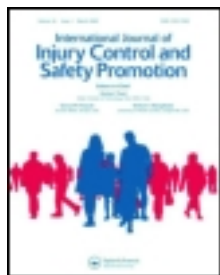


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An examination of some safety issues among commercial motorcyclists in Nigeria: a case study

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An examination of some safety issues among commercial motorcyclists in Nigeria: a case study

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The reduction of road crashes and injuries among motorcyclists in Nigeria requires a system inquiry into some safety issues at pre-crash, crash and post-crash stages to guide action plans. This paper examines safety issues such as age restriction, motorcycle engine capacity, highway code awareness, licence holding, helmet usage, crash involvement, rescue and payment for treatment among commercial motorcyclists. The primary data derived from a structured questionnaire administered to 334 commercial motorcyclists in Samaru, Zaria were analysed using descriptive statistics and logistic regression technique. There was total compliance with age restriction and motorcycle engine capacity. About 41.8% of the operators were not aware of the existence of the highway code. The odds of licence holding increased with highway code awareness, education with above senior secondary as the reference category and earnings. The odds of crash involvement decreased with highway code awareness, earnings and mode of operation. About 84% of the motorcyclists did not use crash helmet, in spite of being aware of the benefit, and 65.4% of motorcycle crashes was found to be with other road users. The promotion of safety among motorcyclists therefore requires strict traffic law enforcement and modification of road design to segregate traffic and protect pedestrians.

Keywords: motorcyclists; crashes; licence, enforcement; post-impact

1. Introduction

Motorcycles have been a major transport option for most people in developing countries. In China, Thailand and Malaysia more than half of the motorised vehicles consist of two-wheelers, while in countries like Indonesia, Taiwan and Vietnam, the proportion exceeds two-thirds. In Cambodia and Lao Peoples' Republic, the shares of motorised two- or three-wheelers hovers at around 75% (Chiu, Kuo, Hung & Chen 2000; WHO, 2003, 2004; GTZ, 2004).

In spite of the increased reliance on motorcycles for passenger transport, thus providing employment and income to operators and mobility to users or patrons, the issue of deaths and injuries associated with it has been a source of concern to policymakers and public health authorities across the globe.

Vulnerable road users such as pedestrians, cyclists and motorised two-wheeler (motorcycle) riders and passengers account for 46% of global road traffic deaths (WHO, 2009). In China, motorcycle users account for 28.1% of road traffic fatalities (World Bank, 2008). Motorcycles accounted for 13% of all

fatal crashes on Australian roads in 2002 in spite of the fact that they constituted only 3% of all registered vehicles (Haworth and Mulvihill, 2005). In 2007, motorcyclists accounted for 19%, 11%, 10% and 18% of fatal road traffic injuries in Croatia, Czech Republic, Hungary and Slovenia, respectively (WHO, 2009). Evidence from Malaysia also shows that 60% of fatalities are motorcyclists (IRAP, 2008). In Nigeria the situation is not different as motorcycles accounted for 26% of vehicles involved in road crashes annually between 2000 and 2009 (see Table 1).

The economic burdens of road crashes are enormous for the global economy and country specific economies. The annual global cost of road crashes has been estimated at US\$517.8 billion (Jacobs, Aeron-Thomas, & Astrop, 2000). The costs to the economies of South Africa, Malaysia and Costa Rica have been put at 2.3%, 2% and 2.3% of their gross domestic product (GDP), respectively (IRAP, 2008, p. 9). The estimated economic costs of road injuries using 1.5% of GDP at 2008 prices for Russia, Turkey, Poland, Belarus and Lithuania are US\$34.3 billion, US\$14.1

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Table 1. Percentage share of motorcycles' involvement in road crashes (2000–2009).

Year	%	Year	%
2000	42.04	2005	25.42
2001	30.48	2006	12.72
2002	26.74	2007	13.83
2003	22.30	2008	26.38
2004	43.66	2009	22.70

Source: Computed by the authors based on FRSC data, 2011.

billion, US\$10 billion, US\$1.8 billion and US\$1 billion, respectively (World Bank, 2009). In Nigeria the economic burden using 1% of the GDP at current prices has been estimated at N63.9 billion and N62.6 billion for 2002 and 2003, respectively (Arosanyin, 2008, p. 148). The economic burden is much for the Nigerian economy. There is the need therefore to look at critical safety issues of one of the key players in Nigerian road safety crisis, that is, the commercial motorcyclists known as *okada*, *going*, *express*, *achaba*, etc.

