

THE EFFECTS OF TRAFFIC CONGESTION ON ROAD ACCIDENTS IN HIE NIGFR- DELTA: THE CASE OF WARRI METROPOLIS

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Abstract

This research work is on the effects of traffic congestion on road accidents in Warri metropolis. The main aim of the research was to bring to light, the factors that contribute to the occurrence of traffic congestion and road accidents. It has become disturbingly clear that these urban problems have continued to slow down socio-economic activities and sustainable development in the study area. A fieldwork was carried out and data were collected on traffic flow and road accidents in Warri metropolis. The statistical technique used is the Pearson's Product Moment Correlation Coefficient (r). The study reveals the existence of conflicts on our roads as one of the background factors responsible for fatal and non-fatal accidents.

The conflict results from a number of factors, which include excessive speed by motorists, recklessness and negligence of drivers and poorly designed and constructed roads. It is therefore, recommended that well constructed roads and readable road signs be provided to cater for the fast and slow moving vehicles as well as careful and reckless drivers in the study area.

Introduction

Traffic congestion and road accidents are major problems of cities. They have caused a lot of hindrances to movement of goods and loss of lives of passengers and pedestrians. According to Ratchiff (1981), traffic congestion can be defined as the collection and agglomeration of vehicles in observable jams at points along arterials of city's transport system, while road accident is an unpleasant, sudden mishap that happens unexpectedly causing damage to properties and lives. In the last decades, Nigeria has experienced an increase in oil production which has increased her economic growth. This in turn has generated a considerable increase and progress in the country's commercial and manufacturing activities. Fortunately also, it has caused an increase in per capita income of workers especially in urban centres both in the formal and informal sectors of the economy.

The improved economic condition has also led to an increase in ownership of motor vehicle among individuals and various organizations, commercial, industrial and even educational in the cities and also enhanced the socio-economic interaction within and between cities.

Adefolalu (1977) has identified the problem of traffic congestion to lights and poor road networks, the attitude of drivers and other road users such as market women, the squatters and informal push truck users.

Urban activities serviced by transport systems are those of internal importance to the settlement as well as those of significance to the city's function as a national or regional centre (Dimitriou, 1992).

The predominance of a single high density central area in most third world cities and the lack of developed secondary centres with adequate transport network only encourages larger average trip making but presents grave circulation problems both for the central area and its immediate environs. These circulation problems give rise to accidents in our roads. The causes of road accidents, in highways need urgent attention. So long as the total number of motorable roads increase in a group: every year there is also the need to keep death

off our roads.

Onokerheraye (1984) stated "that in recent years the rapid growth of Port Harcourt and Warri has also been influenced by the exploitation of petroleum resources". Sada (1984) goes on to say that; "in spite of its declining political fortunes, however, the oil economic and the associated industry have combined to give Warri a dynamic lease of life."

The city is therefore enhanced as an organic entity with an organic life especially as regards growth. Transportation can be seen to have ensured urban growth when it is remembered that all sectors of the city system are intimately related in a web of interactions otherwise referred to as the circulatory system. This is nonetheless the case of transportation in Warri. Viewed from the above perspective, the significance of defects in the transport system within the city is established

As in Warri, this is largely a result of high industrialization. Traffic congestion in Warri and its environs has become a serious problem. At particular periods of the day, the traffic becomes so high that it affects everybody, this is in terms of time loss, loss of lives due to overtaking of other vehicle by impatient drivers, 'energy is dissipated which in turn affect the movement of goods, services and flow of information.

Road accidents are not caused by a single factor. A lot of factors contribute to the causes of road accidents some of these factors could be physical factors, human factors, etc. Motorist sometimes cause road accidents by excessive speed, recklessness and negligence of the motorist, drunkenness or intoxication of the motorist, improper overtaking or cutting in by drivers. These are some of the human factors that cause road accidents. Some of the physical factors that cause road accidents are bad weather and mechanical defects of vehicles.

According to Onokerheraye (1984) "experience in various parts of the country show that in the huge cities, greatly increased volume of traffic have had to utilize a road network which is unsuitable without efficient traffic control system with roads of insufficient width, road surfaces in poor condition, with an absence of proper paved footways for pedestrian movement and insufficient provision for car parking." He remarked that the situation continues to deteriorate as traffic grows at a faster rate than improvements are made. And in the words of Mabogunje (1974), management inefficiency is also behind some of the traffic problems in the city.

