these interventions, it is proposed that helmet usage should become a precondition for every commercial motorcyclist using any road in Uganda.

## INTRODUCTION

The range to which Driving Schools can produce reliable drivers for modern-day roads is drawing worldwide consideration from academics and decision-makers. This consideration springs from a twofold 'fears'. The first is that there is evidence that designs of road use are shifting faster to meet the rising number of motorised vehicles, and demographic transitions, business and commercial activities all of which having a considerable role towards restructuring the necessities for road usage (Gillespie et al., 2014:68). The consequence of this shift is that it is no longer sufficient for drivers to have the ability to drive a particular vehicle, but they should likewise hold the abilities and values necessary to negotiate with several road users in a changing road network and the world of commerce (Ayinla et al., 2012:131). The second is that the current training syllabus for drivers is no longer able to produce drivers with the calibre of professionalism as well as lifetime driving abilities, behaviours and values that are essential for them to be effective in the crowded as well as the fluctuating world of transport (Wang et al., 2014:130). In particular, driving schools have been condemned for their method of training which seems to have very little or no bearing to the public and associated prerequisites of their graduates (Agbor et al., 2014:77), an issue which translates into the production of poor drivers.

In Uganda, available studies demonstrate that the high degree of poor driving witnessed by other road users is not merely a consequence of the weak and narrow road network but owing to the shortage of drivers with driving skills and values that are desirable on the road (Magoola et al., 2018:). Indicators

backing this claim reveal that many drivers that suffered road accidents (for example, in India) were ill-trained and obtained driving licences through back-pass (Grimm & Treibich, 2010:10). This issue can be attributed to a shortage of adequate supervision of the predominantly private driver training schools. For example, the Uganda Police recognises five driving schools, namely: Uganda driving standard agency, International driving agency, Automobile Association of Uganda, Prestige driving school, and Dembe driving school (Nakubaga, 2012). Likewise, available information indicates that a good number of drivers holding driving permits in Uganda are either unqualified or not given adequate training (Ogwal, 2013). According to Radoli (2013), a number of drivers that obtain driving permits are not proficiently trained nor verified for the road, and for those that obtain authentic driving permits regardless of all, traffic police raised reservations regarding their proficiency and suitability for the road.

In the same way, Masaba (2016) notes that a wide discrepancy in driver skills coupled with severe shortages in inter-driver relationships, making appropriate decisions, thinking before they act, interpretation of road traffic signs, and the general respect for the non-motorised traffic. Further, the above views support related researches, for example, Craft et al. (2017: 5) which found that Boda-boda motorcyclists have a disposition for indeterminate conducts, triggering avoidable accidents. The degree of discrepancy exposed by researchers maintains the view that several motorcyclists in Uganda lack basic traffic literacy.

The idea of driving on the road is a preference to the old-style perception of driver training schools and attracts questions concerning the consequence of motorist training. In general, it is the pressure behind the motorist to negotiate whichever nature of road for an income. A case in point, Mwakapasa (2011: 47) maintains that “commercial motorcyclists are under intense pressures to make a profit and may take unnecessary risks to do so”. Nonetheless, with present-day difficulties such as shortage of driving skills, awareness and values to driving under every associated consequence of increased incidence of road accidents and avoidable traffic jam, the pressure is risky for a number of motorists and other road users in general. Notwithstanding the poor driving habits in Uganda, this article offers strategic interventions for enhancing driving. While a number of scholars (such as Li et al., 2017: S60, Shokouhyar et al., 2017: 556 and Blumenberg et al., 2017:252-253) have made contribution towards developing strategies to driving, in their own perspective and setting, not any plan appears applicable to the Ugandan circumstances where the road conditions are different.

Accessible studies (such as Kamulegeya et al., 2015: 1016; Craft et al., 2017 & Tumwesigye et al., 2015) on road accidents are scarce, and they often concentrate on health-related concerns and budget constraints occasioning from the number of financial resources and personnel resources diverted to cases of road crashes at the national hospital as well the different regional and district hospitals in Uganda. They do not consider other elements of driving and means by which road carnage can be lowered and or ways in which motorists can be enhanced to improve their quality of driving. In particular, the advance of commercial motorcyclists commonly known in Uganda as “Boda-boda” attracts great attention seeing the pace at which their number has been and continues to grow country-wide, yet helmet usage receives very little or no emphasis by critical stakeholders including traffic police hence this study.

#### **A survey of helmet usage among Boda-boda motorcyclists**

One of the significant concerns of governments, academia and organisations across the world is injuries resulting from road traffic accidents. A study by Li et al. (2017:S28) reveals that every year, approximately 1.25 million persons lose their lives following traffic injuries which occur on roads and

about 50 million escape with wounds. The above study further notes that traffic injuries on roads are amongst the ten leading causes to physical disability and are expected to be ranked among the top three by 2020. This view is, for the most part, prominent in the developing world whose degree of motorization is growing faster amidst countless problems, namely; narrow roads, poor road network, poorly mechanized vehicles, inadequate training of drivers, inadequate road traffic signs, inconsistent use of helmet and corruption in traffic police departments (Tumwesigye et al., 2016: 8).

Nonetheless, this is not to say that the more-developed economies are free from road traffic accidents; those economies have undertaken a number of mitigations aimed at reducing the number of avoidable deaths resulting from road traffic accidents. For example, China has invested a lot towards improving road traffic safety, an issue that has improved life expectancy to the effect that males can live 0.54 more years and residents in the countryside can live 0.28 years longer owing to a cutback in road traffic injuries (Li et al., 2017: S29). Obtainable studies reveal that approximately 50percent of deaths associated with global road traffic involve pedestrians, motorcyclists and cyclists (Blumenberg et al., 2018: 250).