This paper therefore examines some safety issues in commercial motorcycle operation at the pre-crash, crash and post-crash levels. Specifically, this paper examines licence holding, helmet usage, crash involvement, rescue and transport of victim, hospital bill payments, etc. among commercial motorcyclists in Nigeria using Samaru, Zaria, as case study.

2. Road safety situation in Nigeria

Road crashes started in Nigeria in 1906 in Lagos. Road traffic injuries are public health concerns in Nigeria as road deaths surpass combined deaths from 35 notifiable diseases which include HIV/AIDS and malaria. Between 1970 and 1998 road deaths accounted for 46.7% of reported deaths, while the combined 35 diseases accounted for 43.6% (Arosanyin, 2008). The economic burden on the Nigerian economy has been estimated using partial human capital approach at about 2.30%, 3.49%, 2.09% and 1.29% of the GDP for 1978, 1982, 1993 and 1997, respectively (Arosanyin, 2008, p. 151).

The two principal agencies responsible for the management and enforcement of road safety rules in Nigeria are the Nigeria police and the Federal Road Safety Commission (FRSC). The guidelines for the use of motorcycles for passenger transport are spelt out in the National Road Traffic Regulations of 2004 (Federal Republic of Nigeria [FRN], 2004). These guidelines cover driver licensing, vehicle licensing, age restriction, helmet usage, motorcycle capacity, etc.

In spite of these rules and the statutory roles of the police and the FRSC in road traffic law enforcement,

road crashes involving motorcyclists are still on the high side as shown in Table 1. The involvement of motorcycles in road crashes was about 42% in 2000; 43.7% in 2004; 26.34% in 2008 and 22.7% in 2009. Out of the 114,617 vehicles involved in crashes between 2000 and 2009, 30,076 representing 26.24% were motorcycles.

The above share is too high. It therefore demands that some safety issues concerning motorcycle operations should be examined.

3. Scope and method

This study is limited to commercial motorcycle operation on the main campus of Ahmadu Bello University, Zaria, in Kaduna State, Nigeria.

The main campus, 13 km north-west of Zaria City, is bounded on the north by the Kubani River. It was established on 4 October 1962. It covers a land area of over 21 km² (2133 ha).

The campus started with a population of 4000 and has grown to about 34,000, excluding economic and social service providers. The population must move to various destinations on campus and to Samaru, the host community in Zaria. There are two broad categories of transportation on campus. They are private transport and commercial motorcycle transport, which belongs to Class IV of the classes of informal transport mode (Cervero, 2000, p. 24). The commercial motorcycle transport is a male-dominated activity, that is, males are the operators.

The data required for this study were obtained from primary data sourced through administration of carefully designed questionnaire.

The Ahmadu Bello University Security Unit is responsible for regulating commercial motorcycle operation on campus. It gave the total population of registered motorcycle operators on the campus as 716 at the time of the survey (2009). This study chose the sample using simple random sampling technique. The procedure adopted was the use of odd-even number relying on their registered numbers. Fifty percent of the operators were sampled based on this procedure. The expected total questionnaire is therefore 358. However only 334 were returned, which is about 47% of the operators. The questionnaires were mostly administered personally to the operators, except few who collected and filled themselves. The difference between the expected and actual was as a result of those who collected but failed to return. They were however not replaced, since over 93% of the expected questionnaires were returned.

The nature of the response variables or the regressands in this study, licence holding (has licence = 1; 0, if otherwise) and crash involvement

(ever crashed = 1; 0, if otherwise) are not quantitative but rather qualitative. It therefore necessitates the use of qualitative response models (see Maddala, 1983). The response is binary or dichotomous. Ordinary linear regression model cannot be used because the estimated values of Y could be negative and also in excess of one; also the problem associated with heteroscedasticity and its treatment make its application to this study at hand not appropriate (see Gujarati, 2005). The above reasons make the use of binary logistic model appropriate.

If π is the probability that Y , the dependent variable, assumes 1 ($\pi = P(Y = 1)$) and $1 - \pi$ is the probability that Y assumes value 0, in the absence of other information, we would estimate π by the simple proportion of cases for which $Y = 1$. However, in the regression context, it is assumed that there is a set of predictors $x_1, x_2, \dots, x_p$, that are related to Y and, therefore, provide additional information for predicting Y .

