

# Risk-Taking Behaviour among Commercial Motorcycle Taxi [Okada] Riders in a Semi-Rural Area of Bayelsa State

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## ABSTRACT

**Background:** Commercial motorcycle taxis [Okada] have become an increasingly important mode of transportation in most Nigerian towns and villages due to the lack of proper road infrastructure and poor state of transportation. Road Traffic Accidents [RTA] by Okada riders have now been recognized as a public health issue. This investigation aims to identify factors that predict persistent risky riding behaviours among Okada riders. The classification of behavioral factors promoting RTAs can assist in the conceptualization of the problem and may also contribute to behaviour modification-based efforts.

**Methods:** Using questionnaires examining risk-taking behaviour, we interviewed 403 Okada riders in Yenagoa and Wilberforce Island, Bayelsa in South-Southern Nigeria. The mean age of the riders was 29.32±7.1 years [range= 17-55]. All were males. The greater majority [57%] were married. They had been riding Okada for a mean of 3.5±3.5 years [Range= 1-30]. The mean number of accidents per rider was 1.1±2.5 [Range=0-8].

**Results:** Amongst Okada riders, significant relationships were present between previous RTA and speeding [ $X^2 = 168.425$ ,  $df=3$ ,  $p=0.000$ ], number of passengers carried [ $X^2 = 201.8$ ,  $df=3$ ,  $p=0.000$ ], frequency of alcohol intake [ $X^2 = 11.3$ ,  $df=3$ ,  $p=0.010$ ], smoking of tobacco [ $X^2 = 5.55$ ,  $df=1$ ,  $p=0.019$ ], wearing of reflective jackets [ $X^2 = 5.396$ ,  $df=1$ ,  $p=0.020$ ], wearing of eye protection goggles or visors [ $X^2 = 7.97$ ,  $df=1$ ,  $p=0.005$ ], getting angry easily [ $X^2 = 10.65$ ,  $df=4$ ,  $p=0.031$ ], dislike for women motorists [ $X^2 = 15.44$ ,  $df=4$ ,  $p=0.004$ ]. Binary logistic regression using previous accident as the dependent variable and factors involved in risk-taking behavior as independent variables was able to predict RTA proneness in 84.6% of cases.

**Conclusion:** Amongst Okada riders, significant relationships were present between previous RTA and speeding, number of passengers carried, frequency of alcohol intake, smoking of tobacco, wearing of reflective jackets, wearing of eye protection goggles or visors, getting angry easily, and dislike for women motorists. RTB alone was able to predict RTA proneness among Okada riders in 84.6% of cases indicating that other factors are also involved. These factors should be incorporated into programmes aimed at reducing risky riding behaviour.

**Keywords:** Commercial motorcycle taxis; Risk taking; Young adults; Speeding; Protective gear; Okada; Riders.

## INTRODUCTION

Commercial motorcycle taxis [Okada] have become an increasingly important mode of transportation in most Nigerian towns and villages because of the lack of proper road infrastructure and poor

state of transportation. <sup>[1]</sup> The downturn in the Nigerian economy in the last decade or more has generated an acute increase in unemployment especially amongst the youths. Working as an Okada rider has thus been able to provide jobs for these

unemployed young Nigerians. In some South-Eastern states of Nigeria, Okada provides a high rate of employment second only to Governments as an employer of labour. [2]

The increasing reports of Road Traffic Accidents [RTA] by Okada riders with the attendant trauma to both themselves and their passengers have made the problem to be recognized as a public health issue nationwide. [1-5] The Okada riders have little or no regard for road traffic regulations and often exhibit poor riding skills. [1] In response to this public health issue, a number of State Governments in Nigeria have imposed either a ban on Okada in the metropolis or movement restrictions after 7.00 pm. [5] Motorcycles have a far higher fatality rate per unit of distance travelled when compared with automobiles. According to the U.S. National Highway Traffic Safety Administration [NHTSA], in 2006, 13.10 cars out of 100,000 ended up in fatal crashes. The rate for motorcycles is 72.34 per 100,000 registered motorcycles. [6] Motorcycles also have a higher fatality rate per unit of distance travelled when compared with automobiles. In 2004, figures from the UK Department for Transport indicated that motorcycles have 16 times the rate of serious injuries per 100 million vehicle kilometers compared to cars, and double the rate of bicycles. [6]

