



Research Paper

## Urbanization and Transportation Crisis in Urban Centres: The Panacea

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### ABSTRACT

Urbanization and transportation crisis is a topical issue among urban planners, developers, urban administrators, and other practitioners. The driving forces and dynamics of rapid urbanization, highlighting the main causes and effects of urban explosion, environmental disruption, and city pattern transformation couple with transportation crisis. This study adopts survey method using both primary and secondary data, questionnaires was administered among forty (40) officials of Enugu State Ministry of Transport (MOT), thirty (30) commuters and thirty (30) urban dwellers. Making the total sample size one hundred (100). The general objective of the study is to examine urbanization and transportation crisis in urban centres while the specific objectives are to examine the challenges associated with urban transportation, to look at the impact of increase in population growth on urban transportation, to investigate the effect of lack of parking space on transportation in urban centres, to explore the consequences of traffic congestion on urban transportation and to proffer recommendations to these challenges. The study revealed that Population explosion is one of the major factors responsible for urban transportation crisis, the study further reveals that traffic congestion is associated with urban transportation, the emission of carbon by motorist or noise pollution caused by motorist is harmful to human health, there is a challenge of parking space which is occasioned by high ownership of vehicles, long trip is embarked upon by commuters due to traffic congestion and high cost of maintaining infrastructures due to high population density. The study recommends urgent need for infrastructure expansion to accommodate rural migrants, provision of parking space to accommodate commuters, improvement of virility of the urban transport system, ensure its people-centeredness, which underlines a strategic conceptualization that sees Enugu urban transport system as part and parcel of national development aspiration and legislative policy frameworks that will enhance the entire transport sector in Enugu state.

**KEYWORDS:** urbanization, Transportation crisis, population explosion, traffic congestion, lack of parking space.

Received 25 May, 2021; Revised: 06 June, 2021; Accepted 08 June, 2021 © The author(s) 2021.

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### I. INTRODUCTION

Transport remains a non-negotiable instrument of city development and functioning as the urban centres worldwide rely on efficient transportation to function efficiently. An important feature of urbanization is that of rapid growth and uncontrolled horizontal motion of city. All these, coupled with inadequate transport infrastructure and services has dramatized urban transportation into chaotic, complex and almost intractable nature. Generally, transport system revealed a sector suffering from a warped developmental approach thus constituting overwhelming challenges on urban transportation.

The mass exodus of people from the rural areas to urban centre in search of quality livelihood or greener pasture, has further compounded the transportation crisis experienced in major urban centres across the globe. This has brought about traffic jam, reckless driving as most of drivers are not well experienced but needed to take up the transportation business as a means of livelihood or providing for their families. These have led to road crashes, WHO (2018) noted that ‘road traffic crashes, many of which occur in urban areas,

claim the lives of 1.35 million people per year. More than half of all road traffic deaths are pedestrians, cyclists, and motorcyclists”. Ezeodili (2003) argued that

“the transportation challenges are two dimensions: an increasing stultifying traffic jam, which is frequently the direct consequence of high population density, and deep concentration of commercial establishments in an urban area. secondly, the problem of network of routes throughout the urban area and ensuring adequate provision as the area increases in size. He further stresses that, provision of suitable and adequate parking space for vehicles in urban centres has always been the problem of urban government.”

As this has degenerated into serious problem of wrong parking, blocking of exit routes and passages for other road users, there is also cases of extortion by law enforcement officers for defaulters even though it is suspected that the law enforcement officers deliberately remove those signs in order to make money from motorists.

The study suggested among others, a combined efforts and understandings of academia, transport practitioners and policy makers at various tier of government towards lasting solutions to urban transportation challenges in emerging economy in the world with particular reference to Nigeria and Enugu state urban. The study adopted a comparative analysis of urbanization and transportation crisis in emerging economy in the world, the study further looked at the challenges associated with urban transportation. Solutions to the identified challenges were proffered to conclude the study.

## **STATEMENT OF THE PROBLEM**

It is suspected that transportation crisis experienced at urban centres across the globe and Enugu in particular is as a result of increase in population growth, occasioned by mass exodus of people from rural areas to urban centre in search of better livelihood. Ezeodili (2010) rightly noted that, “an increasing stultifying traffic jam, which is a direct consequence of high population density in urban centres”. There is also an issue of parking space as car users outnumber the parking space. According to Kombs (1988), “inadequate parking space accounts for 34% of parking problems in Lagos and other major urban centres in Nigeria. Noise pollution from motorist which has advert effect on human health is also experienced by urban dwellers due to the transportation crisis”. WHO (2011) observed that

“exposure to prolonged or excessive noise has been shown to cause a range of health problems ranging from stress, poor concentration, productivity losses in the workplace, and communication difficulties and fatigue from lack of sleep, to more serious issues such as cardiovascular disease, cognitive impairment, tinnitus and hearing loss.”

