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Rural-Urban Migration and Population Pressure in Cosmopolitan Nigerian Cities: The Challenges of Infrastructural Development in Enugu and Onitsha Metropolis

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ABSTRACT

Rapid rural-urban migration in Nigeria has intensified population pressure on urban infrastructure, particularly in major cities like Enugu and Onitsha. This study investigates sustainable approaches to managing infrastructural challenges arising from such demographic moves. Specifically, it examines the impact of population pressure on physical and social infrastructure, evaluates governmental responses over the years, and proposes practical, long-term solutions for infrastructural resilience. A mixed-methods approach was employed, combining survey and documentary research designs. Data were collected from 385 purposively selected residents through structured questionnaires, while qualitative insights were obtained via interviews with key stakeholders, including urban planning and waste management agencies. Quantitative data were analyzed using SPSS (Version 28), and thematic analysis was applied to the qualitative data. Findings indicate that population pressure has significantly strained housing, transportation, waste management systems, water supply infrastructure, healthcare facilities, urban environment, and public utilities and social services in both cities. It was also revealed that successive governments have implemented policies and interventions to address the challenges of population pressure in Enugu and Onitsha metropolis over the years. The study underscores the need for sustainable urban planning, improved inter-agency coordination, government and private sector partnerships and investment in infrastructure to enhance urban flexibility. The study was anchored on Stouffer's Theory of Intervening Opportunities, offering a framework for understanding migration-driven urban challenges and planning responses.

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INTRODUCTION

Cosmopolitan metropolis is not a recent phenomenon neither is it peculiar to any society. It is a global phenomenon, a trans-generational process that is inevitable and never ends. Cosmopolitan metropolis brings with it possibilities of improved access to infrastructure and also posed challenges to urban infrastructure in many countries. It is important to note that Nigeria cities have been growing both through natural increase and through stampede from rural areas. Egbara, Ofodu & Onuoha (2023) argued that inmost rural areas, the impact of rural-urban migration was a rapid deterioration of the rural economy leading to chronic poverty and food insecurity. These arise mainly due to excessive drain of youth from the rural populace thus leaving only the older and aged members to constitute the labour force of the rural area. The cause of the phenomenon has been described as the push factors in the rural areas and the pull factors in the urban centres. The dimension of the forces produced by these factors in many Nigeria communities has made "push and pull" to become understatements which could be replaced by "propulsive" and magnetic. Honestly, the rural areas are beset by propulsive forces which send the youths in particular running post haste to the cities which have the magnetic factors that engulf the rural areas in their irresistible field. This has a lot of implication on the society. The prominent among these challenges is the population pressure in cosmopolitan Nigerian cities and the challenges it

imposes on infrastructural development in some cities like Enugu urban (Okegbe & Okechukwu, 2024).

Migration involves individuals relocating from one place to another, either permanently or temporarily (Adewale, 2015). Reasons for migration vary depending on personal circumstances and prevailing conditions. Migration is a selective process, impacting individuals or families with specific economic, social, educational, and demographic traits. In Nigeria, the movement of people from rural to urban areas is a common phenomenon. This movement presents challenges in both rural and urban areas, despite the benefits it brings. Rural migration often results in a rapid decline in the rural economy, leading to persistent poverty and food insecurity (Sangodoyin, 2017). Okegbe & Okechukwu (2024) noted that the historical progression of Nigeria's development, as well as that of many other African nations, demonstrates that the model of colonial exploitation established the basis for contemporary migration. This was achieved by the implementation of a monetary economy and taxation, as well as the centralization of employment opportunities, necessary facilities, and industrial activities in urban regions, particularly during the second national development planning (1970-1974).

Population pressure, a term summarizing the stress brought about by an excessive population density and its consequences, is used both in conjunction with human overpopulation and with other human mobility aids such as vehicles and tricycle populations that suffer from too many individuals per area (Ulayi, Okpe & Omang, 2021). When we use the term "Population pressure" we specifically mean a situation in which the area cannot regenerate the resources used by the population each time. Experts say this has been the case every year, with each successive year becoming more and more damaging. It is only logical that an increase in the urban population will cause additional strains on resources. More people mean an increased demand for food, water, housing, energy, healthcare, transportation, and more. And all that consumption contributes to ecological degradation, increased conflicts, infrastructural challenges and a higher risk of large-scale disasters like pandemics (Egbara, Ofodu & Onuoha, 2023).