According to Buse and Hawkes (2015), the issue of safety on the road is attracting considerable recognition at the global scale, and it has been incorporated in the international agenda. For example, the World Health Organisation (2015) reports on the commitment of countries to halving traffic fatalities on the road by 2020 to realise sustainable city transportation as well as a worldwide road secure society. A number of studies have been conducted to ascertain helmet usage as one of the core basics by which Boda-boda motorcyclists can ensure their own safety when riding. Such studies reveal that commercial motorcycles have become popular in a number of countries such as Vietnam (Bao et al., 2017), India (Wadhvaniya et al., 2017), Pakistan (Uzma et al., 2012), Brazil (Buse & Hawkes, 2015) and China (Li et al., 2017: S60). For example, a study by Craft et al. (2017) focussed on deterrence of motorcycle-related head injury in the three countries (Vietnam, Cambodia and Uganda) revealing that motorcyclists make up to 23percent and more than 50percent of all casualties in countries where they are popular. While a number of studies demonstrate that the number of motorcyclists has grown in several countries (see Marret et al., 2012; Agbor, et al., 2014; Lili et al., 2016; and Kamulegeya et al., 2015). These studies draw attention to the view that motorcycle usage, whether for commercial or other services, is a global dynamic attracting international concerns regarding use, including injuries as well as related patterns and cost implication, risk factors for associated injuries, and means to preventing the global danger.

Boda-boda motorcyclists spread across Africa from East to West. However, not all countries use Boda-bodas for commercial services; for example, South Africa has not adopted using Boda-boda as one of the means of transport. South Africans rely on buses for long distances and motorcars for short distances and others use trains and inland flights. Consequently, Boda-bodas are popular in selected parts; a study by Ayinla et al (2012: 138) reveals a number of factors influencing the high rate of Boda-boda (known as Okada) use in Nigeria such as ease of movement amidst heavy traffic jams. Agbor et al (2014: 77) indicate that commercial motorcycles (known as Bendsikin in Cameroon) transport has grown over the years because of affordability in terms of purchase, fuel consumption and repairing thus favouring low-income earners. A study by Ackaar and Afukaar (2010) discusses the rise of commercial motorcyclists and the incidence of helmet use in Ghana. The above studies underline the view that riding Boda-boda motorcyclists are no longer a concern of just one country rather a regional issue which should be debated in regional fora of West Africa such as ECOWAS seeing that the problem has socio-economic problems such as safety of users to be addressed and or

harmonised.

In East Africa, the numbers of Boda-boda motorcyclists has grown in both rural areas and urban centres. While the regional leaders have not given attention to the lucrative but risky business, country-based studies show that commercial Boda-bodas have become one of the leading means of transport as well as road accidents in the region. In their research, Kamulegeya et al. (2015: 1016) reveal that motorcycle related accidents are responsible for 21percent to 58.8percent of every traffic accident in the East African region. Other studies have been conducted regarding the prevalence and use of helmets among Boda-boda motorcyclists in the region: Kauky et al. (2015: 2) covered the prevalence of helmet use among motorcycle users in Dar es Salaam and Bachan et al. (2017) covered helmet wearing in Kenya; Tumwesigye et al. (2016:2), considered the growing number of injuries related to use of Boda-bodas in Kampala; Kamulegeya et al focussed on the prevalence of head injury associated to Boda-boda motorcyclists in Kampala; and Craft et al. (2017) concentrated on possible means of preventing motorcycle-associated head injuries in Vietnam, Cambodia and Uganda.

Obtainable studies show that Boda-boda motorcycles have become a routine means of transport for both the rural and the urban communities within the region and the number is expected grow. For example, Kibogong and Kisia (n.d) report that the number of motorcycle registration in Kenya grew by approximately 40-fold between 2005 and 2011; the fraction of motorcycles was 70percent of all new registrations. In their study regarding Boda-boda related crashes on the budget for clinical services, Kigera et al. (2010: 58) reveal that Boda-bodas are “the main cause of road traffic injuries and a significant economic burden” in hospital therapeutic services in Uganda. Further, Boda-bodas accounted for up to 21.4percent of all cases of bodily shock in Gulu Referral Hospital (Northern Uganda) and approximately 4.2percent of the overall hospital resources, 15percent of the Hospital funds for health services and 62.5percent of the Hospital’s resource portion for the Department of Surgery were used up on Boda-boda associated injuries at the National Referral Hospital, Mulago.

A study by Galukande et al. (2009) reveals that a decade ago Kampala and its suburbs had approximately 100,000 commercial motorcyclists. This suggests that by the end of 2018, the number had swollen. A report by World Health Organisation (2013) reveals that the fraction of Boda-boda associated road traffic accidents in Uganda has been growing per annum; approximately 17percent of 2,954 persons (502 residents) that died of road traffic injuries in 2010 involved Boda-bodas. As a result, the Boda-boda industry rests on dangerous ground in a number of ways (Doherty, 2017). While Boda-boda motorcyclists are expected to remain one of the key actors in the transportation sector for more years, it calls for a reliable machine designed to make it safe. Uganda has witnessed an increase in the spate road traffic-related accidents on both highways and urban roads in the country. This is attributed to the large number of ways that are seldom in a good state as well as a high number of motor vehicles, sometimes in dangerous mechanical condition. The budding shift to motorcycles, especially for business-related activity, is one of the causes of fear, by the way, seeing Boda-bodas lead to several grave road accidents compared to other motor vehicles in the country.

Notwithstanding the significance of wearing a helmet to avert head injuries amongst motorcyclists, there is inadequate use of helmets by several riders in Uganda. Failure to wear the helmet is a particular aspect exposing riders to skull injuries and death as a result of crashes. An investigation conducted in Dar es Salaam using personal interviews administered to motorcyclists at various points disclosed that 52.7percent of them have one helmet (Mwakapasa, 2011). A separate study by Kauky et

al. (2015:2) in Dar es Salaam reveal that low helmet use involves feeling of uneasiness among motorcyclists as a result of high temperature at some point during warm weather conditions, and use of alcohol. This outcome is supportive of similar rates for Indonesia (89percent) (Corad et al., 1996), China (63percent) (Zhang, 2004), Vietnam (18.9percent) (Hung et al., 2006), and Ghana (1.9percent) (Ackaar & Afukaar, 2010). Since governments and the civil society embarked on road traffic ambitions aimed to raise awareness on safe travel, a number of studies have been conducted regarding helmet use; some reported the trend to be as low as 12.7percent and others said the tendency to be as high as 32.7percent among diverse populations. Many of these studies target victims in selected Hospitals while others hold interviews with motorcyclists however, very few have examined strategies towards enhancing helmet usage. As a result, this study aims to examine the means by which motorcyclists can be enhanced to wear helmets every time they are on the road.