In a separate study by Musisi-Nkambwe (1986) “transport accounts for 50% of unwanted sounds in the city and create irritation, dissatisfaction and disturbance to urban residents”. It against this backdrop that this study seeks to look at the challenges associated with transportation in urban centres as a result of urbanization using three indicators: Increase in population, traffic jam and lack of parking space.

### **1.1. OBJECTIVE OF THE STUDY**

The general objective of this study is to examine urbanization and transportation crisis in urban centre while the specific objectives are as follows

1. To examine the challenges associated with urban transportation
2. To look at the impact of increase in population growth on urban transportation
3. To investigate the effect of lack of parking space on transportation in urban centres
4. To explore the consequences of traffic jam on urban transportation
5. To proffer recommendation to these challenges

### **1.2. RESEARCH QUESTIONS**

1. What are the challenges associated with urban transportation?
2. To what extent does increase in population growth affect urban transportation?
3. What are the issues associated with lack of parking space in urban transportation?
4. To what decree does traffic jam impact on transportation in urban centre?
5. What are the various ways of mitigating transportation crisis in urban centre?

## **II. REVIEW OF RELATED LITERATURE**

### **2.1. CONCEPTUAL REVIEW**

#### **2.1.1. CONCEPT OF URBANIZATION IN NIGERIA**

Dacosta and Claire (2004)

“believe that an urban area is an area that is made up of small cities. There are different types of urban areas e.g. small-big/mega cities. A small city comprises of less than 200,000 registered residents and medium city has

200,000- 500,000 while big cities have up to 500,000 – 1,000,000 registered residents. Metropolitan cities inhabit more than 1 million and above registered dwellers.”

Urbanization is the population shift from rural to urban areas, the decrease in the proportion of people living in rural areas, and the ways in which societies adapt to this change. It is predominantly the process by which towns and cities are formed and become larger as more people begin living and working in central areas. Also, in 2004 Pumain, “stressed that urban centers are regarded as those with population of 1500 or greater”, while Kalwani (2011),

“Argue that urban areas have two sub urban system known as the intra-urban and inter urban systems. Like other concepts in political science the concept of urban system eludes comprehensive definition. He believes that, it is a difficult problem because towns and cities can receive a variety of social meanings.”

Thus, there are several varying definitions of the urban system. Urban entity however, can be defined as a permanent grouping of resident population on a small quantity of land. There is no universal threshold of population density that can be associated to such definition by Pumain, (2004), the ambiguity of defining the term urban area arise from several factors which include among others, Services: The fact that some rural areas offer services found in urban areas, sociological criteria, which denies the physical feature of an urban fabric, the concept of ‘settlement continuum’ which makes it difficult to draw a clear divide line between urban and rural areas, as well as the elusiveness of the term “urban” which keeps on changing with social development over time.

Kalwani, (2011) the term urban is delicate for there is no one conventional definition. Kalwani, stretched that each country has its own definition along the following commonly applied criteria: Demographic (based on population factors). Population size as criterion for the distinction of urban from rural areas; and density criteria also range differently from country to country e.g. In India a settlement with over 386 persons per km<sup>2</sup> is regarded urban.

- i. Legal definition – This is arbitrarily determined by individual countries’ regulation on what criteria to use in defining an urban area. (Kalwani, 2011)
- ii. The term "urban" includes land areas, populations and housing developments located in urbanized areas, such as cities and towns or urban clusters, while "rural" refers to territory, populations and housing units located outside urbanized areas or clusters. Urban areas or urban centres feature densely populated landscapes, and typically have census-determined population densities of more than 1,000 residents per square mile. Rural areas, in contrast, generally have fewer than 500 people per square mile, and fall outside the borders of urbanized areas, urban clusters and their surrounding census blocks.
- iii. According to Weeks (2008) “urban is a characteristic of place, rather than of people”. Places are typically defined as” urban “, and on the bases of definition of the people living there are thought of as being part of the urban population. But we still do not usually apply the term “urban” to a person. The personal adjective urbane still occasionally, used to describe a person is defined by the Oxford English dictionary “as having the qualities or characteristics associated with town or city especially elegant and refined in manners, courteous, suave, sophisticated”. If we agreed that urban is a place –based characteristics, then we can proceed to define an urban as a spatial concentration of people whose lives are organized around non-agricultural, whereas rural means any place that is not urban.

From the above definition of Weeks and other scholars, a farming village of 5000 people should not be call urban, whereas a tourist resort or an artist colony of 2500 people may well be correctly called and designated as urban place. but there is an exemption to this as what constitute an urban centre varies from country to country. For example what constitute urban centre in Nigeria is pegged at 20000 and above.

