

African Research Review

An International Multi-Disciplinary Journal, Ethiopia

Vol. 4 (4), Serial No. 17, October, 2010

ISSN 1994-9057 (Print)

ISSN 2070-0083 (Online)

Urban Traffic Congestion and Its Attendant Health Effects on Road Users in Ado-Ekiti, Nigeria (*Pp. 434-446*)

Awosusi, Ajoke Olukemi - Department of Educational Foundations and Management, Faculty of Education, University of Ado-Ekiti, P.M.B. 5363, Ado-Ekiti, Ekiti State

E-mail: jawosusi@yahoo.com

Telephone: +2348030707463

Akindutire, I.O - Department of Educational Foundations and Management, Faculty of Education, University of Ado-Ekiti, P.M.B. 5363, Ado-Ekiti, Ekiti State.

E-mail: ioakindutire@yahoo.com

GSM: 08033738145

Abstract

This study focused on urban traffic congestion on road users in Ado-Ekiti, Nigeria. It looked critically at the problems, causes and possible remedial measures to urban traffic congestion within the study area. Data for this study were collected from primary sources, through the administration of questionnaires and personal observation. Two sets of questionnaires were designed for this research. One set for members of the National Union of Road Transport Workers (NURTW) within the study area, (100). Another set of questionnaires were randomly administered on other categories of road users (pedestrians, motor cyclist and passengers) within the study area, (100). Results from this study showed that physical break down, mental

effect and psychological effects were the major effects of road traffic congestion on human health in the area. This study therefore recommended that, other alternative transportation system, proper city planning and the construction of interchange and overhead bridges were the panacea to urban traffic congestion in the area.

Keywords: *Congestion, Effects, Health, Road Traffic, and Road Users.*

Introduction

Transportation is an important aspect of human civilization as it reflects the economic level and technological advancement of a given society. Cities and traffic have developed hand-in-hand, since the earliest large human settlement. Urbanization, according to Armah, Yawson and Papsen (2009) noted a myriad challenges to transportation system in relation to negative extremity such as traffic congestion and environmental risk. However, the fact that cars has brought freedom, flexibility and mobility to many people cannot be overlooked, but there is increasing concern about the health and environmental effects of pollution from congested traffic. The same forces that draw inhabitants to congregate in large urban areas lead sometimes to intolerable levels of traffic congestion on urban streets and thoroughfare. Also, rising incomes combined with an increasing propensity from personal mobility and inadequate mass transportation on facilities has resulted in a pronounced increase in automobile ownership and its utilization in major cities. The emergence of traffic and subsequently traffic congestion has opened up the need for improved traffic flow to ensure reduced travel time, safety, average fuel consumption and healthy environments (Ferguson et al, 2004).

Concept of Road Traffic Congestion

Road traffic congestion can be described as a physical phenomenon relating to the manner in which vehicles impede one another's progression as demand for limited road space approaches full capacity. Traffic congestion then occurs when too many vehicles attempt to use common infrastructure with limited capacity (Commuter Pain Survey, 2009).

Traffic congestion occurs when there is excess demand on a highway or road, or when the actual number of vehicles on the road is greater than the capacity of that road to maintain effective traffic flow. Slow speeds, longer trip times, and increased queuing of vehicles characterize traffic congestion (Altshore, 1977).

A period of extreme traffic congestion is also known as traffic jam or gridlock. Gridlock is a term used in describing an inability to move on a transport network. The term originates from a situation in a grid network where intersections are blocked, preventing vehicles from either moving forward or backward through the intersection or backing up to an upstream intersection (Wikipedia, 2009).

Recurrent congestion is generally the consequence of factors that act regularly or periodically on the transportation systems, such as daily commuting or weekend trips. However, even recurrent congestion can display a large degree of randomness, especially in its duration and severity. For example, there are roads that are congested early in the morning when workers are resuming for work. Others are busy in the evening, when workers return home (Carlos, 1999).

Causes of Traffic Congestion

There are a number of specific circumstances that cause or aggravate congestion. Most of them reduce the capacity of a road at a given point or even over a certain length, or increase in the number of vehicles required for a given volume of people or goods (Carlos, 1999).