### **1. Rationale of studying Boda-boda motorcyclists**

A number of studies have tended to focus on motorcyclists from either macro-levels statistics or specific aspects such as head injuries, the implication to the overall healthcare budget, and traffic congestion. While a few commentators reveal that global Boda-boda motorcyclists have the propensity to contribute to the transport needs of a particular community, the safety of both the rider and the passenger is essential in the event of an accident. According to the UK Department of transport (n.d), injuries to motorcyclists are out of proportion to their presence on roads; the percentage of motorcyclists is 1percent of total road traffic but account for 19percent of all road user deaths. The United States National safety council (2018) reveals that 4,976 motorcyclists and passengers died in crashes, and non-lethal wounds amounted to 88,000 in 2016; the death toll among riders and customers increased from 3percent in 2006 to 8percent in 2015. While motorcycles make up 3percent of all known automobiles, they accounted for 13percent of every road traffic mortalities in 2016; and males accounted for 91percent of every motorcycle-related death recorded in that year. Zee News (2018) reports that while motorcyclists in India are characterised by use of mobile phone while riding, there is rare use of helmet, lack of patience and riding on the wrong side of the road.

A study conducted by the World Health Organization (2013:7) reveals that risk factors resulting from motorcycles in Eastern Mediterranean region include: speed (in Sudan and Tunisia); drink-driving (in Morocco, Lebanon, Qatar, Syrian Arab Republic, United Arab Emirates, West Bank and Gaza strip); and non-usage of helmet (in Islamic Republic of Iran, Morocco, Pakistan and Tunisia). Consequently, in its 64/255 Resolution, the United Nations General Assembly (UNGA) proclaimed 2011-2020 as the decade of action for road safety starting March 2010. The decision of UNGA was informed by the world health organization Global Status Report on road safety which estimated 1.24 million death as well as an average of 35million non-fatal injuries resulting from road traffic crashes (United Nations Economic Commission for Africa, 2015). The UNGA reveals that road traffic injuries are estimated at an annual cost of approximately US\$100 billion and half of the world's road traffic deaths do occur among vulnerable road users, namely: motorcyclists (23percent), pedestrians (22percent) and cyclists (5percent).

In Bamako (Mali), several families use motorcycles for countless services ranging from transporting members in the family to carrying animals and merchandise. The Guardian (n.d) reports that a number of motorcycle users rarely wear helmets due to corruption in Malian Police and the Religious doctrine that "God protects humans every time they are on the road". While an estimated 60, 000 motorcycles are registered for commercial service in Rwanda, 38percent of all fatalities in the first quarter of



2018 were either caused by or involved motorcyclists consequently 138 people died (The New Times, 2018). It is not clear the government decision to impound motorcyclists in Kigali city for failure to follow traffic rules and regulations will yield positively. Therefore, this article has reviewed the literature on the basic subjects pertaining to helmet usage. Notably, one issue was probed, *viz.*: helmet usage among Boda-boda motorcyclists. This issue encouraged the study in which outcomes contribute to filling spaces in laxity to wear helmets, irregular helmet usage and corruption in law enforcement. Policy makers have to seek means to enhancing usage of helmets, especially in the Rural Municipalities of Uganda.

## **2. Statement of the problem**

The key emphasis of this article is the widespread state of road crashes among Boda-bodas in Uganda; it is one of the factors contributing to death in the country. There is evidence that death associated to Boda-bodas, in a number of urban areas, is growing worse every year. Consequently, the number of road accidents involving or caused by Boda-bodas is higher compared to other road accidents. A study by Tumwesigye et al. (2015: 3) reveals that in 2010 as many as 17 percent of 2,954 people perished in road accidents attributable to Boda-bodas. A number of Boda-boda motorcyclists that have escaped death have become physically disabled even after discharge from the health facility (Kamulegeya et al., 2015: 1016). The evidence further reveals that for a number of motorcyclists that die on spot or upon admission at the health facility, only 31percent are found wearing a helmet at the time of the crash (Craft et al., 2017: 5). This condition is puzzling for the safety of motorcyclists and the livelihoods of those supported from the income earned by the motorcyclist (Ayinla et al., 2012: 131). This situation necessitates an immediate response from stakeholders, including academia. As a consequence, this study examines means by which Boda-boda motorcyclists can be enhanced to wear helmets every time they are on the road.

## **3. The goal of the study**

The goal of this study is to establish strategies for enhancing helmet use in Uganda. In attaining this goal, three questions are answered: (a) what is the frequency of helmet usage among Boda-boda motorcyclists in the Municipalities of Hoima and Lira? (b) What obstacles hinder Boda-boda motorcyclists from wearing helmets in the Municipalities of Hoima and Lira? And (c) what strategies can be adopted to enhance the usage of helmets among Boda-boda motorcyclists in the Municipalities of Hoima and Lira?

## **4. Study design, location and population**

A cross-sectional review was undertaken through which Boda-boda motorcyclists were observed on usage of helmets at purposely selected road spots. Data were collected over ten days during morning hours, lunchtime and evening hours. The study was conducted in the Municipalities of Hoima in the mid-western region and Lira located in mid-Northern region respectively seeing that previous studies had not reached the two areas. For example, a study by the Global Helmet Vaccine covering 7,488 Boda-boda motorcyclists in Kampala city and 6,792 motorcyclists in Mbale district reveals that 96percent of riders in Mbale did not wear helmets and 21percent in Kampala did not wear a helmet too (Bagala, 2012). Therefore, the choice of the Municipalities of Hoima and Lira was enthused by the view that no such study had been conducted before in spite of the high number of road accidents involving motorcyclists reported in 2018 (Odongo, 2018: 1). Particular sites were nominated on ground of flow of traffic in both municipalities.

The study involved commercial motorcyclists in which the representative sample were observed at seven sites, namely: Wright road, old Fort Portal road, main road, Kabalega road and Kampala road (in

Hoima municipality) and Obote road, Olwol road, Note Ber road, Oyam road, and Juba road (in Lira municipality). Observations were made by selecting the motorcycles flowing from one side of the road to the same direction for 30 minutes before turning to the opposite side of the road. The overall number of motorcyclists observed with or without helmets, at the observation sites, in the period of observation was 652.