For this study, urbanization refers to a process of concentration of the population in large numbers in an urban centre and transformation of the society involving migration and economic changes. Urbanization in Nigeria has a long standing history ranging the ancient time to pre-colonial, colonial and post-colonial era, where kingdoms like the Hausa empire, Niger Delta city states, Borno empire and Oyo empire where functioning as urban centres. According to Mabogunje (1968)

“Kano had a population of about 30,000 around 1855, while Zaria had a population of about 45,000 in 1925. Other noticeable cities in the 19th century in the Northern Nigeria include Yauri, Gumel, Katsina and Sokoto whose growth and development were attributed to trade and administration.”

In the Southern part of the country, urban development began in the 18th century and is associated with the founding and growth of the Oyo and Benin Empires. Oyesiku (1998)

“As far back as 1857, Hinder, a missionary, estimated the population of Ibadan to be 100,000. J Abeokuta 60,000, Ogbomosho, 50,000, Ilorin 70,000 and Isonyin 24000. Trading, marketing and administration were major factors responsible for growth and development of these cities.”

The second half of the 20th century witnessed rapid rate of urbanization. The introduction of wheeled transportation, particularly Railway and road; categorization of settlement into hierarchical order of township and introduction of monetized economy and consequently production of cash crops and exploitation of mineral

resources which led to the development of ‘islands’ of economic and administrative concentration such as Lagos, Ibadan, Kaduna, Jos and Enugu.

Other two important factors that can be linked with growth and development of cities in the country are: (i) continuous geopolitical restructuring, through creation of states and local governments and (ii) the industrialization process between 1960 and 1975, which was based on import substitution strategies and consumer market for imported goods and services.

World Bank (2003)

“The increasing level of concentration of people in urban centres of Nigeria is summarized in Table 1. Nigeria was 10.2% urbanized between 1952 and 1954. This increased to 19.2% in 1963 and jumped to 42% in 2002. Estimation also suggests further increase to 68% by 2020. The case of Lagos is particularly unique. It has one of the fastest growth rates in the world (between 5 and 8 percent per annum) and has become one of the 15 largest agglomerations in the world.”

An important inference from the pattern and level of urbanization in Nigeria is that the rate of urban growth remains one of the highest in the world; and the rate of urbanization far outstrips the pace of economic development.

The increase in the rate of urbanization and the growth in the number of cities are not as alarming as the scaring and unsatisfactory situation in the cities. The alarming situation of urban transportation in the wake of ever-increasing growth and level of concentration of cities in the country is of great concern

**Table 1.** Nigerian Population 1921-2020

Year	Total population 000s	Urban Population as % of Total Population
1921	18,720	4.8
1931	20056	6.7
1952/54	30,402	10.2
1963	55,670	19.2
1972	78924	25.1
1991	96684	33.0
2002	120,000	42.0
2020	160000	68.0

Sources: Population censuses of Nigeria, 1952, 1963 and 1991 and projections of same based on 5% annual growth rate for urban areas.

### 2.1.2. CHALLENGES OF URBAN TRANSPORTATION IN NIGERIA

The transportation system in urban centres of Nigeria is beset with numerous challenges. Generally, the analysis of Nigeria’s transport system revealed a sector suffering from warped or defective developmental approach. Badejo (2011) observed that, ‘there is evidence of skewed modal development tilted in favour of road transportation to the disadvantage of other means of transportation’.

Badejo (2011) further stresses that

“road transportation accounts for about 90% of both freight and passenger transport in Nigeria; in a sharp contrast to its natural advantage of being good for short to medium distance freight haulage. Nowadays, road transport is almost solely responsible for the carriage of bulk goods throughout the length and breadth of the country. Whereas goods arriving by water are economically cheap to be transported from the port by rail or inland waterways, the ports, except in the case of Port Harcourt and Apapa ports have neither rail nor waterways connection leaving road as the only option. This obviously constitutes improper use of the road and unfortunately has translated into a huge national burden; affecting smooth flow of traffic in urban centres.”

In a nutshell, the urban transport challenges in Nigeria today include traffic congestion, parking problems, accidents and environmental pollution. In some major cities, like Enugu, Lagos, Abuja, Ibadan vehicles are seen crawling on the roads especially in both the morning and evening peak periods. This amounts to daily loss of time and energy in our various urban centres.

In most cities, majority of the urban populace depend on public transport for their mobility needs; This is dominated by the private sector operating such vehicles as taxi; para-transit mini buses, fare paying passenger carrying private cars (also known as ‘kabukabu’) and motorcycles (two wheel) and three-wheeled motorcycles operated in most urban centres.

In most cities, demands for parking far outweigh available supply. According to Kombs (1988), ‘inadequate parking space accounts for 34% of parking problems in Lagos. Noise pollution is also a noticeable feature in urban centres’. Musisi-Nkambwe (1986) noted that ‘transport accounts for 50% of unwanted sounds in the city and create irritation, dissatisfaction and disturbance to urban residents’.