The model is given as:

$$\log\left(\frac{\pi}{1-\pi}\right) = \alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p \quad (1)$$

From Equation (1) we can obtain:

$$\pi = \frac{e^{\alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p}}{1 + e^{\alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p}} \quad (2)$$

Equation (2) can be rewritten as:

$$P(Y = 1 | x_1, x_2, \dots, x_p) = \frac{e^{\alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p}}{1 + e^{\alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p}} \quad (3)$$

Two logistic models are fitted to Equation (3). In the first fitted model, Y is the licence holding and X_i ($i = 1, \dots, p$) is a vector of regressors. The regressors are: x_1 = highway code awareness; x_2 = highest educational attainment; x_3 = household size; x_4 = age; x_5 = experience; x_6 = earnings; x_7 = hours of operation; x_8 = mode of operation; x_9 = ownership of motorcycle and e is exponential function.

The definition of variables for the second fitted model, which is crash involvement logistic regression model, is given as: Y is the crash involvement and X_i ($i = 1, \dots, p$) is a vector of regressors.

The regressors are: x_1 = highway code awareness; x_2 = highest educational attainment; x_3 = household size; x_4 = age; x_5 = experience; x_6 = earnings; x_7 = hours of operation; x_8 = mode of operation; x_9 = licence holding and e is exponential function.

The measurement of variables, both ordinal and categorical, is shown in column 2 of Table 2 together with the case processing summary. The two models are estimated based on the maximum likelihood principle.

4. Empirical results

The empirical results are presented below in three subheadings, namely pre-crash, crash and post-crash issues.

4.1. Pre-crash issues

The National Road Traffic Regulations of Nigeria (2004) stipulates the minimum age limit and the capacity of motorcycle to be used for commercial motorcycle transport as 18 years and 100 cm³, respectively (FRN, 2004, p. B199). In the case of the cubic capacity of motorcycles, it must not exceed 200 cm³. This study found total compliance with the age limit and the capacity of motorcycles used for passenger transport in the study area.

This study found that 58.2% of the commercial motorcycle operators were aware of the existence of the highway code while 41.8% of the operators were not aware of the existence of the highway code, which defines the rules of the road. This calls to question on how they got their driver licence without the knowledge and subsequent understanding of the highway code, i.e. an indication that no theory and practical tests were taken before the issuance of driver licence. An examination of the licences however showed that 72.4% of the operators had licence while 27.6 did not have. Out of the 72.4% that had licence, only 88.8% of them carried current or valid licences. The rest did not renew their licence, which has 3 year validity. The reasons adduced by those without current licences include lack of funds (52.6%), no time to process it (42.1%) and lack of enforcement pressure from the police and the FRSC (5.3%).

The case summary statistics (frequencies) of logistic regression for licence holding are shown in Table 2. The results of full and stepwise logistic regression models are shown in Tables 3 and 4, respectively. The full result in Table 3 indicated age, highway code awareness, educational level and earnings as significant determinants of licence holding. While age was barely significant at 0.1 and has the least impact on the model, others are significant at 0.05. In the full model as shown in Table 3, an increase in age of motorcyclist by a year brings about just 4.5% increase in the odds of licence holding, which is very small when compared with other significant factors. This justifies the exclusion of age in the stepwise version, which has highway code, education and earnings as significant variables.

Table 2. Case processing statistics for licence holding logistic model.

Variable	Measurement/category	Percentage (statistics)
Licence holding (dependent variable)	No licence = 0	26.1
	Licensed = 1	73.9
Earnings	Less than N1000 = 1	26.8
	N1000 and above = 2	73.2
Highway code awareness	Not aware = 0	39.9
	Aware = 1	60.1
Age	Years	(mean = 30.96) (standard deviation = 6.64)
Experience	Months	(mean = 52.75) (standard deviation = 36.1)
Highest education attained	No schooling = 0	10.0
	Koranic = 1	15.8
	Primary education = 2	32.6
	Junior education = 3	20.3
	Senior secondary = 4	16.5
	Above senior secondary = 5	4.8
Household size	1–6 = 1	67.0
	7 and above = 2	33.0
Mode of operation	Part time = 0	15.5
	Full time = 1	84.5
Hours of operation	<8 h = 1	2.1
	8–15 h = 2	83.5
	16 h and above = 3	14.4
Ownership of motorcycle	Rented = 0	52.6
	Owner-operator = 1	47.4

Table 3. Full logistic regression result for licence holding.

