



# **Effect of Restricting the Operation of Motorcycles Users to Day Light Period on RTAs: A Case Study of Jos, Nigeria**

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## **ABSTRACT**

A large proportion of Nigerian urban populace relies on public transport for their daily movements. Few decades back; buses, minibuses, and taxi cabs were the only modes of public transport in most of the cities. However, due to the fast growing of the urban population, the demand for the service outweighs the supply by the existing modes. Inadequate supply of the service by the available modes to cater for the urban mobility needs led to the emergence motorcycles as an additional mobility means for both commercial and private purposes to fill in the gap in the demand and supply of public transport service. In spite of its resulting impact in relieving the mobility problems of the cities, the use of motorcycles for public transport caused an alarming increase in road traffic accidents (RTAs). In addition, some motorcyclists; particularly the commercial operators, occasionally used the motorcycles for criminal activities during the night and early morning periods. This compels authorities in some Nigerians states to restrict the use of motorcycles to certain periods. The Plateau State government happened to be one of those that restricted the movements of motorcycles users in the state capital, Jos, to day light hours only. This paper presents an investigation into the effect of the movements restriction policy on the occurrence motorcycles related RTAs in Jos. Data on motorcycles related accidents for four (4) years (two years before and two years after the restriction policy) were sourced from the records of the Nigeria Police Force, Plateau State Command. Findings from this study revealed a considerable reduction of motorcycles related RTAs in Jos as a result of the restriction policy. The policy resulted in a reduction of motorcycles related accidents by 39% over the period used for the study. Likewise, motorcycles related RTAs were reduced by 29%, 39%, and 72% for fatal, serious, and minor accidents, respectively.

**Keywords:** *Motorcycles users, Restriction, Day light period, Road traffic accidents (RTAs)*

## **1. INTRODUCTION**

In Nigeria, road transport being the major means of movement for both passengers and freight is associated with frequent traffic accidents both on intercity and intra-city (urban) roads. This in turn results in loss of lives, disabling many and damage property. Few decades back, in most Nigerian cities; buses, minibuses and taxi cabs were the only conventional modes of public transport. However, with the increasing population growth in urban areas, these conventional modes failed to cater for the mobility needs of the urban populace. To complement for the deficit in the public transport needs in our metropolitans, government is expected to come up with policies that would aid in alleviating the problems; especially, provision of efficient public transport system through public transport subsidy or public private partnership. This would encourage private individuals to invest into the system and hence to achieve the required mobility needs in our municipalities.

Contrary to the expectation, government failed to intervene in alleviating the associated urban mobility problems. This led to the emergence of motorcycles as an additional mode of transport for both commercial and private purposes to fill in the gap in the demand and supply of public transport service for the urban populace. A part from complementing the existing modes of public transport, the use of motorcycles for commercial purposes has provided jobs for many Nigerian youths. Despite its contribution in relieving the problems

associated with urban public transport and providing jobs for many, the use of motorcycles for commercial purpose has introduced a new trend of Road Traffic Accidents (RTAs) in Nigeria [1] because the conditions upon which people and goods are moved from one place to the other are deemed unsafe and prone to accident [2]. It was demonstrated that motorcycle riders (and their passengers), cyclists, and pedestrians account for almost half of global road traffic fatalities [3]. This estimate is consistent with findings reported in recent studies [1, 2, 4-8] regarding involvement of motorcycles in RTAs. Accidents involving motorcycles particularly in developing countries like Nigeria increase every year due to noncompliance with traffic regulations [9].

A part from the explicit contribution of commercial motorcycles riders to RTAs in Nigeria, they are occasionally used for criminal activities such as robbery and other forms of crimes [2, 4]; especially in the early and late hours of the day, respectively. This necessitates authorities in some States of Nigeria to imposed restrictions on the operation of motorcyclists to day light periods only. Plateau state government is one of those that restricted the operation of motorcycles riders to only day light hours in its state capital, Jos; a city in the north-central part of Nigeria. The restriction policy was first imposed in June, 2006 after which the use of motorcycles as a mobility means was completely banned in 2012. It is therefore, essential to investigate the effect of this policy on accidents occurrence involving motorcycles in Jos

metropolis; as previous studies in Jos [7] and other parts of the country [1, 2, 4-6, 8, 10] concentrated on the types of crashes and injuries in RTAs involving motorcycles, and contribution of motorcycles to TRAs in Nigeria.