Behind these challenges are some basic factors. Population and spatial forms of the city are growing at fast rate creating a greater demand for transport infrastructure and services. For instance, Nigeria’s urban population has been growing at an annual rate of about 12% (Badejo, 2011:4), thrice more than the overall

growth rate (3.4%) of the nation. While cities keep attracting droves of population from the peripheries, the cities, in turn are bursting at the seams.

## **2.2. EMPIRICAL REVIEW**

Transportation crisis is a burning issue among practitioners, in a study by Yang and Andres (2016) the economic and financial crisis has been impacting European countries since 2008 at different degrees. The study was aimed at finding out if the statistical analysis of land use and mobility can help to answer the question of what happens during economic crisis on both land use and transport system, and unveiling key spatial relationships between them.

The methodology for the analysis was developed accordingly with the data and resources available. First, an exploratory data analysis (EDA) is performed in order to identify the land use and mobility pattern during the last decade. It focuses on six aspects, which are distribution of population and dwellings, employment and jobs, GDP, motorization and modal split. The second aspect consists on crossing the spatial patterns of the different aspects in order to find some explanatory relationships that indicate the presence of the key characteristics. Through the exploration analysis, we find that there is a close relationship between the land-use system and travel behaviour in Madrid Region. With an increasing of new dwellings constructed in the outer periphery of Madrid Region, it leads longer trips distance and more travel cost particularly by car mode. Moreover, during the economic crisis, we also find the motorization level of Madrid keeps the same, as a result of the decreasing GDP and relatively decreasing household income. While Rukmana (2018) carried out a secondary study of rapid urbanization and the need for sustainable transportation policies in Jakarta. The study shows that Jakarta have witness in the last two decades heavy traffic congestions and lastly, urbanization in Jakarta has contributed to the need for sustainable transportation policies in Jakarta. The study recommended the development of MRT as a viable solution to alleviate the acute traffic jams in Jakarta and the need to implement other innovative sustainable transportation policies including promoting active live through more walking and bicycling, carpool matching services, shuttle services, telecommunication and downzoning in downtown areas.

In another study by Edem (2019) titled Poor Public Transport Infrastructure in Lagos, he stresses that the urbanization of cities has been a more deliberated issue for decades, with visible implementation stipulated by countries towards sustainable implementation of policy and infrastructures that suits the environment at present and for future developments. The effect of these implementations has also seen more research on effective ways to reducing environmental pollutions, and better healthy standard for humanity.

The study used secondary data was adopted based on information collected online from various publication and journals, official statistics of the government and thesis works. The study reveals that there is pressure on infrastructure due to population explode and there is high usage of vehicle with high carbon emission capacity. The study recommended the need for encouraging usage of zero carbon emission vehicles to keep the environment and human health safe. In a separate study by Eze, Ugwoke and Ugwoke (2019) on road traffic congestion and vehicular emissions in Enugu urban Nigeria. Using the primary source of data, questionnaires was administered to commercial motorists and environmental professionals using systematic and purposive sampling techniques. The findings shows that Ogbete road experienced traffic congestion during both peak and non-peak periods while other experimental routes experienced traffic congestion only during peak period and relatively free flow during non-peak period, secondly, road side obstructions (lateral obstruction) constitute the major cause of traffic congestion on the experimental study routes especially Ogbete road and lastly, the degree of traffic congestion on the experimental study routes is in the following order Ogbete road>Kenyatta road>Abakpa-Nike road. The study recommends the provision of required road facilities, enforcement of traffic control laws by relevant authorities and good transportation management system in the study areas.

In 2019, Andrew carried out a study on transport challenges in rapidly growing cities: I there a magic bullet? Andrew makes use of secondary data by reviewing relevant literature. The research outcome shows that, more than half of the world's population now lives in cites, and projections indicate that urban areas will account for 60% of global population by 2030, secondly, cities are growing in number, population and land area and lastly, in 2018 there were 548 cities with at least one million people, and that number is expected to grow to 706 cities by 2030. The study concludes by recommending the use of Automated Vehicles (AVs) will results in real and substantial improvements in urban transportation, but how cities decide to introduce and integrate them into their transportation systems will be more critical than the technology itself.

Sudarsanam and Sanjay (2020) did a similar study in India titled Urbanization and Urban Transport in India: The sketch for a policy, using a self-administered questionnaire. The findings reveal that, the urban population in India has increased significantly from 62 million in 1951 to 285 million in 2001. In terms of percentage of total population, the urban population has gone up from 17% in 1951 to 29% in 2001 and is expected to increase up to around 37% by the year 2021. Secondly, among various factors affecting the quality

of life and safety in a city, the transport system is among the most important as it has a direct correlation with air quality and safety. Thirdly, the urban transport situation in large cities in India is deteriorating. The deterioration is faster in metropolitan cities where there is an excessive concentration of vehicles. Commuters in these cities are faced with acute road congestion, energy wastage, rising air pollution, and a high rate of accident risk. The research concludes by recommending the need for a concise and cogent policy, complete overhaul of public transport management in India and population control.