The quality of a given environment is determined to a large extent by the availability of several forms of urban infrastructure and facilities which have been provided. The term urban infrastructure and facilities refers to those facilities and services, provided to aid the functionality and development of a given area. According to Eze & Agu (2015) urban infrastructure refers to basic equipment, utilities, productive enterprises, instruments and services which are provided essentially for the operation and growth of a city or nation. This means that urban infrastructures are those facilities that aid productivity and directly ameliorate the quality of life of residents. In view of the above, we can see that urban infrastructure and facilities comprise of such transportation facilities as roads, rails, bridges, airports and adequate traffic control; public utilities such as electricity, water, drainage systems, sanitation and telephone services. It also includes community services such as educational and health centers, recreational facilities and postal services among others. Maintenance as it relates to urban infrastructure pre-supposes a calculated attempt to support, sustain or uphold available facilities. It includes all efforts aimed at ensuring that available infrastructural facilities are kept in a workable or acceptable state for its present and intended uses.

The rapid expansion of the population in urban areas is having a detrimental impact on the Enugu metropolis, especially in terms of infrastructural development. The decline in infrastructure in Enugu metropolis can largely be linked to the pressure from the growing population. Essentially, the gradual breakdown of vital physical systems crucial to human welfare in the Enugu metropolis may be a result of population pressure. The impact of population pressure on the environment is swiftly rising. The expansion of industrial space has attracted numerous people from rural areas to urban centers in pursuit of a better life and improved living conditions, leading to rural-urban migration. With the increase in population, issues such as poor housing, traffic congestion, crime, and unemployment are arising. Consequently, urban centres gradually deteriorate as the population grows. Population pressure in Enugu metropolis is getting on the increase daily. Most areas in the city are characterized by poor housing facilities, water, road, drainage, slums, environmental degradation occasioned by a dense population. In light of this background, rural migration and population pressure in cosmopolitan Nigerian Cities: The challenges of infrastructural development in Enugu Metropolis becomes the focus of this study.

Statement of the Problem

Rural-Urban migration is not peculiar to Nigeria, neither did is it a new phenomenon. From time immemorial, people have always moved from rural areas to a more urbanised settings in search of greener pastures and improved living conditions. These movements are not usually coordinated. As a result, they have implications both on the rural economies and on the urban destinations. For the urban areas

(metropolis) which are the central focus of this study, rural-urban migration results to the over-stretching of the existing infrastructure. The population explosion that results from this, while boosting the economy of the cities, stretches all such infrastructures as housing, electricity, pipe-born water, road and other facilities.

It is therefore, on account of this problem that this study seeks to investigate how successive governments in Enugu and Ebonyi states have fared with managing population pressure arising from these on infrastructural facilities. Enugu, a city founded during the colonial times grew to become the capital of the old Eastern region of Nigeria. This brought people from all the present day Southeast and South-South states of Nigeria under the capital city of Enugu state.

This effectively laid the foundation for Enugu as a civil service state. Onitsha on the other part started and grew as a business hub in the region, and on account of that, attracted massive rural urban migration. In no time, Onitsha became the commercial nerve center of the East, with a lot of businesses and corporate moguls establishing there. These cities attracted massive influx from people from different locations in Nigeria and even beyond.

Incidentally, the two metropolitan cities evolved from the old eastern region to the old Anambra state upon the dissolution of the defunct Eastern region in 1966, subsequent creation of states which then situated them into Enugu and Anambra states in the 1991. Ever since then, these cities have continued to bulge with population explosion, stretching all essential infrastructure. This study seeks to present a comparative analysis of these two metropolitan cities with a view to identifying developmental model best suited for managing infrastructural challenges in these bulging cities.

Objectives of the Study

The broad objective of this study is to determine sustainable ways of managing infrastructural challenges caused by population pressure as a result of rural-urban migration in major Nigerian cities, with specific focus on Enugu and Onitsha metropolises. The specific objectives are to:

1. Examine how population pressure has affected the physical and social infrastructure in Enugu and Onitsha metropolis.
2. Identify measures that have been taken by successive governments to address the challenges of population pressure in the cities over the years.
3. Recommend practical and sustainable measures to address the challenges of population pressure and promote infrastructural resilience in the two cities.

Research Questions

The study was guided by the following research questions.