Therefore, if the components of the transport system of Warri are dismantled in an x-ray a negative growth relationship is observed between the lived urban infrastructure (roads) and the various mechanical devices (vehicles) which utilize the former, while the rate of vehicular ownership and therefore vehicle population is high, the rate of growth and construction of roads is relatively minimal.

There has been the lack of proper forecast and control of residential land-use development. The protracted over-loading and frequent strangulations of the transport system has a number of implications on the economic functions of the city (Atubi and Onokala, 2004).

In his study of urban centres in Nigeria, Adefolalu (1979) concluded that urban centres have a vast rural hinterland from which the rural unemployed population migrate to the cities in search of jobs. According to him, the land-use within them, the taste and preferences of their citizens with respect to place of work and rate of travel between workplace and shopping place and residence are added problems to urban traffic.

Tani (2000) in her study pointed out that there is a conflict between urban transportation and land use. Many streets are too narrow for the number of vehicles and size of vehicles using them. Traffic street pattern with

its frequent intersections does not promote a steady unimpeded traffic plan, parked vehicles reduce the speed of this plan and drivers making u-turn etui cause particular problems. In her summary, she proposed that transportation and land use should be adequately planned before implementation so as to avoid traffic plan obstruction.

Robinson and Bamford (1978) recognized the problem of urban transportation and the consequent increase in travel demand. In their study they concluded that the basic network within cities were a I ready fashioned and therefore, unsuitable for flow of traffic. To overcome these urban transportation problems, transport planning must be considered in the height of the time it takes to implement them. 1 hex reiterated their support for the creation of the traffic management schemes and that till transportation policies need to be appraised in terms of their utilization and land use.

Road accident which is one of the problems ol transportation in urban metis continues to attract the attention of people in spite of the work of experts on the issue, not much improvements have been marie in the Warri metropolis.

Onokomaiye (1981) described the causes of road accident as lack of safety consciousness in the design, construction and maintenance of roads as well as in the operation of vehicles and monitoring or surveillance of traffic on the highways, lie explained that "merely increasing the length of trunk roads, expressways and flyovers without caring much about the safety of the road users is bound to end in disaster even in the very short term."

Every society at any given state of technology will attempt to develop transport network or services to minimize distance. This is due to the tact that kick of accessibility to transport facilities will inhibit progress (Owen, 1995).

Study Area

Warri town is the administrative headquarters of Warri South Local government Area Warri-South Local Government Area lies between latitude 5° and 30' and 5° 30' North and longitude 5° and 45' East. It is bounded to the North by Warri North and Sapele Local Government Areas, it is bounded to the South by Warri South-West Local Government .Area and Burnt11 Local (»»». eminent Area. While to the West of it is bounded by the Bight of Benin and the Atlantic Ocean (See Fig. 1)

Warri South Local Government Area is one of the twenty-live local government areas of Delta State. Warri in Warri South Local Government is made up of five quarters namely: Igbudu, Agbassa, Okere, Ogonu and Edjeba.

Warri as a settlement is nearly bisected by the Warri Sapele Road from South to North this road extends from the other side of the Nigerian Port Authority to the Enerhen junction, Warri Urban therefore extends to both the Hast and West of the road. To the Last of the road. Warri urban boarded by the Warri River while to the West of the road. Warri urban is boarded by (ikumaanu layout. And the areas referred to as the environs of Warri urban are the suburbs. Some arc widen Warri for example, Lkurede-Urhobo and Ogonu. While others are within other local government areas for example Effurun and Enerhen (See big. 2).