This paper presents an investigation into the effect restricting motorcycles riders (commercial and private) operation to day light period on RTAs involving motorcycles in Jos, Nigeria. RTAs data were obtained from five Divisional Headquarters of the Nigeria Police Force in Jos metropolis covering the period of four years; 2004 – 2008 (i.e. two years before and two years after the restriction policy). Data obtained were segregated into before and after the implementation of restriction policy after which they were analyzed and the results compared to deduce the variations as well as the effect of the policy on RTAs involving motorcycles.

## 2. METHODOLOGY

### 2.1 Study Area and Data Collection

This study was carried out in Jos, the administrative capital of Plateau State, Nigeria. The city has an estimated population of about 437, 217 [11] and it is situated on latitude 9.9333° N and longitude 8.8833° E. Data on road accidents involving motorcycles were sourced from the statistics office of the Nigeria Police Force (NPF), Jos, Plateau State Command. The data were extracted from the records based on the contribution of accidents occurrence from the five divisional headquarters of the NPF covering the city of Jos for period of four years (2004 – 2008). Extracted accidents records were segregated into two years before (June, 2004 – May, 2006) and two years after (June, 2006 – May, 2008) the implementation of the restriction policy in order to deduce the variations or otherwise, as well as the effect of the policy on RTAs occurrence in the studied area. The five (5) divisional headquarters of the NPF upon which the accidents records were segregated into, are as follows:

- i. A – Division (A)
- ii. Laranto Division (B)
- iii. C – Division (C)
- iv. Nassarawa Ghom Division (D)
- v. Unguwar Rogo Division (E)

In order to have a clear picture of the contributions by number and severity of the accidents involving motorcycles over the period used for the study, the RTAs were sub-classified into four (4) categories as summarized in Table 1.

**Table 1: Categories of Accidents Used**

Type	Description
AAIMc	All Accidents Involving Motorcycles
FAIMc	Fatal Accidents Involving Motorcycles
SAIMc	Serious Accidents Involving Motorcycles
MAIMc	Minor Accidents Involving Motorcycles

Data for each divisional headquarters of the NPF was analyzed separately and then aggregated to see the combined effects of the results for all divisions.

## 3. RESULTS AND DISCUSSIONS

Information on the RTAs involving motorcycles for the two years before and after the implementation of the restriction policy was analyzed and the summary of the results obtained is as presented in Table 2.

**Table 2: Number of Accidents Before and After Restriction Policy**

P	Type	Divisional Headquarters					Total
		A	B	C	D	E	
Before	AAIMc	93	74	105	72	88	432
	FAIMc	19	25	23	18	20	105
	SAIMc	70	43	77	45	60	295
	MAIMc	4	6	5	9	8	32
After	AAIMc	27	61	74	50	51	263
	FAIMc	10	21	15	17	12	75
	SAIMc	14	39	55	32	39	179
	MAIMc	3	1	4	1	0	9

P = Period

An evaluation of the results presented in Table 2 indicates that there was more accidents occurrence involving motorcycles prior to the implementation of restricting the operation of motorcycles riders to day time. In other words, there is considerable reduction in the number of accidents occurrence after the implementation of the restriction policy compared to those of before. The reduction in the number of accidents occurrence is consistent across the individual NPF divisional headquarters as well as the total number for the combined stations for all the classes of accidents severity. The implication of the restriction policy translates into percentage reductions of number of accidents involving motorcycles by 39%, 29%, 39% and 72% for AAIMc, FAIMc, SAIMc and MAIMc, respectively. The consistent reduction in the number of accident occurrence for all cases is credited to the fact that there is more visibility during the day time than in night hours.

To clearly show the variations in accidents occurrence due to the restriction policy among the two periods investigated, graphical relationships between the number of accidents occurrence and types of accidents were plotted for each of the NPF divisional headquarters A, B, C, D and E as depicted in Figures 1, 2, 3, 4 and 5, respectively. Likewise, similar relationship was developed for the total number of accidents versus types of accidents as shown in Figure 6.