### III. SUMMARY OF EMPIRICAL REVIEW

Year	Author(s)	Title of Research/ Location	Methodology	Findings	Recommendation
2016	Yang, W and Andres M	Economic crisis and its influences on the interaction between land use and transport in Madrid Region	Exploratory data Analysis (EDA)	<p>There is a close relationship between the land-use system and travel behaviour in Madrid Region. With an increasing of new dwellings constructed in the outer periphery of Madrid Region, it leads longer trips distance and more travel cost particularly by car mode.</p> <p>Secondly, the motorization level of Madrid keeps the same, as a result of the decreasing GDP and relatively decreasing household income.</p> <p>Thirdly, Most significantly, as the level of PT service decreases, the use of public transport decreases and car use increase in the whole region. It leads to more congestion and energy consumption</p> <p>Lastly, results show a close link between land use and transport and have clear implications for transport policy and sustainability.</p>	The study recommends a total overhauling of the land use act in Madrid region to give room for proper restructuring of the public transport services
2020	Sudarsanam, P and Sanjay, K. S	Urbanization and Urban Transport in India: The Sketch for A Policy	Self- administered questionnaires	<p>The urban population in India has increased significantly from 62 million in 1951 to 285 million in 2001 and is estimated to grow to around 540 million by the year 2021. In terms of percentage of total population, the urban population has gone up from 17% in 1951 to 29% in 2001 and is expected to increase up to around 37% by the year 2021</p> <p>Secondly, among various factors affecting the quality of life and safety in a city, the transport system is among the most important. It has a direct correlation with air quality and safety</p> <p>Thirdly, The urban transport situation in large cities in India is deteriorating. The deterioration is faster in metropolitan cities where there is an excessive concentration of vehicles. Commuters in these cities are faced with acute road congestion, energy wastage, rising air pollution, and a high rate of accident risk</p>	<p>There is need for a concise and cogent policy</p> <p>There is also a need for complete overhaul of public transport management in India</p> <p>Population control</p>
2019	Edem, J. T	Poor Public Transport Infrastructure in Lagos Nigeria, How Sustainable Improvement could enhance well-being of the people and provide environmental benefits	Secondary source of data was adopted based on information collected online from various publication and journals, official	<p>There is pressure on infrastructure due to population explode</p> <p>There is a high usage of vehicle with high carbon emission capacity</p>	<p>Infrastructure upgrade is very much needed in the public transport sector of Lagos state</p> <p>The need for encouraging usage of zero carbon emission vehicles to keep the</p>

			statistics of the government and thesis works		environment and human health safe
2019	Eze C.T, Ugwoke J.L and Ugwoke J. J	Road traffic congestion and vehicular emissions in Enugu urban Nigeria	Questionnaires were administered to commercial motorists and environmental professionals using systematic and purposive sampling techniques	<p>1. Ogbete road experienced traffic congestion during both peak and non-peak periods while other experimental routes experienced traffic congestion only during peak period and relatively free flow during non-peak period</p> <p>2. The study revealed that road side obstructions (lateral obstruction) constitute the major cause of traffic congestion on the experimental study routes especially at Ogbete Road</p> <p>3. The degree of traffic congestion on the experimental study routes is in the following order Ogbete Road &gt; Kenyatta Road &gt; Abakpa-Nike Road.</p>	The provision of required road facilities, enforcement of traffic control laws by relevant authorities and good transportation management system in the study area.
2019	Andrew R. G	Transport challenges in rapidly growing cities: is there a magic bullet?	Secondary data, related literature was reviewed	<p>More than half of the world's population now lives in cities, and projections indicate that urban areas will account for 60% of global population by 2030</p> <p>Secondly, Cities are growing in number, population and land area</p> <p>Thirdly, In 2018, there were 548 cities with at least 1million people, and that number is expected to grow to 706 cities by 2030</p>	Automated Vehicles (AVs) will result in real and substantial improvements in urban transportation, but how cities decide to introduce and integrate them into their transportation systems will be more critical than the technology itself
2018	Rukmana, D	Rapid urbanization and the need for sustainable transportation policies in Jakarta	Secondary data	<p>1. Jakarta have witness in the last two decades heavy traffic congestions rapid</p> <p>2. Urbanization in Jakarta has contributed to the need for sustainable transportation policies in Jakarta.</p>	<p>1.The development of Mass Rapid Transport could be viable solutions to alleviate the acute traffic jams in Jakarta.</p> <p>2.Jakarta will need to implement other innovative sustainable transportation policies including promoting active live through more walking and bicycling, carpool matching services, shuttle services, telecommuting and downzoning in downtown areas.</p>

#### IV. DATA PRESENTATION AND ANALYSIS

##### 4.1. DATA PRESENTATION AND ANALYSIS

From the table below, the population for this study is 100 respondents selected from Enugu State Ministry of Transport, Commuters and urban dwellers. The respondents are staff resident in these agencies cum ministries.