### 6.1 Data collection and Analysis

The Researcher visited each of the study sites three times a day, namely: Morning (07.00 – 08.00 hours); Lunch (13.00 – 14.00 hours); and Evening (18.00 – 19.00 hours). Each site was assigned two days during the week, and a non-standardised observation checklist was used to record usage of helmet per Boda-boda. Once all site observations were concluded, data were coded and entered into the excel spreadsheet before analysis. Descriptive statistics were generated from which usage of helmet in the Municipalities of Hoima and Lira was analysed.

*Table 1: Distribution of key informants*

N/O	Category	No reached
01	Lira Municipal Council	01
02	Official of Uganda Police, Lira	01
03	Civil society organisations in Hoima	01
04	Lira Municipality Boda-bodas' Association	02
05	Hoima Municipal council	01
06	Official of Uganda Police, Hoima	01
07	Civil society organisations in Hoima	01
08	Hoima Municipal Boda-bodas' association	02
	<b>Total</b>	<b>10</b>

Upon completion of all site observations, ten Key Informant Interviews were administered to participants, namely: Municipal authorities, Officials of Uganda Police, Civil society organisations and representatives of respective Municipality Boda-bodas' Associations as indicated on table 1.

### 6.2 Validity and Reliability

The key informant interview guide was verified in week one of September 2018; it was administered to three participants in Ojwina division and essential corrections were made. In order to increase consistency of different participants, every interview involved sit-down and caution was taken to administer the unchanged instrument across participants. Relationship between the social aspects of the study were considered, as a result, the study cross-referenced helpful sources, related social subjects such as observance to social values, goals and targets across diverse information and grouped for consistency across space (between municipalities) and over-time (using appraisals).

## 5. Outcomes of the study

The results of this research are reported based on three aspects emerging from the questions posed during the study, *viz.*: frequency of helmet usage; obstacles hindering Boda-boda motorcyclists from wearing helmets; and strategies to enhance usage of helmets.

### 7.1 Frequency of helmet usage among Boda-boda motorcyclists in Hoima Municipality

A total of 150 Boda-boda motorcyclists were observed at the five sites in Hoima municipality. At each site, 20 motorcyclists were observed in the morning, afternoon, and evening hours. All the sites are located in Kahora division; the division has the highest flow of traffic in the whole municipality as the other three municipalities (Bujumbura, Busiisi and Mparo) are peri-urban divisions. All motorcyclists



were male, and more than 70percent did not wear a helmet. Ten motorcyclists were observed at each site for each of the three periods; morning, afternoon and evening. Tables 2 shows the distribution of motorcyclists wearing helmets at the observation sites, namely: Wright road, old Fort Portal road, main road, Kabalega road and Kampala road.

**Table 2: Boda-boda motorcyclists wearing helmets in Hoima Municipality**

Observation site	No	Morning			Afternoon			Evening		
		f	%	No	f	%	No	f	%	
Kabalega road	20	02	10	20	00	00	20	03	15	
Kampala road	20	04	20	20	00	00	20	06	30	
Main street	20	01	5	20	00	00	20	02	10	
Old Fort Portal road	20	01	5	20	00	00	20	02	10	
Wright road	20	02	10	20	00	00	20	01	5	
<b>Overall average</b>	<b>20</b>	<b>02</b>	<b>10</b>	<b>20</b>	<b>00</b>	<b>00</b>	<b>20</b>	<b>2.8</b>	<b>14</b>	

Table 2 shows that efforts were made to ensure the same number of observations is made at every observation site to determine the variance between individual observation sites regarding usage of helmets. Results reveal they show that a small number of motorcyclists wear helmets thus revealing a low level of helmet usage in Hoima Municipality. While the observations focussed on the motorcyclists, it was discovered that none of the passengers wore a helmet. Regarding the variance in terms of time; the results indicate that the majority of motorcyclists wore helmets in the morning and in the evening hours. None of the observed motorcyclists wore a helmet during the afternoon hours, thus revealing that majority of the motorcyclists did not wear helmets all day through from morning time to evening time in Hoima municipality.

Regarding the variance of motorcyclists wearing helmets on specific roads; Kampala road had the highest number (20percent) in the morning and 30percent in the evening followed by Kabalega road (10percent) in the morning and 15percent in the evening); Main street, Old Fort Portal road and wright road had not more that 10percent of the motorcyclists wearing helmets all day through. While minor variances were observed in a small number of observation sites, motorcyclists presented identical behaviour of helmet usage across every site. For example, 40percent of the motorcyclists found at SHELL stage; 30percent at Red Cross stage; 35percent at Rotary stage; and 25percent at Hoima Regional Referral Hospital stage had helmets but did not wear them. Overall, more motorcyclists wore helmets in the evening hours (14percent) compared to morning hours (10percent).

### **7.2 Frequency of helmet usage among observed Boda-boda motorcyclists in Lira Municipality**

A total of 20 Boda-boda motorcyclists were observed at each of the five sites in Lira municipality during the day (morning, afternoon and evening). The observation sites are located in the divisions of Central and Ojwina given that the two divisions have the highest flow of traffic in the Municipality compared to the other two divisions (Railways and Adyel) that are peri-urban. All motorcyclists are male and almost not a single motorcyclist wore a helmet. This is justified by the fact that overall only two percent (in the morning hours), one percent (in the afternoon hours) and two percent (in the evening hours) wear a helmet. Tables 3 shows the distribution of motorcyclists wearing helmets at each of the observation sites.

**Table 3: Boda-boda motorcyclists wearing helmets in Lira Municipality**

Observation site	Morning			Afternoon			Evening		
	No	f	%	No	f	%	No	f	%
Juba road	20	00	00	20	00	00	20	00	00
Note Ber road	20	01	05	20	01	05	20	01	05
Obote road	20	00	00	20	00	00	20	01	05
Olwol road	20	00	00	20	00	00	20	00	00
Oyam road	20	01	05	20	00	00	20	00	00
<b>Overall average</b>	<b>20</b>	<b>0.4</b>	<b>02</b>	<b>20</b>	<b>0.2</b>	<b>01</b>	<b>20</b>	<b>0.4</b>	<b>02</b>

Table 3 shows that the same number of observations was made at every observation site to determine the variance between individual observation sites regarding usage of helmets. Results reveal that majority of motorcyclists do not wear helmets showing a very low level of helmet usage. While the observations focussed on the motorcyclists, it was discovered that neither did any of the passengers wear a helmet in Lira Municipality. There is no significant variance in terms of time given that there was a difference of one percent between morning hours and afternoon hours or between afternoon hours and evening hours revealing that there is no relationship between time and helmet usage in Lira Municipality. Incidentally, the same outcomes were true for dusty roads such as Republic road.