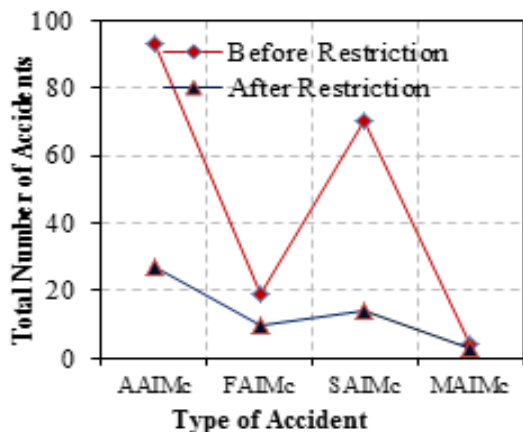


Figure 1: Accidents Occurrence Variation for Station A

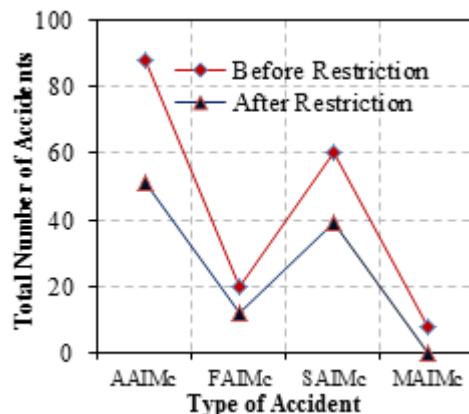


Figure 5: Accidents Occurrence Variation for Station E

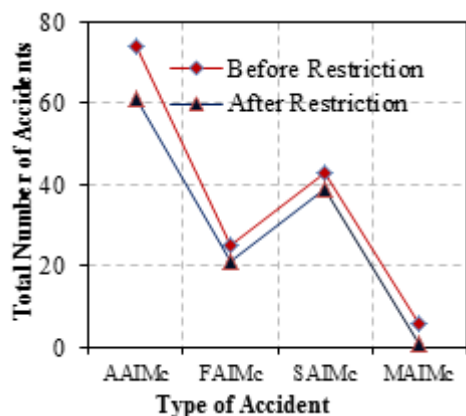


Figure 2: Accidents Occurrence Variation for Station B

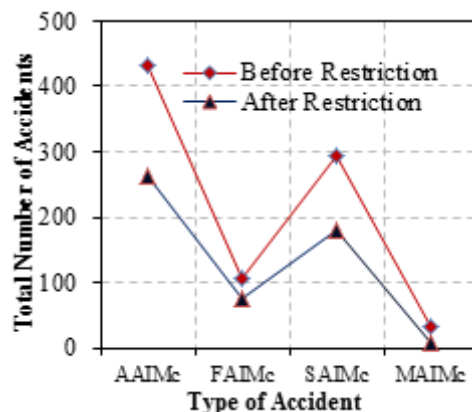


Figure 6: Accidents Occurrence Variation for All Stations

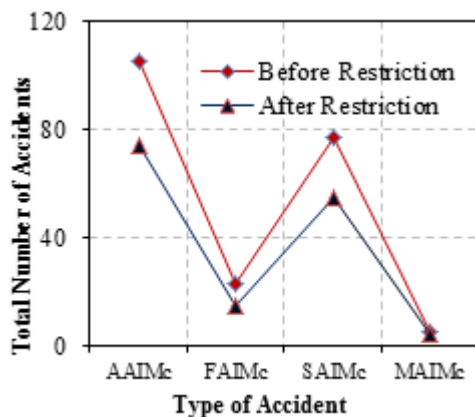


Figure 3: Accidents Occurrence Variation for Station C

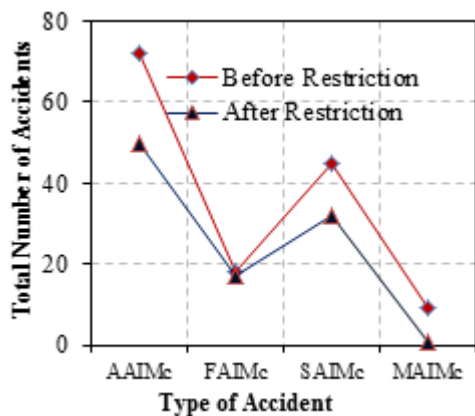


Figure 4: Accidents Occurrence Variation for Station D

From the results presented in Figures 1 to 6, it is clearly seen that in almost all cases the number of accidents occurrence involving motorcycles recorded for the period before restriction policy were generally higher than those for the period after. Variations in the number of accidents occurrence between the two periods used in this study is not surprising; as many of the streets in Jos metropolis lack adequate lighting facilities or not at all. Lack of insufficient street lightings could increase the chances of accidents occurrence during night hours due to poor visibility. Thus, findings from this study are well consistent with the assertion that risk of accident occurrence increases with darkness [12]. In terms of accident severity, serious accidents involving motorcycles (SAIMc) recorded the highest number of accidents occurrence followed by fatal accidents. However, accidents with minor severity recorded the least number of accident occurrence. This supports the general trend in RTAs involving motorcyclists which in most cases results in death or loss of some parts of the victims. A fundamental implication of the findings from this study is that the considerable reduction in the number of accidents occurrence involving motorcycles seems justifiable for the enforcement of restricting the operation of the motorcycles users to only day light period and its subsequent banning.

#### 4. CONCLUSIONS

This paper investigated the impact of restricting the operation of motorcycles riders to day light period only on road traffic accidents (RTAs) involving motorcycles in Jos. The main conclusions from the research reported herein are summarised as follows:

- i. There is considerable reduction of RTAs involving motorcycles in Jos as a result of restricting the operation of the users to day light period only.
- ii. Irrespective of particular type of motorcycles related accidents, banning the movements of motorcycles users during the night and early morning hours resulted in total accidents occurrence reduction by 39%.
