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The Challenge of Road Traffic Accidents in the Third World: The Nigeria's Experience (1960-2010)

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Abstract - **The incidence of road traffic accident is rising world-wide. However, fatalities from automobile crashes are said to be higher in developing countries where the number of motor vehicles relative to the population is generally much lower than in the developed countries. The paper examines the rising tide of carnage on the highways in the third world countries but particularly in Nigeria. In carrying out the detailed study, road traffic accident data (1960-2010) in Nigeria were obtained from the Federal Road Safety Commission (FRSC). Additional relevant information and data were generated from other stakeholders such as the police and hospital sources as well as the accident victims (motorists/commuters). The data was analysed using the least square method. The equation of the trend line for casualty cases was computed. The regression coefficient shows that there has been an upward trend in accident casualty between 1960 and 2010. Accidents on the country's highways are caused by several and diverse factors including roads in dangerously poor conditions, poor maintenance of vehicles, indiscipline on the parts of motorists/motorcyclists and other road users, ignorance of highway code on the part of a large proportion of Nigerian drivers and corruption by some traffic law enforcement agencies. The paper recommends some measures that can ensure effective and sustainable accidents reduction on the country's highways.**

Keywords: **Highways, Accident, Safety, Third-world regions**

I. Introduction

Transport being fundamental to all human activities and need has developed over the centuries, making it possible for man to travel through water, land and air. It is needed for the purpose of achieving/realizing the socio-economic and political goals of man. This is in addition to promoting national unity and socio-economic integration. Stimulating a sense of oneness and mutual understanding in a culturally diverse society. As a measure of the interactions between areas, transport enables a division of labour to occur (Holyes and Knowles, 1992). Furthermore, transport not only facilitates the distribution of goods and services by ensuring that producers are linked with the area of consumption, it also 'stands out as a catalyst in the process of change and development' (Ogunsanya, 2002). In fact, no human activities take place without one form of transport or another. Some activities even require more than one form of transport. Movement is therefore necessary and compulsory for all human activities from womb to tomb (Oyesiku, 2002). Also, as noted by the World Bank Independent Evolution Group (IEG) in a report released in Washington D.C, U.S.A, in April 2007, 'transportation is crucial to a country's competitiveness in an increasingly globalised world economy' (Business World, May, 2007).

Despite the undisputed roles and impact of transport/ highways in the functioning of modern societies, they are unfortunately prone to highly destructive accidents. Automobile transportation has been marked by accidents, injuries and fatalities right from inception and traffic accident have emerged the single greatest source of death throughout the world (Yerrel 1992, Johnson, 1966, Akpoghomeh, 1996, Bolade, 1991). However, fatalities from automobile crashes are said to be higher in developing countries where the number of motor vehicles relative to population is generally much lower than in the developed countries (Jacob and Curttings, 1986, World Bank, 1990, Ovuworie *et al,* 1989).

Road traffic accidents constitute a major cause of accidental death in the developing world. Also, road accidents in developing countries have been shown to cost almost one percent of these countries annual Gross National Products (GNP) wasting scarce financial resources they can ill afford to lose. In Nigeria, for example, accidents on the highways occur more frequently and result in more losses than those from other modes. In fact, Nigeria has one of the highest rates of deaths from motor accidents in the world according to available statistics. (Onakomaiya, 1988, Ademiluyi, 2007).

Death resulting from accidents in Nigeria are said to be about twenty five times those in Great Britain and about twenty seven times those in the U.S.A (Gbadamosi, 1994, 2002, Rose, 1984).

Highway accidents have far-reaching social, economic and environmental implications. It has been revealed that the third world countries, Nigeria inclusive, are losing huge revenue, manpower resources and unfulfilled lives through accident occurrences on the roads. For this reason, research into the causes and control of highway accidents would be a matter of continuous interest at least until the 'menace' could be kept under control. Even the developed countries have not stopped spending time and money researching into causes and control of accidents. It is against this background that this paper takes a look at the rising tide of carnage on the highways in the Third World Countries, particularly in Nigeria.