### 7.3 Issues preventing Boda-boda motorcyclists from wearing helmets

Studies have revealed that helmet usage serves three significant benefits, namely: it reduce the degree of direct damages on the skull; it distributes the influences of the emerging impact to a smaller part of the body; and it confines direct interaction between the head and the influencing item (Blanco et al 2017:5). However, a number of obstacles that hinder Boda-boda motorcyclists from wearing helmets in the study areas have been revealed from the participants as presented in table 4:

**Table 4: The issues that hinder motorists from wearing helmets**

No	Issue	Response (%)	
		Yes	No
01	Sight disruption	95	05
02	Audible range	88	12
03	Night vision	95	05
04	Ignorance among motorists	72	28
05	Poor enforcement of helmet usage legislation	80	20
06	Laxity by the Uganda Police traffic officials	99	01
07	Forgetting to wear the helmet	56	44
08	No perceived need for a helmet	65	35
09	Dislike of a helmet	50	50
10	Net weight of the helmet	62	38
11	Discomfort-ability	85	15
12	Reserved for long distances	54	46
13	Too much sweating	77	23

**Source:** Primary data, 2018

#### *Disruption of sight*

Upon wearing a helmet, many a Boda-boda experiences limited abilities to see what is at the side and or behind them. This is essential seeing that motorists should be on the lookout both right side and left side to see if they're a potential customer. By wearing a helmet, a motorist ability to see both sides is

limited as echoed by one participant: Whenever I wear a helmet, am unable to see correctly.

*The issue of audible range*

Wearing a helmet reduces the ability to hear well. This is especially important because a number of roads do not have lanes reserved for Boda-bodas. As a result, motorists have to fight for the limited space with every other road traffic including motorised traffic and non-motorised traffic.

*The issue of night vision*

Wearing a helmet affects the night vision of a motorist seeing that a number of motorised traffic approaching in the opposite direction rarely change their lighting from full-lights to beam-lights. This is made worse when a motorist wears a helmet. This view corresponds with a previous study conducted in Tanzania regarding Boda-bodas (Mwakapasa, 2011: 12).

*The issue of motorist ignorance*

Since a number of Boda-boda motorcyclists are either poorly trained or not trained at all, they are not informed about whether wearing a helmet is a requirement for one to be on the road. During the study, a few motorcyclists were found keeping their helmets at the stages to be used during retirement from work in the late evening. Others were found hanging the helmets between the motorcycle horns as they went on with their regular routines. Given that Uganda and Tanzania are located in the same geographical region of East Africa, ignorance plays a big role in both countries.

*Poor enforcement of helmet usage legislation*

In both municipalities, motorcyclists were reportedly uninformed about the existing legislation on the usage of helmets. This view supports the findings of a study by Kumphong, Satiennam and Satiennam (2018) which reveals that the greater the efficiency of execution of the helmet legislation backing greater use of helmet, the lesser is the number of deaths that are associated to motorcycles. This issue was, according to the respective Municipal Boda-boda motorcyclists associations, attributed to failure by the Uganda police traffic officials to conduct capacity building training. One of the participants revealed that:

Motorcyclists in this town would be wearing helmets, but the problem comes from the law enforcement officials, the Traffic Police. They only care about motorcars because that is where they can get a lot of money thereby leaving Boda-bodas to ride with no helmet. (Participant, Hoima Municipality)

*Laxity by the Uganda Police traffic officials*

The Uganda Police traffic department has for long been plagued by incidences of corruption in the country. Further, the road Traffic officials have not bothered enforcing the law on helmet use among Boda-boda motorcyclists. The behaviour of Uganda traffic police is so permissive that a number of Boda-boda riders have no remorse meeting with police officials since they know that nothing will be done about the vice. This trend was attributed to the behaviour traffic police on enforcing the policy. A previous study by Conrad et al (1999) established similar findings in Indonesia.

*Forgetting to wear the helmet*

There is a tendency, in the study areas, for motorcyclists to forget wearing the helmet especially when they are driving short-distances within the municipality. Other studies have revealed that of all the factors leading head injuries in Uganda, driving without a helmet stands out of the crowd. It was revealed that while steps have been taken to ensure and or promote wearing helmets among motorcyclists, failure to take the helmet seriously is common among riders. Consequently, this has contributed to a number of motorcyclists even forgetting to pick the helmet from their places of residence as they start the activities of the day, this results into low helmet wearing.

*No perceived need for a helmet*

Despite the prominence on the importance of wearing the helmet, a good number of motorcyclists believe that wearing a helmet is not necessary especially when one is driving at a low speed or when one is very careful when on the road. The views of representatives from the Boda-boda Associations revealed that while a larger percentage of motorists know that wearing a helmet is essential, as a protective mechanism against head injuries and wind while driving, a number of them see no need for wearing the helmet. This view was specifically true among motorcyclists that were aged below 30 years. This view supports a previous finding by Ediringhe (2015) which found that the motorcycle riders, on Sri Lankan roads, that don't wear helmets lack of awareness among regarding the usage.

*Dislike of a helmet*

Boda-boda motorists do not like helmets. An empirical study revealed that motorists rated helmet usage, in terms of effectiveness, likeability and its ability to protect the motorist, as the worst essential criteria for Boda-boda motorists while many motorists considered riding with a helmet as the most flexible thing to them. This also points to a deficiency in motorist training services in the country.

*Net weight of the helmet*

The helmet is perceived to be weighty is one is to keep it on their head the whole day through. The participants noted that if the helmet was lighter than it is, they would have worn it every time they sat on the moving motorcycle but this is not the case as revealed by one participant: that helmet you see does not seem to be heavy as first sight but when you imagine carrying all that weight for the whole day, it is too much on my head.