1. How has population pressure affected the physical and social infrastructure in Enugu and Onitsha metropolis?
2. What have been the measures taken by successive governments to address the challenges of population pressure in Enugu and Onitsha metropolis over the years?

Literature Review

Conceptual Review

Concept of Rural-Urban Migration

Rural and urban can be defined in several different ways. Rural areas can be defined by what they are not, specifically areas that are not urban and are primarily focused on agriculture (Olabode, Oladokun & Oluyemi, 2015). Urban can be defined in one sense by geopolitical divisions, making state, regional, and district capitals urban and everything else rural. This method misclassifies populations at the edges of urban centers or small towns. Another approach uses concentration of population, classifying as urban any settlement with over 2,000 individuals, but this varies by region(Santos & Fernández, 2023).

Migration refers to the movement of people from one place to another, either seasonal or permanent, as a result of economic, social, or personal reasons (Adewale, 2015). Rural-urban migration refers to the movement from the rural areas to the urban centers, propelled by the desire to achieve a higher standard of living. The phenomenon has played a great role in the development of urban populations, transforming both population distribution and the physical form of human settlements (Selod & Shilpi, 2021).

Overview of Rural-Urban Migration in Nigeria

Nigeria exhibits a significant gap between rural and urban areas. The country generally lacks adequate social amenities, especially in rural areas due to neglect by the government. As a result, many rural residents migrate to urban centers in search of better opportunities and to escape the challenges of rural life. (Nwokocha, 2007 as cited in (Okegbe & Okechukwu, 2024).

In many developing countries, including Nigeria, internal migration has become a significant factor influencing government policies and programmes efforts. Key issues include unplanned urbanization, increasing urban crime, rural poverty, agricultural neglect, and uneven population distribution. These factors reflect the impact of the predominant rural-urban migration pattern on national life (Akinyemi, Ibrahim, Yakubu & Usman, 2015). According to Olabode, Oladokun & Oluyemi (2015), individuals

are often attracted to prosperous areas and pushed away from declining regions. Migrants are primarily focused on the potential benefits of moving, often giving less consideration to the problems that may arise, such as pressure on fragile urban infrastructure and potential environmental degradation, particularly as many migrants are relatively poor and live in close proximity. Therefore, rural-urban migration in Nigeria is unavoidable and sometimes evens a desirable consequence of industrialization.

Nwake (2019) stated that labour migrates to areas with opportunities, especially during periods of high demand, which is referred to as seasonal directional migration. For instance, labor moves from northern and southern regions to the west during the dry season for cocoa harvesting. Additionally, people relocate to farming areas during planting and harvesting seasons. It's important to note that seasonal directional migration is typically temporary; once the work is completed, people return to their original location. Some consider such movements as labor mobility rather than migration.

Population Pressure

The term "population pressure" refers to the strain caused by high population density and its effects, and it applies to both uman overpopulation and excessive animal populations in a given area. In the context of humans, population pressure can result from a large number of individuals, as well as from the overexploitation and overconsumption of available resources, leading to environmental degradation. Similarly, even unchanged population numbers can create significant pressure when the carrying capacity of the environment decreases (Aukema; Pricope, Husak & Carr, 2017).

Metaphorically, pressure represents the tendency of a gas or fluid to escape from a confined container. In animal populations, population pressure typically results in migration, while in humans; it can strain existing facilities and lead to land loss due to development and land conversion. When there is no space to alleviate the pressure, the population under pressure may face a severe consequence, such as reduction or even extinction.

Infrastructural Development

Infrastructure refers to the basic facilities that provide support for other systems and drive the economic development of a country. Infrastructure improves industrialization, elevates the standard of living, and supports business expansion (Hammock, 2023). Infrastructure includes physical systems such as electric power networks, transport infrastructure, water and sewage networks, healthcare facilities, and telecommunication networks, which support productivity and social well-being.

Infrastructure development, as defined by Okpalaoka (2021), is the upgrading of the very pillars supporting urban and national development. Such an upgrading allows other systems and services to develop and flourish. Infrastructure development is supportive of long-term economic development through integrated systems that are helpful both to society and the environment. Examples include electric power transmission lines for the supply of electricity, roads and railways for transportation and business, and IT facilities to enable effective communication and commercial purposes (Kayode, 2022). Infrastructure is therefore crucial for economic and urban growth. Its backbone for national development and enhanced infrastructure for the quality of life of citizens is boosted.