After this introduction, the paper is divided into five sections. The first section highlights the road accidents situation in the third world region, the second section looks at the road accident trends in Nigeria, the third focuses on the contributing factors to highway accidents and the fourth section contains some suggested safety measures which hopefully would help in reducing highway accidents. The paper ends with concluding remarks.

II. Road Accident Situation in The Third World

Occurrence of motor accidents on the highways is not a new phenomenon. Incidents of this nature are as old as the use of automobile itself. In fact, available estimates show that between 750,000 and about a million people die yearly world wide as a result of crashes and the figures are even expected to continue to increase with fatality toll of between 900,000 and 1.1 million in 2010 and between 1.1 million and 1.3 million in 2020 (World Bank, DFID and TRL2000). The majority of these deaths are said to be occurring in the third world regions (Leshabari, 2006). Also, unlike in the western world where there has been a steady decrease over the last twenty years or so on the total number of reported cases of accidents and the number of people killed in the crashes, the corresponding figures in the regions of the third world are said to be on the increase. Thus, for example, the available records show that between 1987 and 1995, deaths in the Asia-pacific rose by 40 percent, in Africa by 26% and in the Middle East/ North Africa region by over 36%. However, deaths on the road in highly motorized countries fell by about 10 percent (World Bank), DFID and TRL2000). In fact, Africa's global road fatality share is said to be three times as large (11%) as its motor vehicle share and the relative personal safety risk has also doubled for many of the countries on the continent over the past few decades. As for the Middle East/North Africa, deaths are equally a growing Problem. Deaths on the highway are even said to be growing faster than population in the countries like Saudi Arabia, Lebanon, Morocco and Yemen within the MENA region.

The relative regional share of facilities, population and motor vehicles worldwide is shown in Table 1 below

Table I Distribution of Road Facilities. Motor Vehicles and Population

	Fatalities	*Motor Vehicle*	*Population*
Highly motorized countries (HMC)	14	60	15
Asia/Pacific	44	16	54
Central and Eastern Europe	12	06	07
Latin America/Caribbean	13	14	08
Africa	11	04	11
Middle East and Northern Africa	06	02	04

Source:- (World Bank, DFID,TRL2000)

The table points clearly to the horrific and terrible picture of safety situations in the less motorized (third world) regions of the world. As can be seen from the table, ironically, the highly motorized countries are those with low accident rates and vice versa. Also, as might be expected the majority of those involved in highway accidents are usually the economically active segment of the society, thus leading to substantial wastage of scarce resources and high disturbing/ emotional stress on the populace among others.

III. Road Traffic Accident

Before the advent of the automobile, movement of goods and people from one place to another in Nigeria was by trekking and horse-drawn wagon which though may be slow and tedious, was safer when compared with motorized movement of today (Ogunremi, 1982). Nigeria recorded her first traffic accident in Lagos in 1906 (Oluduro, 1999) and ever since then the nation has witnessed series of road accidents on her highways which have claimed so many lives and resulted in the loss of goods worth billions of naira. In fact, Nigeria has consistently been ranked as having the highest incidence of road traffic accidents in the world, a fact partly attributable to its very poor road safety records/culture.

In carrying out the detailed study, road traffic accident data for a period of fifty-one years (i.e 1960-2010) in Nigeria were obtained from the Federal Road Safety Commission (FRSC).

Additional relevant information and data were generated from other stakeholders such as the police and hospital sources as well as information from some accident victims (motorists/computers) themselves to complement the above data sources. The records of road accidents in Nigeria from 1960 to 2010 as presented in Table II paints a dismal picture of the safety/security on the nation's highways. According to the table, over one million cases of road accidents were reported during 51 years under review. The number of people killed and the number of people injured stood at 313,832 and 956,331 respectively. In other words, as many as 1,270,163 accident victims were recorded on Nigeria highways within a period of 51 years, which gives an average of 24,905 accident victims per year. The average number of people killed and those injured on the nation's highways every year stood at 6,154 and 18,752 respectively. In the year 2001 alone, the country recorded 20,530 accidents with 9,946 deaths. This gives 57 accidents and 28 deaths every day of that year. The situation becomes more worrisome bearing in mind that not all accident cases are reported and or captured by the FRSC record/accident data.