Motorcycle rider deaths were nearly 30 times more than drivers of other vehicles. Motorcycle riders aged below 40 are 36 times more likely to be killed than other vehicle operators of the same age. Motorcycle riders aged 40 years and over are around 20 times more likely to be killed than other drivers of that age. [6]

Several reports have detailed some risky behaviour among motorcycle riders. [7-12,14] Identified risky behaviour include alcohol use, [8,11] age 20 years or less, substance abuse<sup>2</sup> and disobedience of traffic regulations, [9] These risky behaviours have interacting influences which determine motorcyclist accident [and casualty] liabilities. [7]

The aim of this report is to identify factors that predict persistent risky riding behaviours among Okada riders in a semi urban region in a developing country. This would aid the classification of the behavioural factors promoting RTAs and assist in the conceptualization of the problem that may also contribute to behaviour modification-based efforts.

## MATERIALS AND METHODS

Using questionnaires examining risk-taking behaviour, we interviewed 403 Okada riders in Yenagoa and Wilberforce Island, Bayelsa in South-Southern Nigeria from 15th June to August 31<sup>st</sup> 2009. The questionnaires contained demographic data, work history, knowledge of the Highway Code, self-reported speeding [Speed >40 km/hr], overloading of motorcycles [Carrying more than one passenger at a time], use of safety gear, smoking history, use of alcohol, hard drug misuse, involvement in previous RTAs, some personality traits such as anger, perception of and other road users. Other data collected included: Number of years riding Okada, Reason(s) for becoming an Okada rider, involvement in previous Okada accidents, Number of previous Okada accidents, Months elapsed since last accident, Number of passengers usually carried, perceived effects of alcohol and hard drugs, perception of the hazardous nature of the job of being an Okada rider, Use of safety gear by rider and passengers, satisfaction with income from the Okada business, *macho* feeling on riding Okada, regularity of servicing motorcycle, knowledge of the highway code, perception of traffic, duration of riding per day, adherence to road traffic regulations, Okada riding as community service, risk insurance, presence of visual or hearing impairment, sleeping pattern, carrying of luggage on the motorcycle, age of motorcycle, feeling of frustration, low self esteem, duration of working day, job satisfaction and security, aggression, anger, verbally abusive nature, engagement in threatening or aggressive behaviour, fear of

accidents and death at work, loss of concentration, attitude to giving bribes to the police or army at checkpoints, concern for the safety of Okada passengers and body pains after work. The opinions, attitudes and feelings on safety issues were collected using a 5-point Likert scale [Strongly agree=5, moderately agree=4, agree=3, moderately disagree=2, disagree=1].

After obtaining permission from the National Union of Road Transport Workers, and of Commercial Motorcycle Riders Association of Nigeria [COMORAN] Bayelsa State branch, the research questionnaires were administered by four trained research assistants at Okada parks over an 11-week period. The first step in the research was to interview 40 Okada riders in a pilot study designed to validate the research instrument [Cronbach's Alpha = 0.76].

The collected data were entered in to a computer data base and analyzed using the Statistical Package for the Social Sciences [SPSS v.17.0]. Descriptive statistics including frequencies, cross tabulation were obtained for the relevant data. Relationships between various factors and accident proneness were analyzed by cross tabulation and X<sup>2</sup> calculations. Prediction of accident proneness was also carried out using binary logistic regression analysis.

**Demographic data:** The mean age of the riders was 29.32±7.1 years [range= 17-55] [Fig.1]. All were males. The greater majority [57%] were married. The mean number of children was 1.44±1.91 [Range= 0-12]. Most riders [84.9%] were non-indigenes of Bayelsa State [Table 1]. The distribution of the level of education of the riders is shown in Fig.2. They had been riding Okada for a mean of 3.5±3.5 years [Range= 1-30 years].

## RESULTS

The reasons given for becoming a commercial motorcycle taxi rider [Okada] are shown in Fig. 3. Nearly a third of the riders [31.5%] reported that they had previously been involved in road traffic

accidents [RTA] while riding their motorcycles. The mean number of accidents per rider was 1.1±2.5 [Range=0-8] [Fig. 4].