*Discomfort-ability*

The helmet causes a lot of discomforts once it is worn. For example, the neck can no longer move freely when the head is closed up in a mask. This is seen as a hindrance to individual comfort. Similar studies share similar findings (see Aidoo et al., 2018; Bachani et al., 2017: S28; Craft et al., 2017: 3; and Conrad et al., 1999).

*Reserved for long distances*

Helmets are set aside for long distances due to the feeling that short distances especially those that involve moving within the town centre do not require the helmet. This attitude is common among a good number of motorists who think that town service does not require wearing a helmet.

*Too much sweating*

Other studies indicate that motorists do not wear helmets for other additional issues. Bao et al. (2017: S42) found that non-availability and safety of the helmet of a helmet were key reasons; Craft et al (2017: 3) found that *appearance* of the helmet itself affected the scale of its usage; while Bachani et al (2017: S28) found that cost of a helmet hindered a good number of motorists that were not able to save enough money to buy one.

#### **6.4 Strategies to enhance the usage of helmets among Boda-boda motorcyclists in the Municipalities of Hoima and Lira**

*Enforcement of traffic laws and regulations*

One of the key strategies that can be adopted as a way to enhance the usage of helmets among motorcyclists is the use of stringent traffic laws that can force every motorcyclist to wear a helmet every time they are in motion. This view resonates with available studies, such as Blanco et al (2017: 7) revealing that when traffic laws are implemented to the latter, motorcyclists will become cognisant of every action including usage of helmets.

**Table 5: Strategies for enhancing the usage of helmets**

No	Strategy	Response (%)	
		Yes	No
01	Enforcement of traffic laws and regulations	89	11
02	Curbing corruption among road traffic officers	96	04
03	Continuous training of motorcyclists	65	35
04	Punishing every offender with community service	56	44
05	Promoting road traffic education	54	46

*Source: Primary data, 2018*

*Curbing corruption among road traffic officers*

Traffic officers in Uganda have for long been branded among the most corrupt public officers in the country. As a result, the dishonesty has failed a number of interventions including the Boda-boda industry, which is one of the fastest growing in Uganda. A good number of motorcyclists are youths that have not found employment elsewhere however the road traffic officers have continued to exploit those young people by extorting money from them to cover-up the would-be mistakes such as failure to wear a helmet. By curbing corruption among the traffic officers, 96percent of the study participants hope that helmet usage will be enhanced. Corruption among road traffic officers is not limited to Uganda, but other countries such as Bulgaria face a similar challenge that should tackle (Terziev et al., 2016).

*Continuous training of motorcyclists*

This study reveals that a good number of motorcyclists lack adequate and or appropriate training, seeing that there is no single training school for motorcyclists in the country save for the motorists. This has left a big vacuum regarding quality enforcement among motorcyclists who are trained by colleagues only to ride without knowing the road signs and other traffic requirements such as wearing the helmet. According to 65percent of the participants in the study, continuous training will help feel the gap by reinforcing the use of helmets are a prerequisite for every Boda-boda on the road. This notion supports an earlier recommendation emerging from a similar study by Juang et al. (2010) which stresses extensive instruction for all Motorcycle riders.

*Punishing every offender with community service*

A lower percentage (56 percent ), though significant, agreed with the view that every offender should be punished with doing community service so that such action serves as a deterrent to prospective offenders. One of the participants revealed that:

Punishing road traffic offenders is scarcely done in Uganda; and where it is done, the officers in charge do not take long before they withdraw from the roads and that a number of road traffic offenders are not forwarded for punishment. In Municipalities where they are committed, the officers do not reprimand the offender but extort a kickback from them. (Participant – Lira Municipality)

*Promoting road traffic education*

The results reveal that a number of road users, especially drivers, lack sufficient awareness regarding road traffic signs. In both study areas, the level of road signs illiteracy was found to be very high. In Lira municipality, 62percent of the participants indicated ignorance of crucial road traffic signs such as ‘no overtaking’, ‘reduce speed’, an issue that would be covered through awareness creation among road users. This finding supports findings from previous studies such as Okaka, Watmon and Wandera (2018) which found that a number of road users in Uganda are functionally road signs illiterate, this includes drivers, pedestrians, cyclists and motorbikes. Okaka and Wandera (2018) added

that an effective information communication package can stimulate primary warning to be used for controlling the hostile effects of calamities resulting from climate change on road traffic accidents.

## 6. CONCLUSION

This article aimed to establish strategies for enhancing helmet use in Uganda. In an attempt to do so, the frequency of, the justification for and strategy for improving helmet use was discussed. It can be acknowledged that helmet use is an intricate issue, which has both structural and personal concerns. Basing on outcomes, it can be stated that while a number of motorcyclists are aware of the significance of helmet use, the limitations seem to prevail over. As a result, the need for the Uganda traffic police sector to synchronise the different issues raised by motorists in the overall strategy of the industry. One of the concerns underlined by participants, obstruction to sight and hearing suggests that for enhanced helmet use, there is the need for an appropriate type of helmet, which must be made available by the manufacturers guided by the relevant Ministry as well as the Agency responsible for guaranteeing quality. For further studies, the implication of weather change to helmet use could be established through practical investigations to find means of harmonising the two aspects especially during the dry season.