Regressors	Coefficient	Standard error	Wald	Sig.	Exp(B)
Experience	−0.005	0.004	1.261	0.262	0.995
Ownership	0.359	0.298	1.453	0.228	1.432
Age*	0.044	0.025	2.937	0.087	1.045
Household size	−0.461	0.340	1.842	0.175	0.631
Highway code awareness**	0.920	0.287	10.270	0.001	2.508
Educational attainment**	−0.246	0.108	5.164	0.023	0.782
Earnings**	0.894	0.326	7.529	0.006	2.446
Hours of operation	0.421	0.378	1.242	0.265	1.524
Mode of operation	0.246	0.396	0.386	0.534	1.279
Constant	−2.130	1.202	3.140	0.076	0.119
Summary statistics					
$\chi^2 = 28.53$; prob. = 0.001					
R^2 (Nagelkerke) = 0.137					
−2 log likelihood = 305.70					
Cox and Snell $R^2 = 0.093$					
Cases correctly predicted = 75.9%					
No. of cases = 291					

Note: *Significant at 10%; **significant at 5%.

The full model in Table 3 has 75.9% correctly predicted cases and Cox and Snell R^2 value of 0.093 against 75.3% correctly predicted cases and Cox and Snell R^2 value of 0.072 for the stepwise version in Table 4. Though the full model gave higher correctly predicted cases and Cox and Snell R^2 value, the stepwise model is preferred because of its significant factor-filtering advantage.

From the stepwise result, the probability that a commercial motorcyclist will have a driver licence

given that he has the national minimum years of formal education (education = 3), aware of the existence of the highway code (highway code = 1) and earns above the industry daily average (earnings = 2) is 0.823 (82%). On the other hand, the probability that a commercial motorcyclist will have a driver licence given that he has no awareness of the highway code (highway code = 0), no formal education (education = 0) and earns less than the industry daily average (earnings = 1) is 0.625 (63%). In terms of odds ratio,

Table 4. Stepwise logistic regression for licence holding.

Regressors	Coefficient	Standard error	Wald	Sig.	Exp(B)
Highway code awareness	0.851	0.280	9.275	0.002	2.343
Educational attainment	– 0.222	0.104	4.579	0.032	0.801
Earnings	0.846	0.295	8.191	0.004	2.329
Constant	– 0.334	0.601	0.309	0.579	0.716
Summary statistics					
$\chi^2 = 21.659$; prob. = 0.000					
R^2 (Nagelkerke) = 0.105					
–2 log likelihood = 312.57					
Cox and Snell $R^2 = 0.072$					
Cases correctly predicted = 75.3%					
No. of cases = 291					

holding education and earnings constant, motorcyclists with highway code awareness (highway code awareness = 1) have odds of holding driver licence 2.343 times as high as those without highway code awareness (highway code awareness = 0). In terms of percentage, the odds of motorcyclists with highway code awareness are 134% higher than the odds of motorcyclists without highway code awareness. Similarly, motorcyclists earning above the average (earnings = 2) have the odds of holding driver licence 2.329 times as high as those earning below the minimum (earnings = 1) when both highway code awareness and education are held constant. For educational attainment, using above secondary school as a reference category (education = 5), motorcyclists with senior secondary education (education = 4) have the odds of holding licence 0.801 times as low as those with above secondary education holding other variables constant. In percentage terms, the odds of motorcyclists with 'senior secondary education' are 20% less than the odds of motorcyclists with 'above secondary education'. For motorcyclists with 'no schooling' (education = 0), the odds ratio is 0.330. This implies that motorcyclists with no formal schooling have odds of holding licence 0.330 times as low as those with 'above secondary education'. Therefore in percentage terms, the odds of motorcyclists with no schooling are 67% less than the odds of motorcyclists with above senior secondary education. The above shows that highway code awareness, education and guaranteed livelihood are crucial in explaining the chances of licence holding among commercial motorcyclists.

The National Road Traffic Regulation stipulates that motorcycle rider and passenger shall put on crash helmets while in motion (FRN, 2004, p. B199). This study found that passengers did not comply with the law at all while 84.2% of the operators or riders did not comply with the requirement. Only 15.8% of the operators had crash helmets on during operation. The major reasons given are hot weather (52.2%), high cost

(27.7%) and no enforcement pressure to wear it (18.1%). Interestingly, 91.1% of the operators claimed that they are aware of the benefit of wearing it – protection against head injury during accident; only 8.9% claimed ignorance of the benefit of using crash helmet.