Table 1. States of origin of 403 commercial motorcycle taxi [Okada] riders in Bayelsa State

STATE OF ORIGIN	Frequency	Percent
BAYELSA	61	15.1
AKWAIBOM	54	13.4
JIGAWA	43	10.7
DELTA	42	10.4
GOMBE	31	7.7
ANAMBRA	24	6.0
EBONYI	20	5.0
SOKOTO	20	5.0
CROSSRIVERS	19	4.7
ABIA	18	4.5
KADUNA	12	3.0
EDO	10	2.5
KANO	5	1.2
KATSINA	5	1.2
BENUE	5	1.2
IMO	3	.7
KWARA	3	.7
OGUN	3	.7
ADAMAWA	3	.7
OYO	3	.7
ABUJA	2	.5
NIGER	2	.5
OSUN	2	.5
PLATEAU	2	.5
RIVERS	2	.5
ZAMFARA	2	.5
BAUCHI	2	.5
EKITI	1	.2
KEBBI	1	.2
TARABA	1	.2
NON-NIGERIAN	1	.2
BORNO	1	.2
Total	403	100.0

Alcohol intake was recorded among 162 [40.2%] of the Okada riders. Among the accident group of 124 riders, 52 [41.9%] did not take alcohol while 43 [34.7%] ingested alcohol weekly. Twenty of these riders [16.1%] took alcohol daily, while alcohol use was once a month in 6 cases [4.8%]. Thus, 55.6% of the riders who had had accidents took alcohol in varying degrees. The perceived effects of alcohol by the riders are shown in Table 2. Beer or Stout was the preferred alcoholic beverage among the accident group of riders.

Self-reported hard-drug misuse was present in 35 of the Okada riders [8.7%].The perceived effects of hard drugs amongst Okada riders are shown in Table 3. The perception that hard drug made them 'feel good' was reported by 8.2% of the riders.

In the 124 riders who had a history of RTA, the mean number of months elapsed since the last accident was 10.2 ±

11.1 months [Range = 1- 60 months]. Eight [2%] of the riders reported passenger deaths during the road traffic accidents in which they were involved.

**Table 2. Perceived effects of alcohol intake by Okada riders in Bayelsa State**

Perceived effects of alcohol intake	Number of riders	Percentage
“Alcohol makes me feel good”	162	100
“Alcohol gives me strength”	44	27.2
“Alcohol takes away all my pains”	43	26.5
“Alcohol makes me fearless”	30	18.5

**Table 3. Perceived of effects of hard drugs by Okada riders in Bayelsa State**

Perceived of effects of hard drugs	Number of riders		Percentage	
	Accident Group [124]	Whole Group [403]	Accident group	Whole group
“Hard drugs make me feel good”	10	33	8.1	8.2
“Hard drugs make me fearless”	3	21	2.4	5.2
“Hard drugs give me strength”	7	24	5.6	6.0
“Hard drugs take away all my pains”	4	21	3.2	5.2
“Other reasons for taking hard drugs”	0	5	0	1.2

**Table 4. Cross tabulation of previous involvement in RTAs and getting angry easily among commercial motorcycle taxi riders.**

INVOLVEMENT IN ANY PREVIOUS ACCIDENTS ON OKADA	I GET ANGRY EASILY					Total
	DISAGREE	MODERATELY DISAGREE	AGREE	MODERATELY AGREE	STRONGLY AGREE	
NO	153	45	40	10	28	276
YES	67	16	11	8	25	127
Total	220	61	51	18	53	403

**Chi-Square Tests**

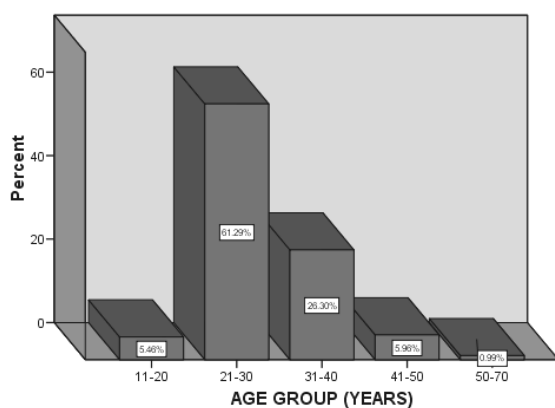
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.654 <sup>a</sup>	4	.031
Likelihood Ratio	10.384	4	.034
N of Valid Cases	403		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.67.