**Table 2 showing the distribution of respondents**

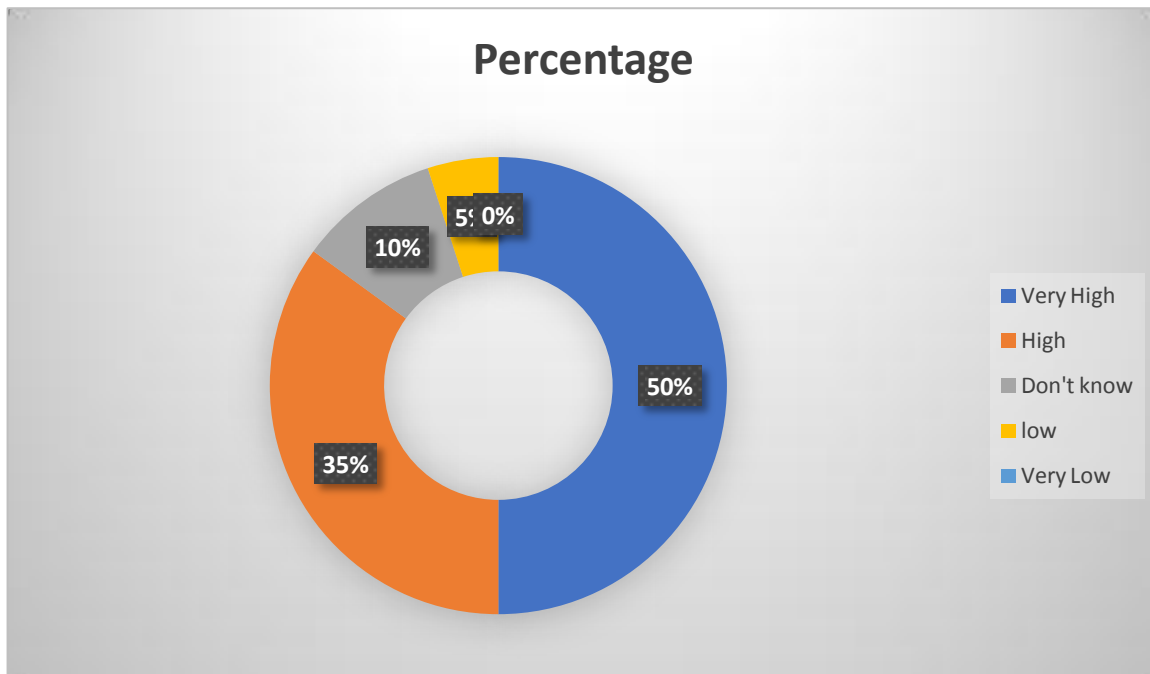
<b>Organizations</b>	<b>Sample Size</b>
Enugu State Ministry of Transport (MOT)	40
Commuters	30
Urban dwellers	30
<b>TOTAL</b>	<b>100</b>

Source: Field survey 2021.

#### 4.2 DISCUSSION OF FINDINGS

under this section, both analysis and discussion of findings are combined. Both the positive and negative responses are analyzed and discussed.

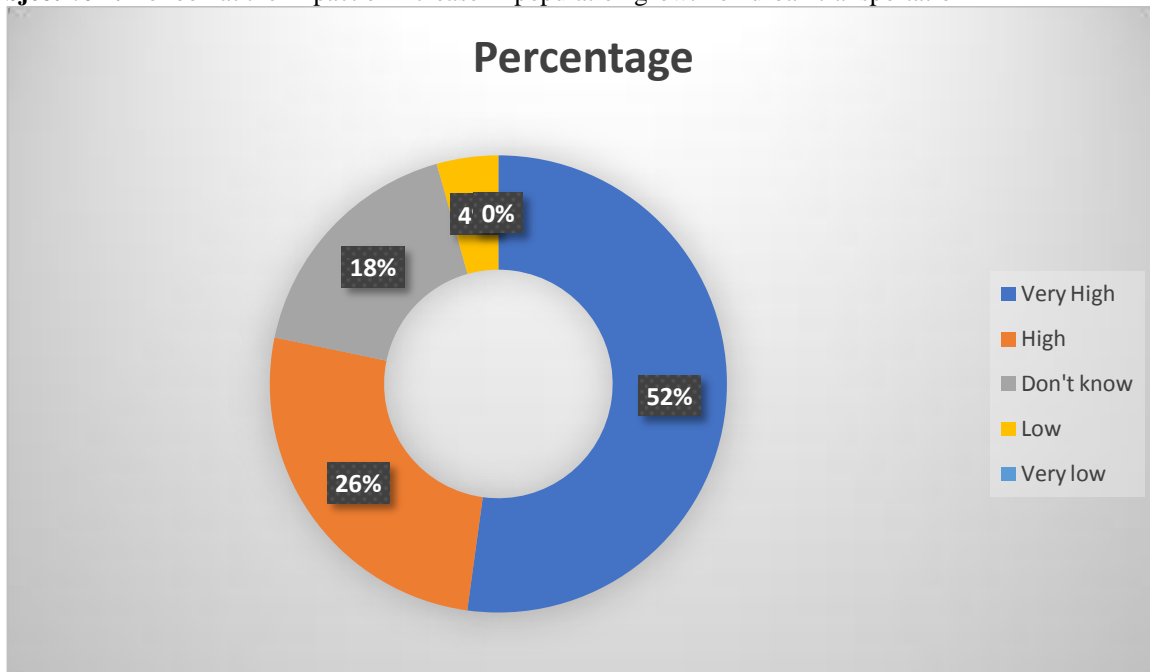
**Objective 1:** To examine the challenges associated with urban transportation