Empirical Review

Yahaya, Hussaini & Bashir (2020) examined Population Growth and Environmental Degradation in Nigeria Urban Centres. The short run estimation indicates that population density; energy resources and financial progress raise the level of environmental degradation. However, output growth reduces environmental pollution in Nigeria. The estimated long run analysis reveals that population growth and financial progress accelerate environmental dilapidation, while trade promote environmental quality.

Akinola (2021) conducted a research titled An Analysis on the Impact of Population Growth on the Economy of Nigeria. The study adopted regression method using secondary data. The analysis was carried out using the Trend Analysis, Descriptive Statistics, Ordinary Least Square Augmented Dickey-Fuller (ADF) stationarity test combined with Granger Causality, Error Correction Model and Cointegration tests. The result from the trend analysis shows that the structure of Nigeria population has been increasing steadily since 1994 till 2020. The result from the Granger Causality shows that there is a unidirectional relationship between population growth and economic growth.

Puspita & Dharmatanna (2023) investigated the Effect of Population Density and Urban Intensity on Building Typology in South Krembangan Area. A qualitative descriptive analysis was conducted by observing building typology and the year of construction which helped in determining how population density and intensity affect building typology in the Krembangan Selatan area. Urban Intensity was assessed by calculating the building volume divided by 300. The highest intensity group

consists of residential areas with buildings in a typical style of the 1960s. Density calculations were made by comparing the area to Semarang, as both areas were influenced by the Dutch colonial Government.

Equere, Ibem & Alagbe (2021) investigated the Impact of rapid population growth on public housing schemes and the influence on city resilience. The study used survey method and data obtained were analysed using descriptive statistics, factor analysis and Principal Component Analysis (PCA) to identify the key factors. The result reveals a mean score of 3.59, showing that the residents were in agreement on a rapid increase in population of people living in the estates. In addition, the result reveals a difference between the mean score of residents' level of satisfaction with the house types meeting their need when they first moved into the estate (3.77) and the extent to which the same house type still satisfies their household need at the time the survey was conducted (3.18).

Hisham & Abdullah (2019) conducted a study on Urban Population and Urban Sprawl Issues in City Structure: A Case of the Sulaymaniah Iraqi Kurdistan Region. For this purpose, a qualitative method is used based on in-depth face-to-face interviews with local authority, including planners, architects, and experts of master planning, as well as professors in the academic institutions The findings reveal that the autonomy, political conflict, non-implementation of master plans, and economic prosperity are the driving forces which are accelerating this urbanization process.

Theoretical Framework

This study is based on theory of Intervening Opportunity by Samuel A. Stouffer (1940). Theory of intervening opportunity, which was first developed by Stouffer (1940) looks not at the size of settlement or the distance between them but at the perceived opportunities and challenges, which the settlement presents. According to this theory, the amount of migration into a certain city is directly proportional to the number of opportunities between the points of destination but inversely proportional to the number of opportunities between the point of departure and the destination. Opportunities according to the theory include the residential accommodation facilities, employment prospects, social facilities and any other pull factor which the migrants perceives as being available in the city of destination. Everett Lee (1966) reformulated Stouffer's theory to give more emphasis to internal (or push) factors. Lee also outlined the impact that intervening obstacles have on the migration process, arguing that variables such as distance, physical and political harriers, and having dependents can impede or even prevent migration. Lee pointed out that the migration process is selective because differentials such as age, gender, and social class affect how persons respond to push-pull factors, and these conditions also shape their ability to overcome intervening obstacles.

In describing the current research with this theory, rural-urban migration in Nigeria is accounted for by the perceived opportunities in the urban areas. Despite the lack of adequate infrastructure to support enhanced urban growth, the majority of migrants are drawn into the urban areas due to expected better living standards, jobs, and services. Disparities in opportunities between rural and urban areas trigger migration even when the urban areas are already overburdened. As a result, this migration pattern leads to increased urban population density, placing immense pressure on housing, transportation, power, water, and sanitation. Stouffer's theory can be applied to understand why individuals migrate despite these challenges; it is not an issue of distance or city size, but one of perceived availability and accessibility of opportunities in the destination city.