4.2. Crash issues

This study shows that 38.2% of the commercial motorcycle operators have had accidents with their motorcycles. The case processing statistics for crash involvement is presented in Table 5 while the stepwise logistic regression result is shown in Table 6.

The results indicated that highway code awareness and earnings are significant at 0.05 while mode of operation is significant at 0.1. The model correctly predicted 68.1% of the cases, with Cox and Snell R^2 of 0.054. From the model, the probability of crash involvement, given that the motorcyclist is aware of the highway code (highway code = 1), works on a full-time basis (mode = 1) and earns above the industry daily average (earnings = 2), is 0.2598 (26%). The probability of crash involvement is 0.6878 (69%) when the motorcyclist is not aware of the highway code (highway code = 0), works on a part-time basis (mode = 0) and earns below the industry daily average (earnings = 1). If both earnings and mode of operation are held constant, motorcyclists with highway code awareness (highway code = 1) have odds of crash involvement 0.531 times less than those without highway code awareness. That is, the odds of crash involvement for motorcyclists with highway code awareness are 47% less than the odds of those without highway code awareness. Also for earnings, motorcyclists that earn above minimum (earnings = 2) have odds of crash involvement 0.560 times as less as those earning below minimum (earnings = 1). This implies that the odds of motorcyclists' earning above minimum involvement in crash are 44% less than those

Table 5. Case processing statistics for crash involvement logistic model.

Variable	Measurement/category	Percentage (statistics)
Ever crashed (dependent variable)	No = 0	61.8
	Yes = 1	38.2
Licence holding	No licence = 0	26.1
	Licensed = 1	73.9
Earnings	Less than N1000 = 1	28.3
	N1000 and above = 2	71.7
Highway code awareness	Not aware = 0	40.8
	Aware = 1	59.2
Age	Years	(mean = 30.66) (standard deviation = 6.4)
Experience	Months	(mean = 52.25) (standard deviation = 36.79)
Highest education attained	No schooling = 0	10.3
	Koranic = 1	16.5
	Primary education = 2	32.0
	Junior education = 3	20.2
	Senior secondary = 4	16.5
	Above senior secondary = 5	4.4
Ownership of motorcycle	Rented = 0	52.6
	Owner-operator = 1	47.4
Household size	1–6 = 1	66.9
	7 and above = 2	33.1
Mode of operation	Part time = 0	16.5
	Full time = 1	83.5
Hours of operation	< 8 h = 1	2.2
	8–15 h = 2	83.8
	16 h and above = 3	14.0

Table 6. Stepwise logistic regression for crash involvement.

Regressors	Coefficient	Standard error	Wald	Sig.	Exp(B)
Highway code awareness	−0.633	0.257	6.064	0.014	0.531
Earnings	−0.581	0.286	4.124	0.042	0.560
Mode of operation	−0.623	0.345	3.264	0.071	0.536
Constant	1.371	0.550	6.202	0.013	3.939
Summary statistics					
$\chi^2 = 15.405$; prob. = 0.002					
R^2 (Nagelkerke) = 0.073					
−2 log likelihood = 354.13					
Cox and Snell R^2 = 0.054					
Cases correctly predicted = 68.1%					
No. of cases = 279					

earning below minimum when other variables are held constant. Motorcyclists that operate on a full-time basis (mode = 1) have odds of crash involvement 0.536 times less than those on a part-time basis (mode = 0). Therefore, the odds of full-time motorcyclists' involvement in crash are 46% less than those operating on part-time basis.

For those who have had crashes with their motorcycles, the number of times ranges from 1 to 3 and above, with those involved once accounting for 41.9%, twice – 27.9% and thrice and more – 30.2%. The distribution of the type of crash, with reference to their last crash, is shown in Table 7. Most road conflicts of motorcyclists, based on the last crash, are with other road users (65.4%). Conflict with other vehicles and pedestrians accounted for 42.7% and

Table 7. Type of crash (last crash).

Type	Percentage
Hit a vehicle	18.2
Hit by a vehicle	24.5
Hit a pedestrian	22.7
Hit other objects	17.3
Own crash alone	13.6
Other	3.6

Source: Authors' computation.