The phenomenon of road traffic congestion became obvious due to the rapid increase in the number of vehicles because it is affordable, safer and faster. Other possible cause includes lack of alternative means of local transport (rail, air or water transportation), unplanned road works with little or no practical diversions, broken down vehicles left in the middle of the roads, poor road infrastructure and absence of an efficient public transport system. Issuance of road worthy certificates to rickety and road unworthy vehicles and licenses to incompetent drivers and disregard for traffic regulations by drivers are major causes of road traffic congestion.

Besides these palpable causes, employment patterns, income levels and poor maintenance of our roads, shoddy works due to poor supervision and monitoring, corruption and the negligence of duty bearers may cause road traffic congestion indirectly (Ellimah, 2009). In Nigeria generally and in Ado-Ekiti in particular, poor layout of the cities prepared ground for perennial traffic congestion. Ado-Ekiti for example has only one major road which lacerate through the urban centre. All vehicles which need to pass through Ile-Ife have to share the road with vehicles doing local movements.

Impact of Traffic Congestion on Health of Road Users

Health is a state of complete physical, mental and social well being not merely the absence of a disease or infirmity (WHO, 1948)

Physical Impact on Health

Traffic congestion is becoming an increasing source of air pollution. First, traffic congestion increase emissions, motor vehicles emerged as the greatest contributor to atmosphere warming as cars, buses and trucks release pollutants and green house gases that promotes global warming.

Traffic congestion makes motorist to inhale vehicular smoke emission resulting into diseases. Carlos (1999) opined that inhalation of particulate matter is associated with increase in people with asthma, reduction in lung function and admission to hospital for respiratory and cardiovascular diseases. Fergusson, Mahiswalis and Daly (2004) also agreed that air pollution has been lined to morbidity and mortality from various diseases such as coronary disease, aggravation of respiratory disorder and obstructive pulmonary diseases. It is in relation to nasal and ocular symptoms that vehicle exhaust fumes probably have their greatest effects. Surveys in Germany and Japan have shown a higher prevalence of allergic Rhinitis in areas with heavy pollution from automobile exhausts, (Wikipedia, 2010).

Impact on Mental Health

Road traffic congestion creates mental stress. Stress can be caused by the amount of traffic congestion resulting into road rage has become an increasing social problem. It has been the cause of many attacks on car drivers and has even resulted in several deaths. Disorders attributable to stress includes hypertension, headache, backache, skin disorder, irritable bowel syndrome and ulcers. Stress is also believed to contribute to coronary heart disease and some case of cancer (Averbach and Cambling, 1997). Stress can also contribute to some respiratory disorder. For example, stress can trigger asthma while proximity to traffic was recently reported to be associated with wheeze in infants, air pollution related to traffic is significantly associated with triggering of wheezing symptoms in the first 3 years of life (Andersen, et al 2008). Almost one in three drivers suffers from a newly recognized disorder, named "Traffic Stress Syndrome". This is a form of psychological anxiety that certainly affect drivers, while stuck in traffic. Symptoms normally show after being held up in traffic. It is characterized by increased heart rates, headaches, and sweaty palms. In more severe cases, drivers report nausea, dizziness and stomach cramps. The

impact of these symptoms can lead to a loss of concentration and poorer driving as well as heightened levels of anger (www.ace.mmu.ac.uk2010).

Psycho Social Impact

The fact that many of our roads have failed to keep pace with a growing population and increased travel demand, traffic congestion has continued and also economic and social development and also has a negative impact on the environment (Kakooza, et al, 2005). Traffic congestion will result in longer travel times, extra fuel consumption, high-level pollution, discomfort to road users, and degradation of the urban environment (Ellimah, 2009).