## REFERENCES

- Ackaar, W. and Afukaar, F.K. (2010). Prevalence of helmet use among motorcycle users in Tamale metropolis, Ghana. *Journal of Traffic injury prevention*. Vol. 11, No. 5 P 522 - 525.
- Agbor, A.M. Azodo, C.C., Ebot, E.B. and Naidoo, S. (2014). Dentofacial injuries in commercial motorcycle accidents in Cameroon: pattern and cost implication of care. *Journal of African health sciences*. Vol. 14, No. 1 P 77 - 82.
- Aidoo, E.N. Bawa, S. and Amoako-Yirenkyi, A. (2018). Prevalence rate of helmet use among motorcycle riders in Kumasi, Ghana. *Journal of Traffic injury prevention*. Vol. 19, No. 8 P 856 - 859.
- Ayinla, O. T. Gboyega, A. Adefunke, S, E. Olusegun, O.S. and Olugbenga, A.J. (2012). Factors influencing high rate of commercial motorcycle accidents in Nigeria. *American international journal of contemporary research*. Vol. 2, No 11 P 130 - 140.
- Bachani, A.M. Hung, Y.W. Mogere, S. Akunga, D., Nyamari, J. and Hyder, A.A. (2017). Helmet wearing in Kenya: Prevalence, knowledge, attitude, practice and implications. *Journal of Public health*. Vol. 144, P S23 - S31.
- Bagala, A. (2012). "Helmet use among Boda-boda passenger low". *Daily monitor*, Wednesday January 11, 2012.
- Bao, J. Bachani, AM. Viet, CP. Quang, LN. Nguyen, N. and Hyder, AA. (2017). Trends in motorcycle helmet use in Vietnam: results from a four-year study. *Journal of Public health*. Vol. 144, P S39 - S44.
- Blanco, M. Cabrera, JM. Carozzi, F. and Cid, A. (2017). *Effects of motorcycle helmet Lawson fatalities' prevention: an impact evaluation*. Universidad De Montevideo: Department of economics working papers series.
- Blumenberg, C. Martins, R.C. Costa, G.C. and Ricardo, L.I.C. (2018). Is Brazil going to achieve traffic death target? An analysis about the sustainable development goals. *Journal of Injury prevention*. Vol. 24, P 250 - 255.
- Buse, K. and Hawkes, S. (2015). Health in the sustainable development goals: ready for a paradigm shift. In Blumenberg, C., Martins, R.C., Costa, G.C. and Ricardo, L.I.C. (2018). Is Brazil going to achieve traffic death target? An analysis about the sustainable



- development goals. *Journal of Injury prevention*. Vol. 24, P 250 - 255.
- Conrad, P. Bradshaw, Y.S. Lamsudin, R. Kasniyah, N. and Costello, C. (1999). Helmets, injuries and cultural definitions: Motorcycle injury in urban Indonesia. *Journal of Accident analysis and prevention*. Vol. 28, No. 2 P 193 - 200.
- Corad, P. and Bradshaw, Y.S. (1996). Helmets, injuries and cultural definitions: motorcycle injury in urban Indonesia. *Journal of Accident anal preview*. Vol. 28 No. 2 P 193 - 200.
- Craft, G. Van Bui, T. Sidik, M. Moore, D. Ederer, D.J. Parker, E.M. Ballesteros, M.F. and Sleet, D.A. (2017). A comprehensive approach to motorcycle-related head injury prevention: experiences from the field in Vietnam, Cambodia, and Uganda. *International journal of environmental research and public health*. Vol. 4, P 1 - 9.
- Department of transport. (n.d). *Motorcycling*. Accessed <https://www.gov.uk/government/organisations/department-for-transport/series/think-community-activity> on 9 Aug 2018.
- Doherty, J. (2017). *Life (and limb) in the first-lane: disposable people as infrastructure in Kampala's Boda-boda industry*. Available at DOI: 10.1080/21681392.2017.1317457.
- Ediringhe, HJ. (2015). Effectiveness of helmet usage by motor bicycle riders. *The international symposium in conjunction with the 25<sup>th</sup> international course on transport planning and traffic safety held at Indian institute of technology Delhi, India*. (November)
- Ferraz, M. (2018). Service user involvement and perspectives, in *European psychiatric/mental health nursing in the 21st century*. DOI: 10.1007/978-3-319-31772-4\_3
- Galukande, M. Jombwe, J. Fualal, J. and Gakwaya, A. (2009). Boda-boda injuries a health problem and a burden of disease in Uganda: a tertiary hospital survey. *East and central African journal of surgery*. Vol. 14, No. 2 P 33 - 37.
- Gillespie, N. Unthank, A. Campbell, L. Anderson, P. Gubernick, R. Weinhold, M. Cenderelli, D. Austin, B. McKinley, D. Wells, S. Rowan, J. Orvis, C. Hudy, M. Bowden, A. Singler, A. Fretz, E. Levine, J. and Kirn, R. (2014). Flood effects on road-stream crossing infrastructure: economic and ecological benefits on stream simulation designs. *Journal of Fisheries*. Vol. 39, No. 2 P 62 - 76.
- Grimm, M. and Treibich, C. (2010). *Socio-economic determinants of road accident fatalities in low and middle-income countries*. International institute of social studies: Working Paper No. 504.
- Hung, D.V. Stevenson, M.R. and Ivers, R.Q. (2006). Prevalence of helmet use among motorcycle riders in Vietnam. *Journal of Injury prevention*. Vol. 12, No. 6 P 409 - 413.
- Juang, D. Feliz, A. and Barbara, M. (2010). Sledding injuries: A rationale for helmet usage. *The journal of trauma*. Vol. 69, No. 4 P S206 - 8.
- Kamulegeya, L.H. Kizito, M. Nassali, R. Bagayana, S. and Elobu, A.E. (2015). The scourge of head injury among commercial motorcycle riders in Kampala: a preventable clinical and public health menace. *Journal of Africa health science*. Vol. 15 No. 3 P 1016 - 1022.
- Kauky, C.G. Kishimba, R.S. Urio, L.J. Abade, A.M. and Mghamba, J.M. (2015). Prevalence of helmet use among motorcycle users in Dar es salaam, Tanzania. *Pan African medical journal*. Vol. 20. P 438.
- Kibogong, D. and Kisia, C. (n.d). *Motorcycle-related road traffic crashes in Kenya: facts and figures*. World health organisation.
- Kigera, J. Nguku, L. and Naddunba, EK. (2010). The impact of Boda-boda motor crashes on the