Table II Road Traffic Accident Trends in Nigeria (1960-2010)

YEAR	NO OF CASES	NO KILLED	NO I NJURED	NO OF CASUALTIES
1960	14130	108	10216	11299
1961	15963	1313	10328	11641
1962	16317	1578	10341	11919
1963	19835	1532	7771	9303
1964	15927	1769	12581	14350
1965	16904	1918	12024	13942
1966	14000	2000	13000	15000
1967	13000	2400	10000	12000
1968	12163	2808	9474	12282
1969	12998	2347	8804	11151
1970	16666	2893	13154	16047
1971	17745	3206	14592	17798
1972	23287	3921	16161	20082
1973	24844	4537	18154	22691
1974	2889	4992	18660	23652
1975	23651	5552	20132	25684
1976	40881	6761	28158	34916
1977	35354	8000	30023	38023
1978	36111	9252	28852	38104
1979	29271	8022	21203	29225
1980	32138	8736	25781	34720
1981	33777	10202	26337	36539
1982	37094	11382	28539	39921
1983	32109	10462	26866	37328
1984	28892	8830	23861	32691
1985	29978	9221	23853	33074
1986	25188	8154	22176	30330
1987	28215	7912	20804	28716
1988	25792	9077	25027	34104
1989	23987	8714	22117	30831
1990	21683	8154	19195	27349
1991	22498	9525	25443	34968
1992	22909	9620	25495	35115
1993	21419	9454	24397	33851
1994	18218	7440	18287	25727
1995	17000	6647	14668	21315
1996	16795	6364	14500	20864
1997	17500	6500	14500	21000
1998	16046	6538	17341	23879
1999	15873	6795	17471	24266
2000	16348	8473	19070	27543
2001	20530	9946	22309	32255
2002	14544	7407	22112	29519
2003	14363	6452	18116	24568
2004	14279	5361	16897	22258
2005	8962	4519	15779	20298
2006	9114	4944	17390	22334
2007	8477	4673	17794	22467
2008	11341	6661	27980	34641
2009	10854	5693	27270	32963
2010	5217	4102	17744	21846
TOTAL	1,049,095	313,832	956,331	1,270,163

Source :- Federal Road Safety Commission, Abuja (2011)

Furthermore, the least square method was used to find the equation of the appropriate trend line. The choice of the least square method is informed by the shortcomings of the other methods including the freehand, the moving average and the semi-averaged methods. The least square approach used in this study made use of a straight line to represent the trend line in the accident data between 1960-2010. The general form of the equation used to represent the straight line is:-

$$y = a+bx$$

where: y represents the accident data

x - represents the time (in years)

a - is the intercept on the y-axis of the graph

b - is the slope of the line or the rate at which the accident data has been changing over time.

The equation to represent the trend line for the accident data as: accident trend = 347329.7 – 164.61 (time) the regression coefficient or the slope (b) is shown to be -164.61. The interpretation of this is that between 1960 and 2010 the number of accidents have been decreasing at the rate of about 165 per year. This downward pattern can be seen in figure 1.

The equation of the trend line for casualty cases is computed as: casualty trend = -494947 + 262.05 (time). The regression coefficient or the slope (b) is given as 262.05. This means that there has been an upward trend in accident casualty between 1960 and 2010. The trend line equation shows that the accident causalty has been increasing by about 262 every year. The upward pattern can be seen in figure 2.

The increasing casualty cases in Nigeria, as shown from the analysis above, represents a great loss to the nation as well as the immediate family of the victims. In the case of those that were injured, some of them might have suffered permanent disabilities resulting in dependency status on the rest of the society, apart from huge financial cost in the form of hospital bills.