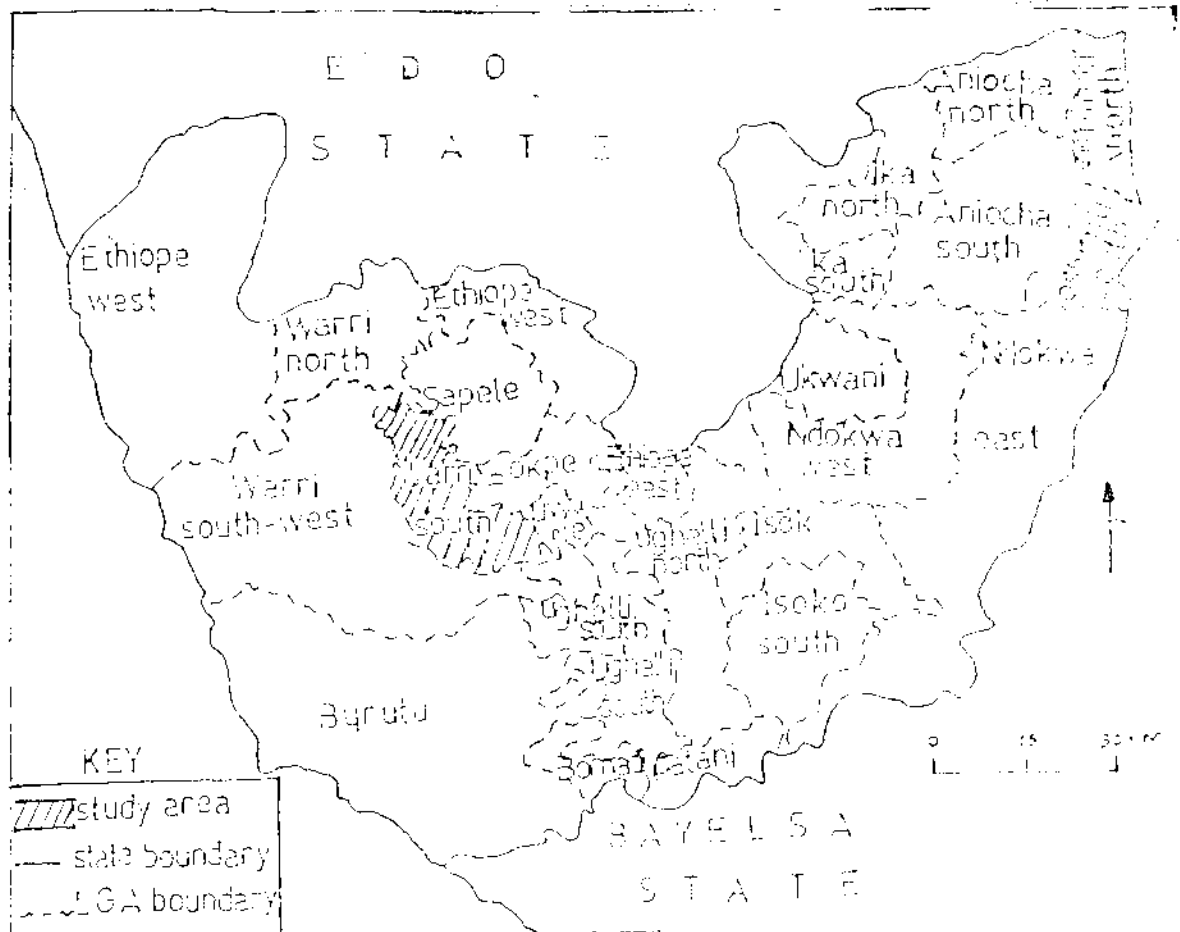


Fig. 1: Map of Delta State Showing Study Area. Source: Lands and Survey. Asaba. 2002.