- budget for clinical services at Mulago hospital, Kampala. *East and central African journal of surgery*. Vol. 15, No 1 P 57 - 61.
- Kumphong, J. Satiennam, T. and Satiennam, W. (2018). Correlations among motorcycle-related deaths, helmet law enforcement and helmet usage for ASEAN countries. *International journal of GEOMATE*. Vol. 15, No. 49 P 72 - 77.
- Li, Q. Ma, S. Bishai, D. and Hyder, AA. (2017). Potential gains in life expectancy by improving road safety in China. *Journal of Public health*. Vol. 144, P S57 - S61.
- Lili, X. Yao, Z. and Liping, L. (2016). Risk factors for motorcycle-related severe injuries in a medium-sized city in China. *Journal of AIMS public health*. Vol. 3 No. 4 P 907 - 922.
- Magoola, J. Kobusingye, O. Bachani, AM. Tumwesigye, NM. Kimuli, D. and Paichadze, N. (2018). Estimating road traffic injuries in Jinja district, Uganda, using the capture-recapture method. *International journal of injury control and safety promotion*. Available at DOI:10.1080/17457300.2018.1431934.
- Marret do Nascimento, LM. and Bortolotto, GAO. (2012). Study of activities of postmen motorcyclists: a look at motorcycle accidents. *Journal of Work*. Vol. 41. P 5858 - 59.
- Masaba, S. (2016). *Over 50 arrested over lack of permits in Kampala*. Accessed the New Vision, Tuesday August 23, 2016. Accessed <https://www.newvision.co.ug> 23 Aug 2018.
- Mwakapasa, EG (2011). *Attitude towards and practice of helmet use among commercial motorcyclists in Dares Salaam region, Tanzania*. Muhimbili University of Health and Allied Sciences: MSc Dissertation.
- Nakabuga, Z. (2012). Police recognises only five driving schools, *The Observer*, Accessed <https://www.observer.ug> 23 Aug. 2018
- National Safety Council. (2018). *Motorcycle safety is a two-way street*. Accessed <http://www.nsc.org/home> on 9 Aug 2018.
- Odongo, R. (2018). Lira Police impounds motorcycles, *Uganda radio network*. Accessed <https://ugandaradionetwork.com/a/> 12 Aug 2018.
- Ogwal, L. (2013). *Poor driving skills blamed on unqualified drivers*. Accessed *Daily Monitor*, Tuesday June 6, 2013 [www.monitor.co.ug](http://www.monitor.co.ug) 23 Aug 2018.
- Okaka, W.T. Watmon, T.B. and Wandera, C. (2018a). Promoting literacy campaigns for road traffic signs to reverse road carnage in East African Community, *Conference paper presented at the 4<sup>th</sup> international psychology congress 20-23 November*. Kenya: Kwale.
- Okaka, W.T. Watmon, T.B. and Wandera, C. (2018b). Strengthening communication services for geo-physical climate change disaster impacts on road traffic accidents in Uganda. *Conference paper presented at the 4<sup>th</sup> international psychology congress, 20-23 November*. Kenya: Kwale.
- Radoli, L. (2013). *More unqualified bus drivers on the road after UTC's defunct*. Accessed <https://ugandaradionetwork.com/story/more-unqualified-bus-drivers-on-the-road-after-UTC's-defunct#author> 23 Aug 2018.
- Sanusi, A.A. and Emmelin, M. (2015). Commercial motorcycle drivers' perceptions of risk and road safety in urban Nigeria: an exploratory study. *An international journal of injury control and safety promotion*, 22(4), 328-39.
- Shokouhyar, S. Taati, E. and Zolfaghary, S. (2017). The effect of drivers' demographic characteristics on road accidents in different seasons using data mining. *Journal of Promet – traffic & transportation*. Vol. 29 No. 6 P 555 - 567.

- Terziev, V. Nichev, N. and Bankov, S. (2016). Corruption among police officers in Bulgaria. *Paper presented at a conference - Social enterprise skills for business advisors*. (September)
- The Gurdian. (n.d). *Mali road safety exhibition highlights perils of motorbike culture*. Accessed <https://www.thegurdian.com/international> 9 Aug 2018
- The New Times. (2018). *Rwanda: Police week – road safety campaign launched*. Accessed <http://newtimes.co.rw/> 9 Aug 2018.
- Tumwesigye, N.M. Atuyambe, L.M. and Kobusingye, O.K. (2016). Factors associated with injuries among commercial motorcyclists: evidence from a matched case control study in Kampala city, Uganda. *Journal of Plos ONE*. Vol. 11, No. 2 P 1 - 18.
- United Nations economic commission for Africa. (2015). Third African road safety conference: mid-term review of the African road safety action plan. *Concept note*. Accessed <https://www.uneca.org/sites/default/files/uploaded-document/RITD/2015/3AfricanRoadSafetyConference/concept-note-third-africa>. Html 9 Aug 2018.
- Uzma, R.K. Nakhaba, Z. Amber, S.S. Rahim, K.A. Safia, A. Junaid, B. Christian, H. Sana, S. and Abdul, R.J. (2012). Perceptions, barriers, and strategies of women pillion riders about helmet use – a qualitative study from Pakistan. *Journal of Injury prevention*. Vol. 18, No. 1 P A193 - A194.
- Wadhvaniya, S. Gupta, S. Mitra, S. Tetali, S. Josyula, L.K. Gururaj, G. and Hyder, A.A. (2017). A comparison of observed and self-reported helmet use and associated factors among motorcyclists in Hyderabad city, India. *Journal of Public health*. Vol. 144, P S62 - S69.
- Wang, Y. Li, L. Feng, L. and Peng, H. (2014). Professionalism drivers' views on risky driving behaviours and accident liability: a questionnaire survey in Xining, China. *Journal of Transportation letter*. Vol. 6, No. 3 P 126 - 135.
- Wao, J. Bachan, A.M. Viet, C.P. Quang, L.N. Nguyen, N. and Hyder, A.A. (2017). Trends in motorcycle helmet use in Vietnam: results from a four-year study. *Journal of Public health*. Vol. 144, P S39 - S44.
- World Health Organisation. (2013). *Global status report on road safety: time for action*. Geneva: WHO.
- World Health Organisation. (2015). *Sustainable development goal 3: ensure healthy lives and promote well-being for all ages*. (Accessed <https://sustainabledevelopment.un.org/sdg3> on 31 July 2018)
- World Health Organisation. (2013). *Road safety in the eastern Mediterranean region: facts from the global status report on road safety 2013*. Regional office for the eastern Mediterranean.
- Zee News. (2018). *Hyderabad motorcyclist rides on the wrong side while on the phone, ends up brain dead – watch*. Accessed <http://www.india.com/tags/road-safety.html> 9 Aug 2018.
- Zhang, J. (2004). *Motorcycle helmet use and risk factors for helmet non-use among motorcyclists in China*. Sydney: University of Sydney.



This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).