Methodology

This study adopts a mixed-methods approach combining both survey and documentary research designs. The study covered two states in the South-East geopolitical zones namely, Enugu and Anambra states. The researchers focused on rural-urban migration and population pressure in the metropolitan cities of Enugu and Onitsha in these two states. The survey aspect involves the use of structured questionnaires administered to a purposively selected sample of residents in Enugu and Onitsha metropolis. A purposive random sampling technique was used to select high knowledgeable respondents. A total of three hundred and eighty-five (385) copies of the questionnaire were properly completed and were used for the analysis. Statistical Package for the Social Sciences (SPSS) version 28 was used for descriptive. Descriptive statistics, including frequencies, percentages, and mean scores were used to present respondents' perceptions in a Likert scale format: Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), and Strongly Disagree (SD). The qualitative component used secondary data and in-depth interviews with key stakeholders including Anambra State Urban Development Board (ASUDEB), Enugu Capital Territory Development Authority (ECTDA), MOT cadets in Enugu, Enugu State Waste Management Authority (ESWAMA) and Anambra State Waste Management Agency (ASWAMA), among others. Thematic analysis was used to analyze the qualitative data, focusing on objectives of the study.

Results and Discussion

In this section, the results of data collected are presented and analysed according to the research questions using frequency, percentage, and mean score and any item with a mean of 3.00 or above was agreed while any item with a mean score below 3.00 was disagreed.

Research Question One

How has population pressure affected the physical and social infrastructure in Enugu and Onitsha metropolis?

Table 1: Mean score on how population pressure affected the physical and social infrastructure in Enugu and Onitsha metropolis

S/ N	Items	SA 5	A 4	U 3	D 2	SD 1	Total	Mean	Dec
1	The population growth in Enugu and Onitsha has led to overcrowded housing conditions	224 1120 58%	96 384 25%	10 30 3%	20 40 5%	35 35 9%	385 1609 100%	4.2	Agree
2	Increased population has placed excessive demand on public transportation systems	201 1005 52%	117 468 30%	20 60 5%	20 40 5%	27 27 7%	385 1600 100%	4.2	Agree
3	There is a noticeable strain on water supply systems due to population pressure	212 1060 55%	103 412 27%	15 45 4%	15 30 4%	40 40 10%	385 1587 100%	4.1	Agree
4	The healthcare facilities in the city are overstretched due to the growing population	299 1495 78%	55 220 14%	5 15 1%	10 20 3%	16 16 4%	385 1766 100%	4.6	Agree
5	Rapid urban migration has led to increased traffic congestion in Enugu and Onitsha	218 1090 57%	122 488 31%	10 30 3%	18 36 5%	17 17 4%	385 1661 100%	4.3	Agree
6	Population pressure has contributed to the deterioration of waste management systems	207 1035 54%	94 376 24%	20 60 5%	12 24 3%	52 52 14%	385 1547 100%	4.0	Agree
7	Urban slums are expanding as a result of uncontrolled population growth	211 1055 55%	109 436 28%	15 45 4%	35 70 9%	15 15 4%	385 1621 100%	4.2	Agree
Total average mean Score								**30/7=4.2**	

Source: Field Work, 2025

The analyses presented in Table 1 above shows that mean scores of all the items are above the cutoff point of 3.00 indicating agree. This shows that all the items are how population pressure affected the physical and social infrastructure in Enugu and Onitsha metropolis. The overall average mean score of 4.2 is a strong indication that the items are confirmation that population pressure as a result of rural-urban migration significantly affected the physical and social infrastructure in Enugu and Onitsha metropolis.

Research Question Two

What have been the measures taken by successive governments to address the challenges of population pressure in Enugu and Onitsha metropolis over the years?

Table 3: Mean Score on measures taken by successive governments to address the challenges of population pressure in Enugu and Onitsha metropolis over the years

S/N	Items	SA 5	A 4	U 3	D 2	SD 1	Total	Mean	Dec
1	The government has implemented urban planning policies to control unregulated settlement growth	210 1050 55%	105 420 27%	10 30 3%	20 40 5%	40 40 10%	385 1580 100%	4.1	Agree
2	Successive governments have invested in expanding public transportation systems	190 950 49%	90 360 23%	20 60 5%	20 40 5%	65 65 18%	385 1475 100%	3.8	Agree