22.7%, respectively. Nigeria operates mixed traffic. There is no segregated or dedicated lane for motorcycles as the practice in some countries. The roads in Nigeria are neither *self-explaining* nor *forgiving*. In most cases motorcyclists are not visible to motorists

especially at night. This led to the use of reflective jackets to improve visibility but most of the reflective jackets are not truly reflective. They are just identity marks for the differentiation of the various associations of commercial motorcycle riders. The struggle for the right of way coupled with poor understanding of the rules of the road often leads to collision between vehicle owners and motorcycle riders. The second significant conflict is with pedestrians (22.7%). To say urban road design in Nigeria is not pedestrian-friendly is an understatement. In some cases, pedestrians have to mix with motorised traffic as they move along the road. One of the advantages of okada is fastness as they avoid congestion through their zigzagging manoeuvring. In the process, they encroach on sidewalks and hit pedestrians, who are usually not protected through road design.

The resulting types of injury sustained in the last crash are shown in Table 8.

It shows that 97.2% of the victims had head injuries, which is a manifestation of their refusal to use crash helmet. The fact that 96.9% of last crash injuries involved fracture (leg/arm) further exposes the danger inherent in the use of motorcycle for public transport in Nigeria. Most tertiary hospitals in Nigeria now have special treatment wards for motorcycle crash victims.

4.3. Post-crash issues

The commercial motorcycle operators who have had accidents were transported to the hospital by good Samaritans in 27.3% of the cases, 45.5% by themselves, 15.2% by other victims and 12.1% by traffic law enforcement agencies (police/FRSC). It is interesting to note that Nigerians, aside the victims, are more responsible for moving crash victims to the hospital for treatment than the police/FRSC. The law enforcement agents were only involved in about 12.1% of the cases. This further calls to question the rescue efforts and emergency response of the traffic law enforcement agencies. The fine against hospitals rejecting road crash victims in Nigeria, which is N50,000, may not solve the post-impact care crisis in Nigeria because FRSC is responsible for a small fraction of victims moved to the hospital.

Table 8. Types of injury sustained by operator (last crash).

	Type			
	Bruise	Fracture (leg/arm)	Head	Others
No	22.3	3.1	2.8	1.5
Yes	77.7	96.9	97.2	98.5

Source: Authors' computation.

In terms of the number of days spent at the hospital, 35% spent a day on admission, while the same proportion (35%) spent 2 days. Those who spent 3, and 4 and more days on admission in hospital accounted for 10% and 20%, respectively. One of the crucial issues in hospital rejection of road crash victims in Nigeria is the issue of who pays the bill as most first point of emergency are private hospitals, which will demand payment before treatment is administered. Table 9 shows the responsibility for payment. This study shows evidence of unpaid bills written off by hospital management (5.1%). There is no evidence that the police/FRSC was responsible for the payment of any bill.

5. Implications for road safety

The above findings have implications for road safety policy and programmes in Nigeria. These implications are examined under road planning and design, traffic law enforcement and post-crash management.

The rate of conflict between motorcyclists and other road users estimated at 65.4% suggests that road planning and designs in Nigeria are neither *self-explaining* nor *forgiving*. A reduction in crash rate will entail the redesigning of existing roads to segregate traffic, which is currently mixed, so that road users would know where they should be and use the road safely. The roads should have a degree of tolerance for error to protect road users in the event of a crash. The Federal Ministry of Works and its State counterparts should encourage the design and construction of roads that are *forgiving* especially in the urban centres.

The evidences of illegal usage of the road portray a weak and ineffective traffic policing system. The traffic rules right from driver licensing to the use of crash helmet should be enforced. The FRSC and Nigeria police should be funded and equipped to perform their statutory duties. The State Vehicle Inspection Offices responsible for the conduct of theory and practical tests should be funded and equipped to deliver their mandates.

Post-crash management is vital for fatality reduction. The FRSC and the Nigeria police should abolish

Table 9. Hospital bill payment (last crash).

Who was responsible?	Percentage
Self	56.4
Family/relation	12.8
Good Samaritan	5.1
Other victims	20.5
Others (usually bills written off by hospital management)	5.1

Source: Authors' computation.

in both principle and practice the 'police report' mandate before road crash victims are treated in hospitals. It should be replaced with the 'Good Samaritan Act'. The first principle should be to save lives in road crashes and not litigation.

6. Conclusion

The reduction of road crashes in Nigeria is highly dependent on the management of motorcyclists, who are constantly in conflict with other road users. This conflict is usually as a result of their poor understanding and compliance with the rules of the road. The problems are further compounded by improper licensing, weak traffic law enforcement and roads that are not self-explaining and unforgiving. The promotion of safety among motorcyclists should concurrently tackle the issue of infrastructural lapses, enforcement and the Good Samaritan Act.

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