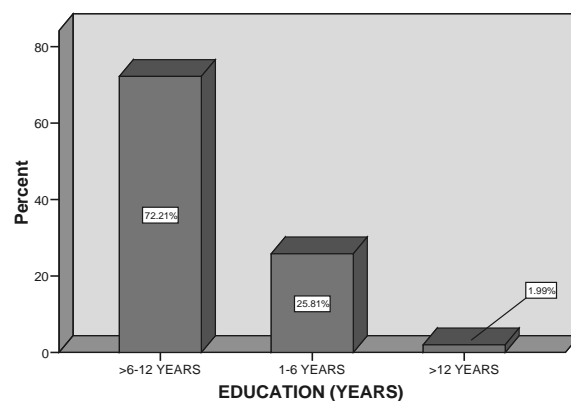
**Symmetric Measures<sup>c</sup>**

	Value	Approx. Sig.
Nominal by Nominal Contingency Coefficient	.160	.031
N of Valid Cases	403	

- a. Not assuming the null hypothesis.
- b. Using the asymptotic standard error assuming the null hypothesis.
- c. Correlation statistics are available for numeric data only.



**Figure 1. Distribution of age groups among Okada riders in Bayelsa State, Nigeria.**



**Figure 2. Educational levels of Okada riders in Bayelsa State, Nigeria.**

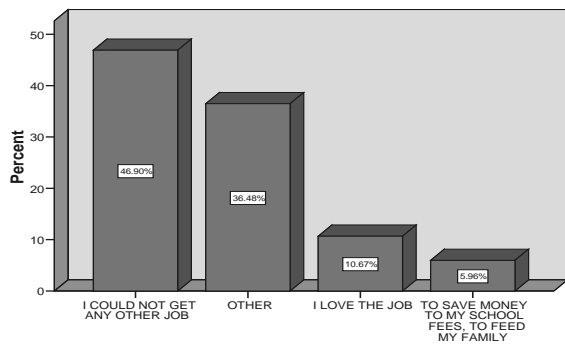


Figure 3. Reasons given for becoming a commercial motorcycle taxi rider.

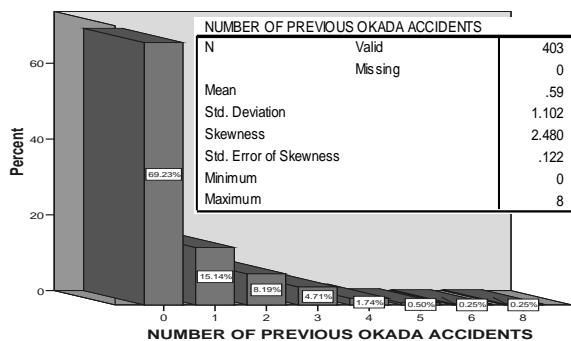


Figure 4. Distribution of number of previous road traffic accidents in which the Okada riders were involved. Inset: Table showing the mean number of road traffic accidents per rider.

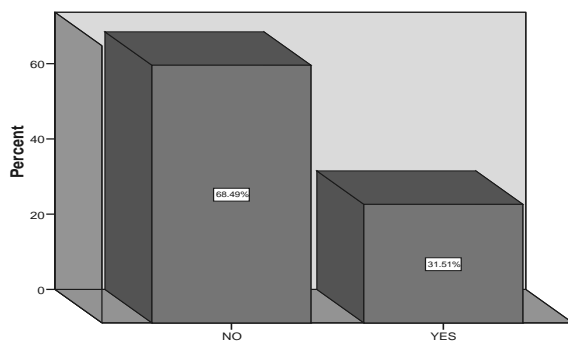


Figure 5. Involvement in previous commercial motorcycle accidents by riders.

No significant relationship was found between age, previous Okada accidents and level of job satisfaction. Amongst Okada riders, significant relationships were present between previous RTA and speeding [ $X^2 = 168.425$ ,  $df=3$ ,  $p=0.000$ ], number of passengers carried [ $X^2 = 201.8$ ,  $df=3$ ,  $p=0.000$ ], frequency of alcohol intake [ $X^2 = 11.3$ ,  $df=3$ ,  $p=0.010$ ], smoking of tobacco [ $X^2 = 5.55$ ,  $df=1$ ,  $p=0.019$ ], wearing of reflective jackets

[ $X^2 = 5.396$ ,  $df=1$ ,  $p=0.020$ ], wearing of eye protection goggles or visors [ $X^2 = 7.97$ ,  $df=1$ ,  $p=0.005$ ], getting angry easily [ $X^2 = 10.65$ ,  $df=4$ ,  $p=0.031$ ], dislike for women motorists [ $X^2 = 15.44$ ,  $df=4$ ,  $p=0.004$ ]. Binary logistic regression using previous accident as the dependent variable and factors involved in risk-taking behaviour as independent variables was able to predict RTA proneness in 84.6% of cases.