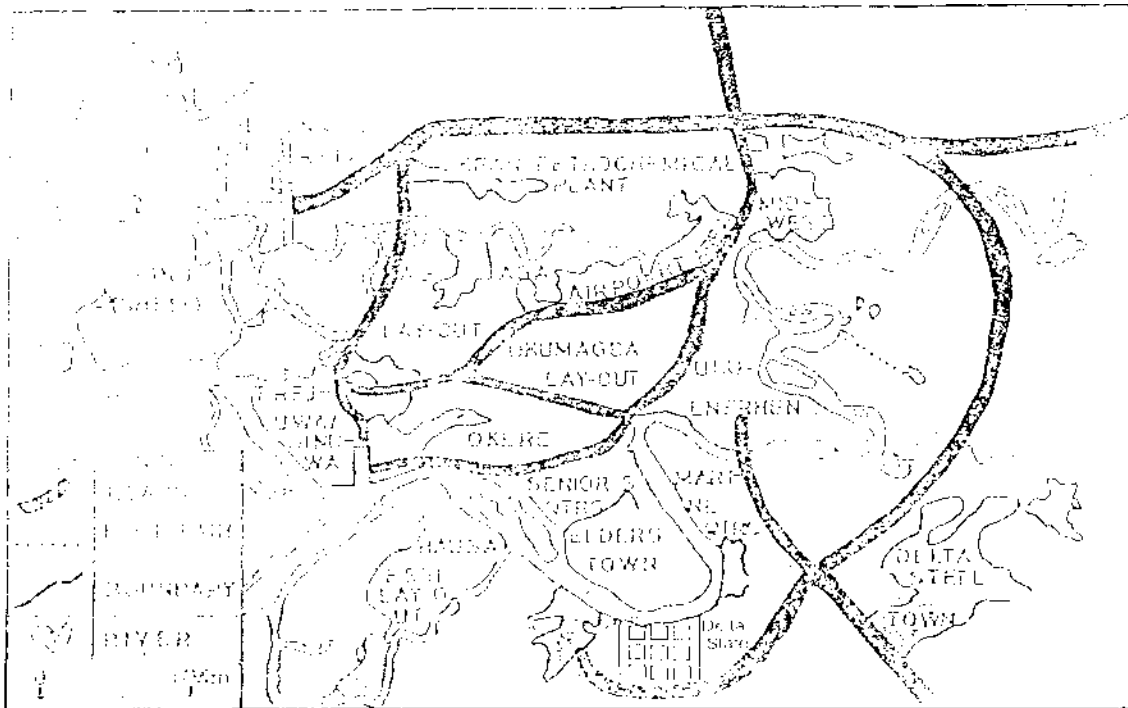


Fig. 2: Warri District Showing Divisions.

Materials and Method of Study

The purpose of this study is to examine the general pattern and attributes of traffic flow in Warri. However, the main objectives of this study include, to examine the causes of traffic congestion on road traffic accidents in Warri metropolis and to examine the land use pattern as regards their influence on transportation.

The primary source of data for this study include the use of oral interview, personal observation of strategic positions mainly junctions/activity centres, these junctions are Enerhen junction, Jakpa junction, Hausa quarters, Okumagba Avenue and Airport junction.

Oral interview was used by the researchers in order to have a face to face interview with some of the road users. The group of people interviewed includes Chairman of motor parks, security men of commercial banks situated along major roads, and traffic police or traffic wardens.

The secondary sources of data used for this study are journal publications, newspapers, government agencies, Shell Petroleum Company, Internet etc.

The collected data was analyzed by the use of the Pearson's Product Moment Correlation Coefficient (r), with an attempt to show the relationship between road network and traffic congestion on road accidents in the study area.

Analysis and Discussion of Results

The effect of land use in Warri metropolis is that where they are present they tend to increase the traffic flow in the areas where they are found and this gives rise to traffic congestion. In the case of Warri, the commercial, residential and industrial land use are the generators of traffic.

However, a research hypothesis was formulated which states that "There is no significant relation between traffic density in relation to land use pattern and yearly road traffic accident Warri metropolis".

Below are various tables representing the different information collected above regarding traffic flow counted and accidents.

Table 1: Traffic Flow Counted in Six Principal Roads/Centres in Warri Metropolis

Road Junction	7-9	9-11	11-1	1-3	3-5	5-7	Total
Eerhen	2290	1670	920	1689	1720	1810	1005
Jakpa	3200	1830	820	1050	2000	2070	1097
Airport Road	2100	1050	750	950	1500	1800	8150
Okumagba	2230	1000	700	770	1700	2000	8400
Hausa Quarters	2500	1100	900	1200	2050	2200	1025
Ekpan	2000	1900	600	1000	1950	2500	1055
Total	14940	8810	1690	6639	1092	12380	5837

Source: Authors Fieldwork, 2001.

From the Table 1 above it can be observed that Jakpa junction attracts 1200 (21.42%) of vehicle traffic between the hours of 7 and 9.00 a.m. While in the evening, it attracts 2070 (16.72%) of traffic flow in the six different locations. This means that the number of vehicles that passed through this point in the morning far exceed vehicles that pass in the evening. This is also indicated that most residents use the point to get to their work place and leave for different locations after work in the evenings.

Table 2: Yearly Accidents Records for Warri Metropolis

Year	Number of Accidents Reported
1990	70
1991	50
1992	158
1993	115
1994	78
1995	61
1996	69
1997	96
1998	51
1999	71
Total	819

Source: Nigerian Police Traffic Log Book Warri. 2000.

From the Table 2 above, it can be observed that there was a decline in the rate of traffic accident over the years from 1990 to 1999 with 1992 recording the highest in ten years and 1998 recording the lowest within the same ten years.

Table 3: Fatal Accidents in Warri

Year	Number of Fatal Accidents
1990	102
1991	13
1992	9
1993	17
1994	12
1995	13
1996	9
1997	13
1998	4
1999	8
Total	200

Source: Nigerian Police Traffic Log Book, Warri, 2000.