- iii. Likewise, the policy reduced motorcycles related RTAs by 29%, 39% and 72% for fatal, serious, and minor accidents, respectively.
- iv. A key implication of the findings from this research is that the considerable reduction in motorcycles related accidents occurrence seems justifiable for the enforcement of banning the movements of motorcycles users during night and early morning hours in Jos metropolis.

## REFERENCES

- [1] Gbadamosi, K. T. (2006). The Emergence of Motorcycle in Urban Transportation in Nigeria and its Implication on Traffic Safety. Association for European Transport and Contributors 2006.
- [2] Oni, S., O. Fashina, and Y. K. Olagunju (2011). The Motorcycle Crash Characteristics in Lagos State, Nigeria. *Journal of Environmental Management and Safety*, 2(1): p. 1-15.
- [3] WHO (2009). *Global Status Report on Road Safety: Time for Action*, World Health Organization, Geneva, Switzerland.
- [4] Aderamo, A. J. and S. Olatujoye (2013). Trends in Motorcycle Accidents in Lokoja, Nigeria. *European International Journal of Science and Technology*, 2 (6): p. 251-261.
- [5] Oladipo, O. O. (2012). The Development and Impact of Motorcycles as Means of Commercial Transportation in Nigeria. *Research on Humanities and Social Sciences*, 2 (6): p. 231-240.
- [6] Ogunmodede, T. A., Adio, G, Ebijuwa, A. S., Oyetola, S. O., and Akinola, J. O. (2012). Factors Influencing High Rate of Commercial Motorcycle Accidents in Nigeria. *American International Journal of Contemporary Research*, 2 (11): p. 130-140.
- [7] Nwadiaro, H. C., Ekwe, K. K., Akpayak, I. C., and Shitta, H. (2011). Motorcycle Injuries in North-Central Nigeria. *Nigerian Journal of Clinical Practice*, 4 (2): p. 186-189.
- [8] Solagberu, B. A., Ofoegbu, C. K. P., A A Nasir, O. K. Ogundipe, Adekanye, A. O., and Abdur-Rahman, L. O. (2006). Motorcycle Injuries in a Developing Country and the Vulnerability of Riders, Passengers, and Pedestrians. *Injury Prevention*. 12: p. 266–268.
- [9] Federal Road Safety Commission (2007). *Federal Road Safety Corps Establishment Act*. FRSC, Abuja. [www.frsc.gov.ng](http://www.frsc.gov.ng) (Accessed on 16th June, 2013).
- [10] Oluwadiya, K. S., Oginni, L. M., Olasinde, A. A. and Fadiora, S. O. (2004). Motorcycle Limb Injuries in a Developing Country. *West African Journal of Medicine*, 23(1): p. 42-47.
- [11] NPC (2006). *Population and Housing Census, Priority Table, Volume III, 2010*, National Population Commission, Abuja, Nigeria.
- [12] Wanvik, P. O. (2009). Effects of road lighting: An Analysis Based on Dutch accident statistics 1987–2006. *Accident Analysis & Prevention*, 41(1): p. 123-128.