## DISCUSSION

Amongst Okada riders, significant relationships were present between previous RTA and speeding [ $p=0.000$ ], number of passengers carried [ $p=0.000$ ], frequency of alcohol intake [ $p=0.010$ ], smoking of tobacco [ $p=0.019$ ], wearing of reflective jackets [ $p=0.020$ ], wearing of eye protection goggles or visors [ $p=0.005$ ], getting angry easily [ $p=0.031$ ], and dislike for women motorists [ $p=0.004$ ]. In other studies, the number of passengers carried on the motorcycle was not examined [3-15] probably because the riders do not carry more than one passenger. In Nigeria, Okada riders can frequently carry 1 to 3 passengers<sup>3</sup> in non-conformity with the traffic laws. [16]

The use of alcohol by motorcycle riders and car drivers has long been identified as a major cause of RTAs. [8,12-14] Peek-Asa and Kraus [8] identified alcohol use as a significant factor in motorcycle crashes in California and is an important area for injury prevention efforts. The Motor cycle Safety Federation of the USA [MSF-USA] [13] has shown that at a Blood Alcohol Concentration [BAC] of 0.01 to 0.04%, judgment begins to lessen, the drinker is less critical of their own actions, reaction time is slowed, and indications of mental relaxation may appear. At a BAC of 0.05 to 0.07%, judgment is not sound, thinking and reasoning powers are not clear, and the ability to perform complex skills is lessened. At a BAC of 0.08% or above, judgment and reasoning powers are severely hampered, and the individual cannot complete common simple tasks without error. In the current study, 55.6% of the



riders who had had accidents took alcohol in varying degrees. In the study by Peek-Asa and Kraus [8] 42% of motorcycle riders tested positive for the presence of alcohol.

In our study the use of alcohol was recorded among 162 [40.2%] of the Okada riders which parallels the 42% reported by Peek-Asa and Kraus. [8] Among the accident group of 124 riders, 52 [41.9%] did not take alcohol while 43 [34.7%] ingested alcohol weekly. Twenty of these riders [16.1%] took alcohol daily, while alcohol use was once a month in 6 cases [4.8%]. Thus, 55.6% of the riders who had had accidents took alcohol in varying degrees. We found however, that there was no uniformity in the literature on determination of alcohol intake in motorcycle riders. Swaddiwudhipong, Boonmak, Nguntra et al. [14] in their study from a rural area of Thailand only identified those riders that took alcohol within 2 hours before riding a motorcycle. The study concluded that there was no significant difference between the rider education group and the group without intervention [p=0.7]. In the study that we report herein, alcohol intake was examined as a life-long event and was found to be a significant factor in accident liability [ $X^2= 11.3$ , df=3, p=0.010].

Several studies have identified young age [ $<$  or  $=24$  years] as a significant factor in risky riding behaviour and proneness to accident liability among motorcycle riders. [3-15] However, we did not find a significant relationship between age and previous Okada RTA. This may be due to the fact that the age distribution in our series is within a narrow band [ $29.32 \pm 7.1$  years]. Also, many of the reports on motorcycle accidents and the factors causing them focus on non-commercial riders. [4-14] The use of the motorcycle as commercial taxi is prevalent in the emerging economies of the world as exemplified by Nigeria, [2,3] Taiwan [9] and Thailand. [14]

RTB alone was able to predict RTA proneness among Okada riders in 84.6% of cases using binary logistic regression method. This indicated that other factors are

also involved. A study by Shankar and Mannering [12] used multinomial logit analysis of single-vehicle accident severity in Washington State, USA to evaluate the determinants motorcycle accident severity. This author [12] identified rider attributes as a significant factor.