3	There have been visible efforts to improve water supply infrastructure in recent years	212 1060 55%	103 412 27%	15 45 4%	15 30 4%	40 40 10%	385 1587 100%	4.1	Agree
4	Policies have been implemented to decongest urban centres through development of satellite towns	299 1495 78%	55 220 14%	5 15 1%	10 20 3%	16 16 4%	385 1766 100%	4.6	Agree
5	Healthcare infrastructure has been expanded in response to population growth	208 1040 54%	102 408 26%	10 30 3%	18 36 5%	47 47 12%	385 1561 100%	4.1	Agree
6	There are effective laws and enforcement mechanisms to manage urban land use and expansion	197 985 51%	91 364 24%	20 60 5%	12 24 3%	65 65 17%	385 1498 100%	3.9	Agree
7	There are active waste management programmes and strategies initiated by the government to handle urban waste	215 1075 56%	105 420 27%	15 45 4%	10 20 3%	40 40 10%	385 1600 100%	4.2	Agree
Total average mean Score								**29/7=4.1**	

Source: Field Work, 2025

The statistical analysis in Table 2 indicates that all the items have mean scores above the cutoff point of 3.00 indicating that the respondents agree that all the questionnaire items are measures taken by successive governments to address the challenges of population pressure in Enugu and Onitsha metropolis over the years. The overall average mean score of 4.1> 3.00 (Likert mean) which indicated base on decision rule that successive governments have implemented policies and interventions to address the challenges of population pressure in Enugu and Onitsha metropolis over the years.

Discussion of Results

The results of the first objective revealed that population pressure as a result of rural-urban migration significantly affected the physical and social infrastructure in Enugu and Onitsha metropolis. Based on the outcome of the analysis presented on research question one, the following findings indicated how population pressure as a result of rural-urban migration has affected the physical and social infrastructure in Enugu and Onitsha metropolis. hese include among other things that the population growth in Enugu and Onitsha has led to overcrowded housing conditions, increased population has placed excessive demand on public transportation systems, noticeable strain on water supply systems due to population pressure, healthcare facilities in the cities are overstretched due to the growing population, rapid urban migration has led to increased traffic congestion in Enugu and Onitsha, population pressure has contributed to the deterioration of waste management systems, and urban slums are expanding as a result of uncontrolled population growth. This finding aligns with research by Nwalusi et al. (2022) which documents a gross housing shortage, increased housing rent and high land value in Enugu, resulting in sprawling squatter settlements.

Similarly, Idoko and Ezeodili (2021) observed that urbanization in Enugu has adversely affected housing quality and choice of settlement. While Egbara et al. (2023) discovered that urban spatial structure has significant negative effect on housing quality in Enugu Urban and the population growth has significant negative effect on housing affordability in Enugu Urban, Enugu State of Nigeria. Onitsha's rapid growth from 261,000 in 2006 to over 1 million by 2024 has overwhelmed road systems, resulting in severe traffic congestion and road deterioration, as detailed by Makata (2024). In Enugu, the Ajali Water Works, designed to serve 77,000 m³ daily, has failed to keep pace, resulting in inconsistent supply and reliance on supplementary boreholes. Consistent with your findings, many scholars have flagged healthcare systems in urban Nigeria as inadequate for surging populations—though specific Enugu/Onitsha studies are limited, national trends corroborate this overstretch, resulting in overloaded facilities and long patient wait times. Rural outmigration into Onitsha is shown to account for up to 84% of urban environmental problems, including ineffective waste systems and pollution harvardpublications.com. The lack of proportional expansion in waste infrastructure aligns with your observed deterioration of waste management systems. These studies are therefore strong indication and support to the finding that that population pressure as a result of rural-urban migration significantly affected the physical and social infrastructure in Enugu and Onitsha metropolis.

Table5: Effects of Population Pressure on Physical and Social Infrastructure in Enugu and Onitsha Metropolis

S/N	Affected Infrastructure	Observed Impact	Impact Level	Supporting Evidence / Studies
1	Housing	Overcrowding, expansion of slums, squatter settlements, unaffordable rents	Very High	Nwalusi et al. (2022); Idoko & Ezeodili (2021); Egbara et al. (2023)
2	Transportation	Excessive demand on roads, severe traffic congestion, deterioration of road networks	Very High	Makata (2024); Egbara et al. (2024); Field data from Enugu and Onitsha
3	Waste Management Systems	Waste accumulation, overstretched agencies, poor sanitation, especially in informal settlements	High	Nwalusi et al. (2022); Harvardpublications.com
4	Water Supply Infrastructure	Insufficient supply, inconsistent access, reliance on boreholes	High	Ajali Water Works report; Field observation
5	Healthcare Facilities	Overstretched capacity, long wait times, inadequate medical personnel	High	National health trends; Primary data from Enugu and Onitsha
6	Urban Environment	Expansion of slums, pollution, pressure on land use	Moderate	Nwalusi et al. (2022); Harvardpublications.com
7	Public Utilities and Social Services	Increased demand and strain on electricity, schools, and other urban amenities	Moderate	General field data; Secondary literature highlights