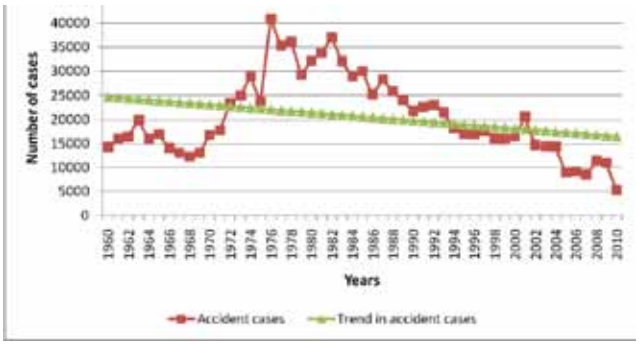

Fig. 1 Pattern and Trend in Road Traffic Accident Cases in Nigeria (1960 -2010)

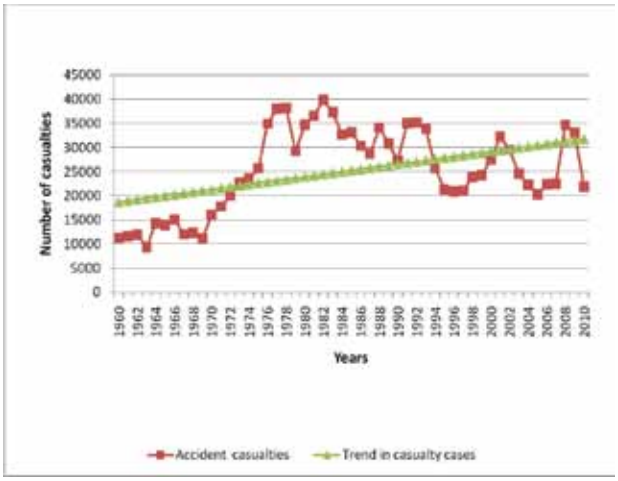

Fig. 2 Pattern and Trend in Road Traffic Accident Casualties in Nigeria (1960 -2010)

This alarming rate of road traffic accidents in Nigeria has been an issue of great concern and a source of worry to every Nigerian including the government. As observed by Ademiluyi and Solanke (1996), there is hardly any family in Nigeria today which has not experienced the anguish of the sudden loss of a beloved one as a result of accidents that could have been avoided on our motorways. In reaction to the situation, successive governments have initiated one programme or the other towards ensuring reduction of road traffic accidents. The introduction of Vehicle Inspection Officers, Operation Keep Left, Right Hand Drive. Federal Road Safety Commission, Signs and Signals and City Traffic Checks etc are examples of such programmes. The Federal Road Safety Commission (FRSC) in particular, was established by decree 45 of February 18, 1988. The Commission was charged with the sole responsibility of ensuring the minimization of the carnage on various motor ways and educating the public on the essence of good driving culture on the highways.

The rising rate of road accidents through which the nation is steadily losing the cream of her able-bodied, skilled and trained human capital calls for increasing awareness of the numerous hazards/risks involved in the use of motor vehicles on the road. It is also important to identify the major causes of road traffic accidents.

IV. Contributory Factors To Road Traffic Accidents

An important approach to the theoretical explanation of road traffic accidents has been given by Haddon (1968) who divides road traffic accidents into three parts, namely, pre-crash phase, crash phase and post crash phase. The pre-crash phase is concerned with accident prevention. The crash phase emphasizes injury prevention while the post-crash focuses on severity reduction. The Epidemiological model of road accident is another useful tool that can be used to examine accident occurrence. The model suggest that road accidents could be mirrored. In addition, it supports the view that road accidents are a multifaceted phenomenon with numerous and diverse causal factors which can be broadly grouped into three, namely, the Mechanical, the Human and Environmental.

Although man has been identified as the most potent factor in accident occurrence (World Bank, 1984, 1990, Onakomaiya, 1980 and 1990, Agunloye 1990, etc) all over the world, there are several other contributory factors to road traffic accidents. These factors could be classified into five major components: Human/Behaviour factor, Environmental/ Road factor, Mechanical factor, Institutional factor and Natural factor.

1. Such problems as drunkenness, tiredness the use of drugs, all forms of negligence, emotional instability, wrong judgement, over-speeding etc involving drivers, passengers, pedestrians etc come under Human/ Behavioural factor.
2. Environmental/Road factor involves the road gravity, the weather condition and many other environmental conditions that hinder the smooth operation of transport system.
3. *Mechanical Factor:* This is a factor in accidents causation due to the vehicle (i.e. vehicle being responsible for the accidents). Such mechanical factors include failed brakes/ engine/clutch, tyre burst, electrical faults, locked steering etc.
4. *Institutional Factors:*- This results from the general absence of alternative means of movement leading to over-concentration of traffic on the road. The inadequate and unreliable telecommunication systems and postal services may also lead to the continuous use of the road as a means of achieving socio-economic and political goals of people.
5. *Natural Factor:* A person may die while driving or a tree may crash on a moving vehicle. Accidents are inevitable in a situation like that.