From the responses above, 50% of the respondents noted that one of the challenges associated with urban transportation is traffic congestion. Traffic congestion is prevalent in major cities, in Enugu metropolis traffic congestion is seen in Ogbete market road, Holy Ghost, Abakpa, Trans-Ekulu bridge, Zik Avenue, Abakpa junction, new market roundabout, Kenyetta market, Gariki, WTC amongst others. Congestion is particularly linked with motorization and the diffusion of the automobile, which has increased the demand for transport infrastructures. However, the supply of infrastructures has often not been able to keep up with mobility growth. The government is doing little or nothing to upgrade facilities to bridge the gap between population growth and transportation systems in urban centres. 35% of the respondent observed that, traffic congestion is high in Enugu metropolis, leading longer time of commuting. On par with congestion, people are spending an increasing amount of time commuting between their residence and workplace. An important factor behind this trend is related to residential affordability as housing located further away from central areas (where most of the employment remains) is more affordable. Therefore, commuters are exchanging commuting time for housing affordability. However, long commuting is linked with several social problems, such as isolation (less time spent with family or friends), as well as poorer health (obesity). Time spent during commuting is at the expense of other economic and social activities. However, information technologies have allowed commuters to perform a variety of tasks while traveling. 10% said they don't know while 5% and 10% said low and very low respectively.



**Objective 2:** To look at the impact of increase in population growth on urban transportation

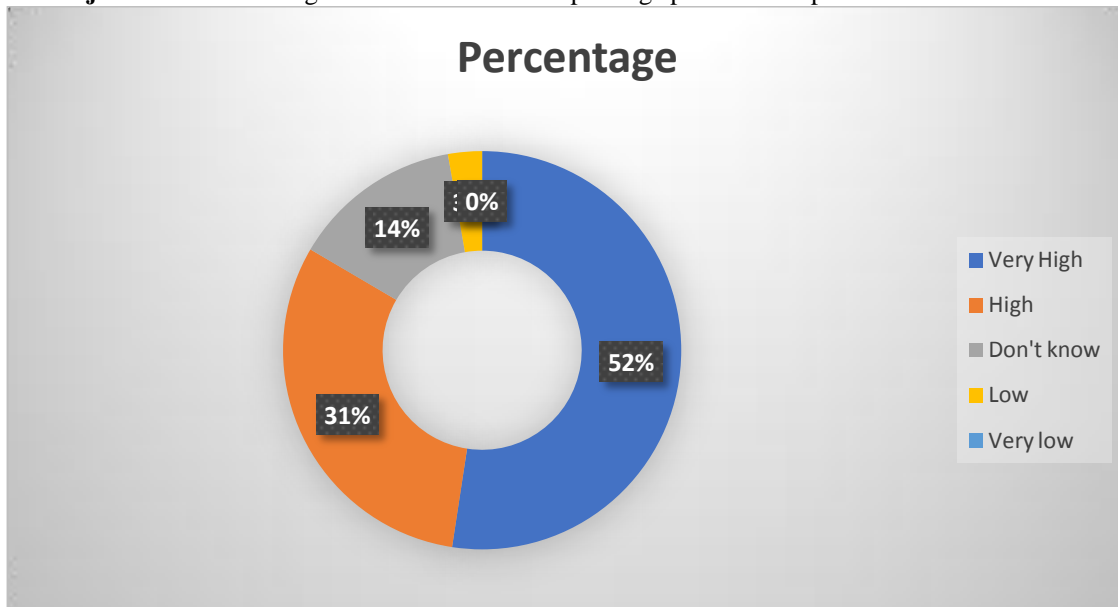


52% of the respondents indicated that population increase as a result of influx of people from the rural areas to urban centre, they either looking for greener pasture or better way of livelihood. This result in stressing infrastructures and facilities, making maintenance cost high as such resulting in poor maintenance of infrastructures.