Source: Field Work, 2025

Table 5 presents the effects of population pressure on physical and social infrastructure in Enugu and Onitsha. Impact severity is ranked based on both primary findings and corroborative secondary data. Studies consistently show that housing, transport, and waste systems are the most visibly affected sectors in the two studied cities-Enugu and Onitsha metropolis.

The impact level of population pressure on physical and social infrastructure in Enugu and Onitsha metropolis is presented in figure 1 below.

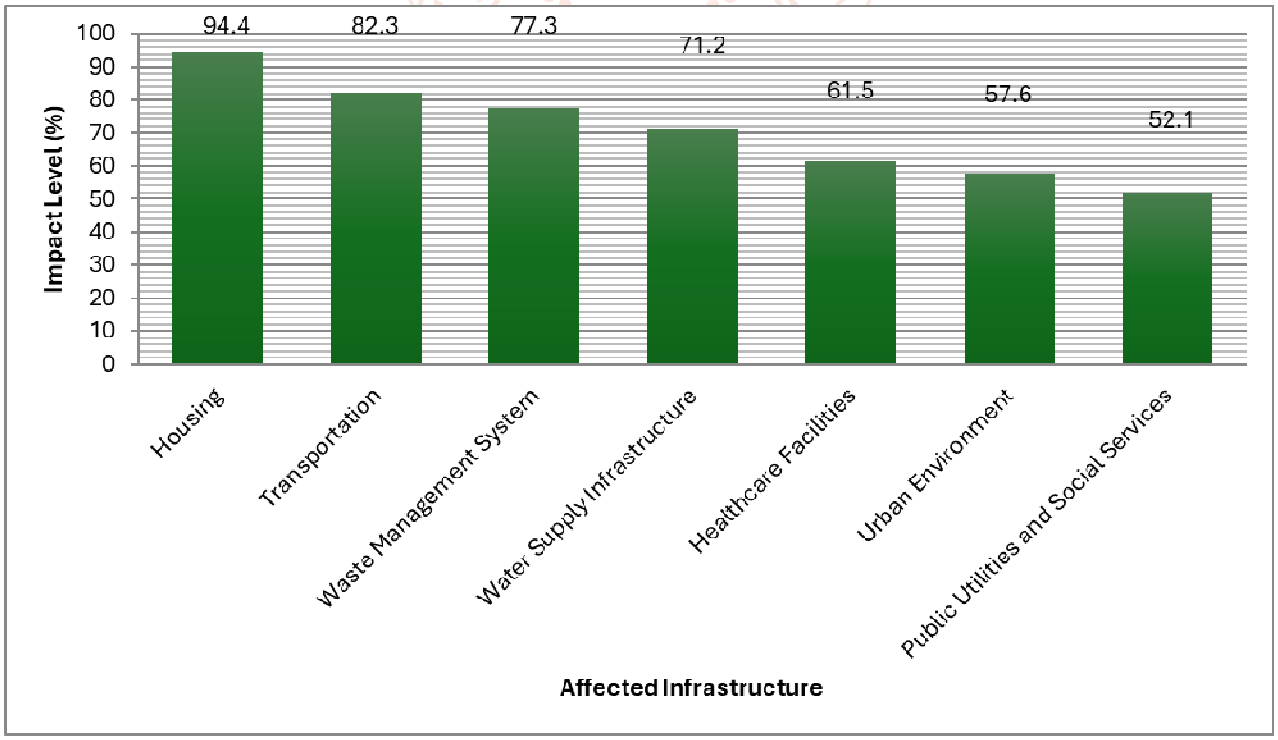

Figure 1: Bar Chart representing the impact level of population pressure on physical and social infrastructure in Enugu and Onitsha metropolis

Figure 1 indicated the impact level of population pressure on physical and social infrastructure in Enugu and Onitsha metropolis in order of severity. The Enugu and Onitsha's infrastructure was not designed for the current scale of urban migration, leading to widespread pressure and deterioration. The ongoing reconstruction in transportation, housing and water infrastructure in Enugu metropolis by the Enugu state governor Hon. Barr. Peter Mbah is a clear evidence of impact severity of population pressure on physical and social infrastructure in Enugu metropolis.