All the above factors are known to have caused and remain potential causes of road accidents all over the world. However, the author's investigation and the police, hospital and Federal Road Safety Commission (FRSC) sources have also identified the following as causes of road traffic accidents in Nigeria.

i. The rickety state and lack of proper maintenance of vehicle particularly public/commercial vehicles: Many Nigerians prefer to "manager" bad tyres, drive without lights, brakes and other glaring mechanical faults till a costly accident happens. The use of substandard spare-parts and used/ overage imported (Tokunbo) cars with used/retreaded tyres etc also constitutes a threat to the drivers and other road users. It is not an exaggeration to say that not many vehicles on Nigerian roads have fire extinguisher, spare tyre, side-view mirror and C-caution and other essential vehicle components.

ii. There is also the problem of over-speeding and improper overtaking, lack of concentration, drunkenness, illiteracy, mobile phone use, eating, drinking on the steering, tuning to radio stations, reliance on charm or day-dreaming while driving, and arrogance of heavy truck and government drives etc. The phenomenon of teenage drivers, inexperienced, and incompetent drives also contributes to traffic accidents on Nigerian roads.

iii. The bad roads, and lack of maintenance culture also cause road traffic accidents in Nigeria. Many roads lack adequate traffic signs and road markings due to irregular maintenance. Most of them are pot-holed, untarred and slippery, especially during the rainy season.

iv. Many Nigerian drivers have never seen the Highway Code in their life. They are therefore ignorant of the Highway Code or traffic laws, yet they drive. There is also the problem of driving licence getting into wrong hands including teenagers and those who have never undergone driving tests. Some have more than one driving licence so that an alternative one is used when one is seized.

v. Some other road users particularly motor cyclists, pedestrians, street and road hawkers (traders) are always in conflict with motorists for the use of available space on the road. It is also a common scene to observe nomads grazing their animals - cows, sheep etc along the road.

vi. Sometimes two drivers park their vehicles side by the side right in the middle of the road and hold conversation while the engines are running. The conversation may go on for minutes in defiance of the hooting by others drivers. Broken down vehicles are also often found on the same sport on the highway for as long as it takes the owner to repair or remove it. Carcasses of burnt down vehicles are also sometimes left on the same sport usually by the side of the road for a long period of time. There are lots of reported cases of vehicles running into stationary vehicles and carcasses thereby causing major accident on our highways.

vii. In many Nigerian towns and cities, there are no pedestrian bridges, and zebra crossings are not obeyed by the motorists. Even where overhead bridges are provided, many pedestrians refuse to use them believing that it wastes time and that straight path is shorter and faster.

viii. Often, garbage (refuse) dumps by agencies of government and/or individuals spills into large portions of the roads, line up the sides of streets and roads in some towns and cities (especially Ibadan and Lagos). These hamper the flow of traffic and sometimes result in accidents.

ix. Some uniformed men in Nigeria are in the habit of contravening road traffic laws, rules and regulations. Not only would they drive against one way traffic road, at times when they are in commercial vehicles, they encourage the commercial driver to do so assuring him of protection from the legal consequences. Highly placed government officials are guilty of the same malpractice.

x. Recently in Nigeria, motorcycles have become a popular means of transportation especially in the urban areas and this is said to be a contributory factor to road traffic accidents in the country. The incidence of accidents involving motorcycle and motorcycle, and motorcycle versus other vehicles and pedestrians has opened up a new wave of accident phenomenon particularly in most urban centres in the country.

xi. Regardless of the official ban, many overused vehicles still find their way into Nigeria shore from the neighbouring countries, particularly from Cotonu in Benin Republic, as a result of the very porous nature of the country's border.