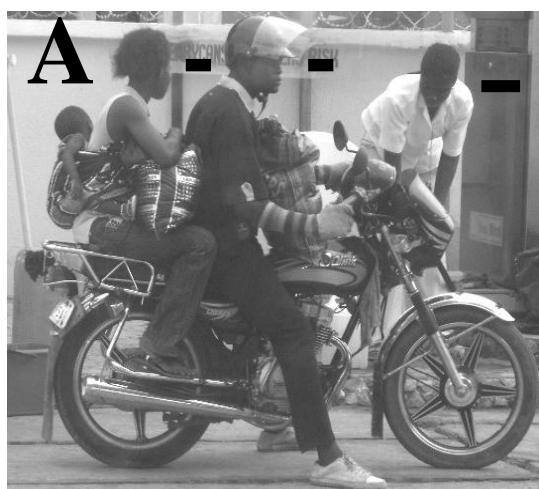
The relationship between speeding and RTA among motorcyclists has been reported by many researchers. [2,8] The element of speeding amongst commercial motorcycle riders in Nigeria probably emanates from a combination of factors such as high propensity for risk taking, sensation seeking, disregard for traffic regulations and the pressure of trying to carry as many passengers as possible to their destinations so as to make more income.

Anger and antagonism to other road users appear to have an effect on accident proneness. [2] Okada riders focus on their business of carrying passengers and making money rather than on obeying traffic regulations or being courteous to other road users. The anger against other road users is particularly marked against female car drivers who they perceive as being slow and holding up traffic. [2] Amongst Okada riders interviewed in this study, significant relationships were present between previous RTA and speeding [p=0.000], getting angry easily [p=0.031], dislike for women motorists [p=0.004].

The above-named factors need to be borne in mind when developing programmes for Okada riders that aim to deter the development of persistent risky riding behaviour and promote behaviour modification-based efforts. The models that can be adopted in order to reduce risk-taking behaviour amongst Okada riders and to reduce the rate of RTAs in Nigeria can be divided into three types. [2] These include [a] Community Model which focuses on Risk Reduction Measures, acknowledgement that our lack of urban planning and poor road and transportation network has created Motorcycle-dependent areas [MDA] in our urban and rural areas. There needs to be a

concerted effort towards and attention paid to Urban planning [land utilization]. [b] Okada Rider Education Model and [Crash Reduction Model]: <sup>[2]</sup> this model would incorporate Rider education, Rider certification, Drug misuse education and Behaviour modification programme and Risk-reduction measures. Motorcycle crash countermeasures should also include high-quality licensing programs, and the promotion of safe and responsible riding. There is need to provide research-based rider education courses for beginning and experienced Okada riders. The programme support should include

Rider Coach and Rider Coach Trainer certification courses and recognition of qualified sponsors to conduct training based upon minimum national standards. Rider Courses should be conducted throughout the country. Crash-Reduction Model: The FRSC would need to adopt an improved motorcyclist [Okada] licensing programme. The Ministry of Works and Transport, in cooperation with the National Union of Road Transport Workers [NURTW], should provide technical assistance and support materials in licensing improvement in addition to providing an improved road infrastructure and land utilization policy.



**Figure 6.** Load carrying by commercial motorcycle riders. A- The rider is carrying a load on the motorcycle fuel tank; the passenger has a baby strapped to her back and is carrying a luggage on her laps. The passenger and her baby are not wearing any helmets. B-An Okada passenger is carrying a 4-metre long aluminum ladder on his right shoulder and luggage on his laps. The traffic officers on the right are unconcerned.

There is need for educating Okada riders on the risk of using alcohol and other drugs while riding and educating both Okada riders and automobile drivers on the importance of actively sharing the road with one another. Rider education has been shown to improve motorcycle riders' risky riding behaviour in rural Thailand. <sup>[14]</sup> Although most papers have focused on motorcycle rider behaviour there is also a need to focus research on Okada passengers' risk-taking behaviour <sup>[2]</sup> in order to address an important issue that may also help to reduce the public health burden of Okada RTAs. Okada passenger education should also be incorporated into the Crash

Reduction Model. Improved Law Enforcement would lead to greater compliance with road traffic regulations among Okada riders.

In Nigeria, the public health issues involved in the Okada phenomenon cannot be wished away by imposing a ban <sup>[1,5]</sup> as this has detrimental economic and social implications. <sup>[1]</sup>

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