From table 5 above it can be observed that there has been a decline in the rate of fatal accidents in Warri metropolis over the years from 1990 to 1999 with 1990 recording the highest in ten years with a figure of 102 representing 51% and 1998 recording the lowest within the same ten years with a figure of 4 representing 2%.

Year	Number of Non fatal Accidents Reported
1990	47
1991	33
1992	62
1997	45
1994	87
1995	52
1996	97
1997	132
1998	4
1999	46
Total	605

Source: Nigeria Police Traffic Log Book, Warri, 2000.

from Table d above it can be observed that there has been an increase in the rate of non fatal accidents in Warri metropolis over the years from 1990 to 1999 with 1997 recording the highest in ten years with a figure of 132 representing 22% and 1998 recording the lowest within the same ten years with a figure of 4 representing 1%.

The Pearson's Product Moment Correlation Coefficient analysis was used to establish a relationship between traffic density and yearly road accidents in Warri metropolis, from the analysis. it was observed that the calculated value obtained is 0.01, while the critical table value is 2.31. This means that since the calculated value is less than the critical table value. H_0 is accepted and H_1 is rejected. The interpretation of the result therefore, is that there is no significant relationship between traffic density and road accidents in Warri metropolis, perhaps other factors could be responsible. Such as (a) Human factors (b) Physical factors i.e. the topography of the land, the muddy nature of the soil, the road network, heavy Rainfall, the resultant Hooding of the area etc, (c) engineering problems i.e. poor drainage system, non availability of traffic lights. Non availability of pedestrian lanes etc (d) Management problems i.e. poor traffic management, location of markets along the roads in the study area, wrong design

or construction of roads especially in the placement of road junctions etc.

Recommendations

1. Re-Orientation of the Land Use Pattern

The land use pattern in Warri metropolis is business oriented as well as residential and thus it houses a substantial percentage of foreign and private establishments. These establishments in themselves are trip generators because they employ a great number of people living in the area, the effect therefore is for workers to troop to Warri in the morning hours causing congestion on the streets and roads and also troop away from Warri after the day's work. Since the problem of congestion in the area lies in the mere fact that a substantial amount of establishments which compose a great percentage of the populace are located in the Warri metropolis, the most obvious thing to do therefore is to pass a law to encourage further location of establishments in the area and distribute headquarters or branches of some establishments to some less congested sites.

2. Effective Use of Facilities

To some degree, congestion along the roads in Warri metropolis stems from the fact that the existing facilities are not effectively utilized. To make the good use of the existing facilities is obviously desirable especially in such traffic management measures as one-way working, junction control and parking control. On most of the roads and at junctions, the traffic lights are provided but are not made use of and the absence of traffic signs on such roads worsens the situation. The fact that this idea of using the traffic light has failed in Warri metropolis is due to bad planning.

and lack of responsibility on the part of the law enforcement agents. In some areas, the lights are in a programmed to meet the flow of traffic in all directions and thus leads to congestion. There should be periodic inspection of the light posts to check burnt out and improper functioning bulbs and also continuous parade of the roads to arrest violators.

The deterioration of traffic signs and/or use of obsolete traffic signs also causes congestion; to some extent, for example worn out one-way signs, no parking signs, no left/right turn and U-turn signs could cause traffic delay due to the fact that road users who are not informed maybe defaulters of such orders and this could cause some delay along the routes. These signs should either be renovated or replaced by the concerned authorities to ensure effective transportation system and sustainable development in Warri metropolis.

3. Better Road Network Characteristics

To ease traffic flow along the routes in Warri metropolis, better road network characteristics must be ensured. For example, the roads have to be better connected to improve their accessibility also roads have to be widened to more lanes to increase their carrying capacity. Better road network characteristics would not only lead to a faster flow of traffic along the routes, it would also make for a well structured road network system and also a faster pace at curbing congestion and accident problems in the Warri metropolis.

Conclusion

The cause of traffic congestion and road accident have been attributed to inadequate parking space, improper location of roads etc. In order to yield substantial returns the roads should be maintained, widened in width, the construction of many malls and provision for parking space and strict enforcement of traffic rules should be used in solving the problems of traffic congestion

A useful starting point for the reduction of accidents on the roads in Warri metropolis is at the initial design and construction stage. A well designed and constructed road will minimize road accidents and promote sustainable development in the transportation system of Warri metropolis

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