Busy streets mean that children are discouraged from playing there or from walking or cycling to school. Besides, there are environmental, societal and business challenges caused by traffic congestion such as tiredness, resulting into weariness of drivers, which can lead to road accident. When employees are stuck in traffic, the tiredness and the stress can result in low productivity (Commuter Pain Survey, 2009). In addition, congestion reduces regional economic health because traffic congestion is proving to be a major cost and inconvenience for many businesses and companies particularly those whose activities demand high level of transport per unit of production. Traffic congestion has an impact on a large proportion of companies to a major degree particularly, when one consider the road haulage cost, delivery schedule from the company and staff punctuality. Delays, which mainly result in late arrival for employment, meetings, and education, resulting in lost business, disciplinary action or other personal losses and wear and tear on vehicles as a result of idling in traffic and frequent acceleration and braking, leading to more frequent repairs, and replacements will result into financial burden on the individual and the nation at large (Ellimah, 2009).

General and Specific Objectives of the Study

The general objective of this study was to examine the pattern of vehicular traffic flow in Ado-Ekiti, to achieve this; the following specific objectives were set.

- i) To identify the causes of urban traffic congestion in Ado-Ekiti
- ii) To examine the problem of urban traffic congestion and its health effects in Ado-Ekiti.

The Study Area

Ado-Ekiti, an ancient city in Nigeria is located between latitudes 7⁰34' and 7⁰41' north of the equator and longitudes 5⁰11' and 5⁰16' east of the

Greenwich meridian. The history of Ado-Ekiti dates back to a period before the advent of Ewi dynasty in 1310 AD. It grew to a town of repute about 700 years ago, when the Oba Ado otherwise called the “Elewi” joined the princely adventure instituted by several children of Oduduwa (From Ile-Ife) to establish their own territories (Ebisemiju 1993). It becomes the headquarters of Ekiti Divisional Council in 1916 and rose to the status of a State Capital on October 1, 1996. It has a total population of 256, 519 people going by the 2006 population census, with the upsurge in urbanization trend in the region, the estimated population of the city could be put around 300, 000 people. Geologically, Ado-Ekiti lies entirely within the pre-Cambrian basement complex rock group, which underlies much of Nigeria. It falls within Koppen’s ‘A’ climate belt that is tropical wet climate. The city is strategically located in Ekiti land at the convergence of major roads forming a radial pattern. These roads are Ado-Ekiti – Akure road passing through Ijan-Ekiti and Aramoko Ekiti, Ado-Ekiti –Ikare road passing through Ijan Ekiti.

Educationally, Ado-Ekiti is in the forefront, it has about 14 Public Secondary schools among which are; Christ’s School, Mary Immaculate, Ado Grammar School etc. Four notable tertiary institutions are located in the city to give qualitative education to the people; they are University of Ado-Ekiti, The Federal Polytechnic, Ekiti State Technical College and The State School of Nursing.

Economically, Ado-Ekiti is undergoing tremendous transformation. No wonder commercial banks such as Union Bank, First Bank, UBA, Oceanic Bank, Intercontinental Bank, Bank PHB and Zenith Bank PLC etc locate in the city to further boost commercial activities. Hotels and Rest Houses such as Pathfinder Hotel, Dave Hotel, After ‘7’ Guest House, Spotless Hotel, Anisulowo Hotel, Fabian Hotel, Olujoda Hotel etc locate strategically in the city to offer recreation and tourism opportunities to people.

As a result of economic, social and political transformation that is taking place in Ado-Ekiti in recent time, the city continues to witness physical expansion in term of buildings, transportation network (roads) duplication of market places, social activities, religious activities, and economic activities. The transformation system of the city is operating below average. This is because, vehicular traffic flow problems get to the peak at the city centre, where motorists spend upward of 20 to 25 minutes to ply a distance of about 500 metres on an average working day (Ogunleye and Ibitoye 2006). The

traffic control measures along major roads in the city are not adequate, road network is in a deplorable condition and parking facilities are not adequately provided. All these are attributable to the fact that the upliftment of the city from a local Government Headquarters status to a state capital in October 1996 did not transcend to infrastructural development (Transport facilities) provision in the city. This particularly accounted for the vehicular traffic flow problem in the city.