Cities facing the aging of their transport infrastructure have to assume growing maintenance costs as well as pressures to upgrade to more modern infrastructure. In addition to the involved costs, maintenance and repair activities create circulation disruptions. Delayed maintenance is rather common since it conveys the benefit of keeping current costs low, but at the expense of higher future costs and, on some occasions, the risk of infrastructure failure. The more extensive the road and highway network, the higher the maintenance cost and its financial burden. The same applies to public transit infrastructure that requires a system-wide maintenance strategy.

26% of the respondents further indicated that with the increase in population, its impact on transportation in urban centres is high as it affects the environment as a result of more seconded vehicles are in circulation to cohesion transportation challenges. Thereby resulting in emission of carbon into the environment, which is harmful to human health. Pollution, including noise generated by circulation, has become an impediment to the quality of life and even the health of urban populations. Further, energy consumption by urban transportation has dramatically increased, and so the dependency on petroleum. These considerations are increasingly linked with peak mobility expectations were high energy prices incite a shift towards more efficient and sustainable forms of urban transportation, namely public transit. There are pressures to “decarbonize” urban transport systems, particularly with the diffusion of alternative energy sources such as electric vehicles. 18% responded by saying they don’t know while 18% and 4% respectively noted that the impact of population increase on urban transportation is low and very low.

**Objective 3:** To investigate the effect of lack of parking space on transportation in urban centres



52% of the respondents noted that owing vehicles in Enugu is a necessity, as such motorization has expanded the demand for parking space, which has created footprint problems, particularly in central areas where the footprint of parked vehicles is significant. Congestion and parking are also interrelated since street parking consumes transport capacity, removing one or two lanes for circulation along urban roads. Further, looking for a parking space (called “cruising”) creates additional delays and impairs local circulation. In central areas of large cities, cruising may account for more than 10% of the local circulation, as drivers can spend up to 20 minutes looking for a parking spot. This practice is often judged more economically effective than using a paying off-street parking facility. The time spent looking for a free (or low cost) parking space is compensated by the monetary savings. Parking also impairs deliveries as many delivery vehicles will double-park at the closest possible spot to unload their cargo. Major markets in Enugu lack parking space as the facilities are not up to standard especially Ogbete market, Abakpa market, New Heaven market where parking space is problematic

Identifying the true cause of congestion is a strategic issue for urban planning since congestion is commonly the outcome of specific circumstances such as the lack of parking or poorly synchronized traffic signals.

#### 4.3. SUMMARY

The finding so far shows that:

1. Population explosion is one of the major factors responsible for urban transportation crisis which is not cost effective with regards to infrastructural maintenance
2. The study further reveals that traffic congestion is associated with urban transportation
3. The emission of carbon by motorist or noise pollution caused by motorist is harmful to human health
4. There is a challenge of parking space which is occasioned by high ownership of vehicles
5. Long trip is embarked upon by commuters due to traffic congestion

#### 4.4. CONCLUSION

It is an established fact that consequent upon rapid population growth and horizontal motion of cities, so widespread are the dimensions of transport challenges in urban areas; although each city/town has its own specific transport problems. Several measures had been attempted to improve urban transport challenges in Enugu state. These solutions had not been able to relieve the city of their overwhelming challenges due to complexity of the factors and seemingly ad-hoc nature of attempted solutions. Lasting solutions to urban transport challenges require a combined efforts and understandings of academia, transport practitioners and policy makers at various tier of government. The recent efforts to address transport challenges in metropolitan so far have shown that successful urban transport planning and administration requires sizeable capital investments and should be on long-term basis.

Towards improving urban transport challenges, there is also the need to ensure result-oriented integration of transport modes in the country. An integrated transport system implies the development of a seamless chain of connected and complementary transport means linking different modes of transport in such a way that every

mode has the opportunity of fulfilling its distinct potentials in a partnering manner. A pragmatic transportation development plan, designed to ensure sustainable result, will only be intelligent if based on the principle of integrated and inter-modal transport connectivity. It is what the enormity of the transport challenges facing urban centres of Nigeria demand, and to which critical examination should be directed.

#### 4.5. RECOMMENDATIONS

In the light of the above, this study proposes the following recommendations to mitigate the challenges highlighted above:

1. Guaranteed safety in every mode of transportation, with shorter duration for trips and mitigation of pollution arising from all modes of transportation.
2. Result-oriented and didactic training, research and development on all areas of transportation, including transport policy administration and management.
3. Making transportation affordable and accessible as a social right and to extend its benefit to the disadvantaged – the poor, elderly, school children, the physically challenged-including those with disabilities.
4. Urgent improvement of virility of the urban transport system, ensure its people-centeredness, which underlines a strategic conceptualization that sees Enugu urban transport system as part and parcel of national development aspiration.
5. There is urgent need for infrastructure expansion to accommodate rural migrants, where flyovers are built in strategic locations like Holy Ghost/Ogbete market, WTC road, Kenyetta market, Abakpa market, New Heaven axis, Ugwuaji amongst others. This is to help decongest the traffic jam

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