V. Suggested Safety Measures

Having identified the causes of accidents, we need strategies for reducing them to the barest minimum. Nigeria's road accident score board as shown in this paper reveals that years after political independence, Nigeria is still one of the worst zones of accident occurrence in the world and Nigerians could still, as well, be considered as dangerous road users. Deliberately planned strategy for minimizing accidents will not only take into account the causes discussed above but also focus on the derives, the vehicles and the road – the three most crucial factors. Against this background, the following measures are recommended.

1. In Nigeria today, about 90% of transportation volume and values are based on the roads. There is therefore the need to diversify the pattern of movement of people for various purposes by developing other modes of transport, particularly rail and water transportation. Diversification of traffic to other modes will go a long way in reducing the conflict that often arises from the use and misuse of the road as the only available mode.

2. There should be enough presence of traffic law enforcement agencies on all our highways and even more within the cities and towns. If traffic rules and regulations are enforced by the police, traffic wardens, highway patrols and road safety corps members and these regulations are kept by the motorists, pedestrians and all road users, road accident occurrence will definitely reduce.

3. Many of the vehicles and buses in use in Nigeria today are in complete state of disrepair. There is therefore the need for compulsory vehicle checks at regular intervals, following which certificate of road worthiness would be issued to all categories of vehicles.

4. There is the need for proper maintenance of roads, and road signs and signals should be in place and be functional on all our roads. There may also be a need to construct by-passes to prevent heavy trucks carrying deadly cargoes from passing through the cities and towns.

5. There is the need to create road safety awareness through education and enlightenment programme. The programme should cover the entire road users (drivers, pedestrians, vehicle passengers, car owners and even students etc) and involve the use of posters, radio and

television programmes, newspaper advertisements, seminars and workshops, and training/retraining exercises.

6. There is the need to address the issue of indiscipline on the road and traffic rule violations among Nigerians particularly the drivers and pedestrians. Better driving skills and better driving behaviour would make an enormous different in the reduction of the number of casualties on our roads.

7. There is the need to include traffic education and safety culture with emphasis on defensive driving in our educational curriculum at all levels including the primary and secondary schools. A defensive driver, according to Asini (1983), would adjust his speed and driving style to suit six critical conditions namely; the conditions of the road, the weather, the time of the day, his vehicle, the traffic volume and his own physical well being.

8. There is the need for a good statistical data based through the establishment of transport data bank for comprehensive collection, analysis and regular publication of accident statistics. This should cover such areas as the general overview of the road accident situation, regional and international comparisons of accidents records, trends in accident patterns, identification of vulnerable groups of road users and accident black-spots, the effectiveness or otherwise of accident counter measures already put in place etc.

9. There is the need to promote adequate research on accident causes and the preventive measures for future safety planning. Here, there is the need for the involvement of private individuals and corporate organizations in the area of funding to complement government efforts.

10. The author's investigation reveals that some members of the corps are now busy extorting money from motorists along the highways rather than doing the job they are employed to do. There is the need for the FRSC to be more awake to its responsibility and also flush out the bad eggs among the staff members.

11. If the wide-spread belief that over 40% of driver's licenses are fake and large proportion of Nigerian drivers of nowadays are ignorant of and do not comply with the Highway Code is anything to go by, these issues must be properly addressed as a way of reducing the escalating number of accidents on the highways. The Highway Code, for example, is arguably the most important basis for vehicular control in any civilized society.

12. The use of drugs and intoxication account for a large proportion of road traffic accidents world-wide. There should be a complete ban on the sale of alcohol in and around motor parks and the ban must be rigorously enforced.

13. The non-challant attitude of Nigerians to the plight of accident victims has contributed significantly to the death of those that need not to die after their involvement in accidents. There is every need to change the attitude of Nigerians in favour of rescuing accident victims through some form of legislation and appeal to their sense of pity.

VI. Conclusion

The cost implication, the mental agony, the suffering and losses (particularly of family pillars and breadwinners) arising from road traffic fatalities are too enormous for the situations to continue unchecked. There is therefore the need for a general re-orientation of the whole society on road safety matters. In this regard, individuals must appreciate the value of self-discipline, which if genuinely exercised, would prevent drivers, other road users and law enforcement agencies from acting in a way that would bring destruction and misery to themselves and/or other people. If the suggestions in this paper are followed, third world highways and Nigeria's roads in particular, would be safer and preventable deaths would be reduced.

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