Conceptual Framework/Literature Review

The concept of Urban transport infrastructure is applied to this study. Urban transport infrastructure is as complex as the city and the types of modes of transport that service it. This is because different modes have different but complementary facilities. A transportation system however is expected to provide a reliable, safe, comfortable and easily accessible service at reasonable cost to satisfy both temporal and spatial travel demands of the society within which it operated (Altshouse, 1977, Oni 2004). According to Connor (1993) the transport infrastructural need of a city may include;

A. Bus Transport

- i) Rolling stock (buses, maintenance and emergence vehicle)
- ii) Terminal and depots
- iii) Garages and shops
- iv) Office building
- v) Bus stops and shelters
- vi) Road improvement for bus priority
- vii) Fare collection equipments
- viii) Software for routing, inventory and analysis

B. Rail Transport

- i) Track
- ii) Stations including fare collection equipment
- iii) Escalators and elevators
- iv) Rolling stock passengers cars
- v) Other rolling stock, which include work trains, rider cars and hopper cars
- vi) Signals and communications
- vii) Power equipment, substances and circuit breakers
- viii) Ships
- ix) Yards
- x) Depots

- xi) Security systems
- xii) Safety systems, i.e. for plants pump rooms and five suppressant system

In Nigeria, Urban transport is Road based and urban transport infrastructure may be looked at from the perspective of roads and their complementary facilities. Nevertheless, the efficiency and effectiveness of an urban transport system are influenced by the adequacy of each of these elements of the urban transport and infrastructure.

Zhang and Baterman (2003) discovered that traffic congestion increases on-road and near-road pollutant exposure due to increased time in traffic. Traffic congestion causes cars to slow down or even to stop. When cars are idle, they still burn fuel and still release fuel emissions into the atmosphere.

Kenneth (1993) noted that increasing road capacity or the reduction of traffic in a number of ways such as function improvements, through the use of bridges or tunnels, this free movement from having to stop for other crossing movements. Also, adding more line or by removing obstacles and widening tunnels will reduce traffic congestion drastically.

Olomola (2003) stated that the provision of transport infrastructure and services, provide a basis for explaining the incidence of poverty across various Nigerian communities in both urban and rural areas. The categories of transport problems that can be identified are: bad roads, fuel problem (high fuel price, shortage of fuel supply and consequential high transport cost), traffic congestion (long waiting time, bad driving habit, hold-ups), inadequate high passenger capacity/mass transit vehicles and overloading, high cost and shortage of spare parts, poor vehicle maintenance and old vehicles etc.

Methodology

Data for this study were collected from primary sources. Primary data were collected using two sets of structured interview questionnaires, based on the topic of the study. Fifty (50) questionnaires were randomly administered on members of the National Union of Road Transport Workers (NURTW) at old Garage and Fajuyi motor-park in Ado-Ekiti. The questionnaires were administered during working day and collected the following day, through the assistance and co-operation of the Union Chairmen.

Another one hundred (100) questionnaires were randomly administered on categories of respondents (pedestrians, motorcyclist, and passengers etc.)

within the study area, which made it a total of two hundred (200) questionnaires administered.

The questionnaire were administered on weekends and collected the same day in each of the days and areas administered.

Personal observation method of data collection was equally applied in this study. Descriptive method of data analyses using frequency table and percentages were adopted to analyze the data.

Results of Findings and Discussions

The results on whether or not, there is traffic congestion problem in the study area, revealed that 120 (60.0%) of the respondents stated yes, while 80 (40.0%) of the respondents stated no (See table 1). This suggested that traffic congestion problem in the study area was high.

Table 2 presents results on other urban traffic congestion problem in the study area, showed that 70 (35.0%) of the respondents stated narrow roads, 60 (30.0%) of the respondents observed pot-holes, 40 (20.0%) of the respondents noted lack of road traffic signs, while 100 (50.0%) of the respondents stated erosion features. This suggested that narrow roads were the major urban traffic congestion problem in the study area.

Table 3 reveals the results on whether or not there are road traffic facilities in the areas, revealed that 40 (20.0%) of the respondents stated that there were road traffic facilities in their area, 160 (80.0%) of the respondents observed that there were no traffic facilities in their area. This suggested that the level of road traffic facilities in the study area was very low, and as such need to be improved upon.

The findings on the causes of urban traffic congestion in the area showed that 43 (21.5%) of the respondents stated lack of alternative means of transport, 60 (30.0%) of the respondents observed unplanned road network, 15 (7.5%) of the respondents noted abandoned container / broken down vehicles, 2 (1.0%) of the respondents stated bad weather condition, 15 (7.5%) of the respondents stated inadequate road signs, 40 (20.0%) of the respondents noted pot holes, while 30 (15.0%) of the respondents observed narrow roads.(See table 4). This implied that the major cause of road traffic congestion in the study area was the unplanned road network.

The Findings on the major effect of urban traffic congestion on health in the area in table 5 showed that 70 (35.0%) of the respondents stated physical breakdown, 50 (25.0%) of the respondents observed mental effect, while 80 (40.0%) of the respondents noted psychosocial effect. The implication of this is that the major effect of road traffic congestion on health in the study area was psychosocial effects.

The results on how best the management of road traffic congestion could be carried-out in the area as shown in table 6 revealed that 70 (35.0%) of the respondents stated dual carriage way, 60 (30.0%) of the respondents observed the construction of street parking lots, 20 (10.0%) of the respondents observed the provision of mass transit vehicles, while 50 (25.0%) of the respondents noted adequate provision / improved road traffic infrastructures. This suggested that the construction of dual carriage ways in the study area will bring immediate relief to the problem of road traffic congestion in the study area.

Conclusion

Urban traffic congestion is frustrating to drivers, commuters and pedestrians, because it creates gridlock, distort incentives and causes pollution. Traffic congestion is a phenomenon that can be effectively managed, if the government can expand road capacity in the congested areas.

Recommendations

In-view of the findings in this study, there are needs for the provision of alternative transportation system in the study area, such as public buses and high-speed trains.

- There is need for the provision of the appropriate road traffic signs in the area.
- There is need for proper city planning and urban design practices in the area, for this will have huge impact on the levels of future traffic congestion in the study area.
- The construction of interchange and overhead bridges must be extended to major junctions to free movements from motorists having to stop for other crossing movements.
- Road users namely drivers and pedestrians should know exactly, what is expected of them. This can be achieved through regular sensitization programmes in the media.

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Table 1: Whether or not, Traffic Congestion Problem exists in the StudyArea

Issues	Frequency	Percentage
Yes	120	60.0
No	80	40.0
Total	200	100.0

Source: Author’s Fieldwork Report, 2010

Table 2: Other Urban Traffic Problems in the Area

Issues	Frequency	Percentage
Narrow roads	70	35.0
Pot holes	60	30.0
Lack of road traffic signs	40	20.0
Erosion Features	30	15.0
Total	200	100.0

Source: Author’s Fieldwork Report, 2010

Table 3: Whether or not There are Road Traffic Facilities in the Area.

Issues	Frequency	Percentage
Yes	40	20.0
No	160	80.0
Total	200	100.0

Source: Author's Fieldwork Report, 2010

Table 4: Causes of Road Traffic Congestion in the Area

Issues	Frequency	Percentage
Lack of alternative means of transport	43	21.5
Unplanned road network	60	30.0
Abandoned containers/broken down vehicles	15	7.5
Bad weather	2	1.0
Inadequate road signs	15	7.5
Pot holes	40	20.0
Narrow roads	25	12.5
Total	200	100.0

Source: Author's Fieldwork Report, 2010

Table 5: Major Effect of Road Traffic Congestion on Human Health in the Study Area

Issues	Frequency	Percentage
Physical break-down	70	35.0
Mental effect	50	25.0
Psychosocial effect	80	40.0
Total	200	100.0

Source: Author's Fieldwork Report, 2010

Table 6: How Best the Management of Road Traffic Congestion in the Study Area Could be Carried-out.

Issues	Frequency	Percentage
Dual carriage way	70	35.0
Street parking lots	60	30.0
Mass transits	20	10.0
Adequate /improved road infrastructures.	50	25.0
Total	200	100.0

Source: Author's Fieldwork Report, 2010