The results of the second objective revealed that successive governments have implemented policies and interventions to address the challenges of population pressure in Enugu and Onitsha metropolis over the years. Based on the outcome of the analysis of primary data presented on research question two, the following findings indicated that various measures have been taken by successive governments to address the challenges of population pressure in Enugu and Onitsha metropolis over the years. These include among others that the government has implemented urban planning policies to control unregulated settlement growth, successive governments have invested in expanding public transportation systems, there have been visible efforts to improve water supply infrastructure in recent years, policies have been implemented to decongest urban centres through development of satellite towns, healthcare infrastructure has been expanded in response to population growth, there are effective laws and enforcement mechanisms to manage urban land use and expansion, and there are active waste management programmes and strategies initiated by the government to handle urban waste. This finding aligns with Nwalusi et al. (2022), who documented efforts by the Anambra State Urban Development Board (ASUDEB) and Enugu Capital Territory Development Authority (ECTDA) to enforce planning regulations and control informal urban sprawl. However, the effectiveness of these policies remains mixed, as rapid population influx often outpaces enforcement capacity. Makata (2024) noted that urban transport reforms, including the deployment of urban buses and road decongestion initiatives, were introduced in Onitsha to manage urban pressure. While Egbara et al. (2024) discovered that Enugu Capital Territory Development Authority (ECTDA) and MOT cadets have significantly helped in the management of traffic flow in Enugu urban. Further findings from their study revealed that the current traffic light in use at Enugu urban has positively contributed to the management of traffic flow. Yet, the infrastructure is still insufficient for the scale of urban migration.

Healthcare expansion efforts were recognized as part of government responses to population growth. This aligns with national trends where state governments invest in building primary healthcare centers and urban hospitals to increase access (Ozor & Eze, 2023). However, population pressure continues to strain medical personnel and facility resources in high-density zones. Respondents noted that there are active waste management programs, particularly the activities of the Enugu State Waste Management Authority (ESWAMA) and Anambra State Waste Management Agency (ASWAMA). These agencies are tasked with waste collection, recycling, and public sanitation initiatives (Nwalusi et al., 2022). While such efforts are ongoing, the volume of waste generated often exceeds the capacity of these agencies, especially in informal settlements.

Table 6: Government Measures Addressing Population Pressure in Enugu and Onitsha (Ranked by Impact)

S/N	Government Measures	Description	Impact Level	Observations
1	Urban Transport Reforms	Deployment of buses, traffic cadets, traffic lights, road decongestion	Very High	Improved traffic flow noted; however, infrastructure still insufficient for rising demand
2	Waste Management Programmes	Operations by ESWAMA and ASWAMA on waste collection, recycling, and public sanitation	High	Active programmes in place, but agency capacity is often exceeded, especially in informal areas
3	Urban Planning and Land Use Regulation	Enforced by ECTDA and ASUDEB to curb informal settlements and sprawl	High	Some enforcement success, but hindered by enforcement limitations and rapid urban expansion
4	Healthcare Infrastructure Expansion	Construction of primary health centers and urban hospitals	Moderate	Infrastructure improving, yet health workers and facilities overstretched in dense areas

5	Development of Satellite Towns	Decongestion policy via peripheral urban development	Moderate	Policy in place, but implementation slow and impact not yet widespread
6	Water Supply Infrastructure Improvement	Expansion of urban water systems to meet growing demand	Low	Visible efforts exist, but many areas still face irregular or insufficient supply
7	Enforcement of Urban Land Use Laws and Expansion Control	Legal frameworks and enforcement mechanisms to guide city growth	Low	Legal tools available but weak enforcement due to capacity and corruption challenges

Source: Field Work, 2025

Table 5 above shows government measures and interventions aimed at addressing population pressure in Enugu and Onitsha ranked by impact. Impact level is ranked based on findings in terms of **visibility, effectiveness, and reach** of the interventions. Data is derived from primary research and supported by secondary sources (e.g., Nwalusi et al., 2022; Makata, 2024; Egbara et al., 2024; Ozor & Eze, 2023).

The impact level of government measures addressing population pressure in Enugu and Onitsha metropolis is presented in figure 2 below.

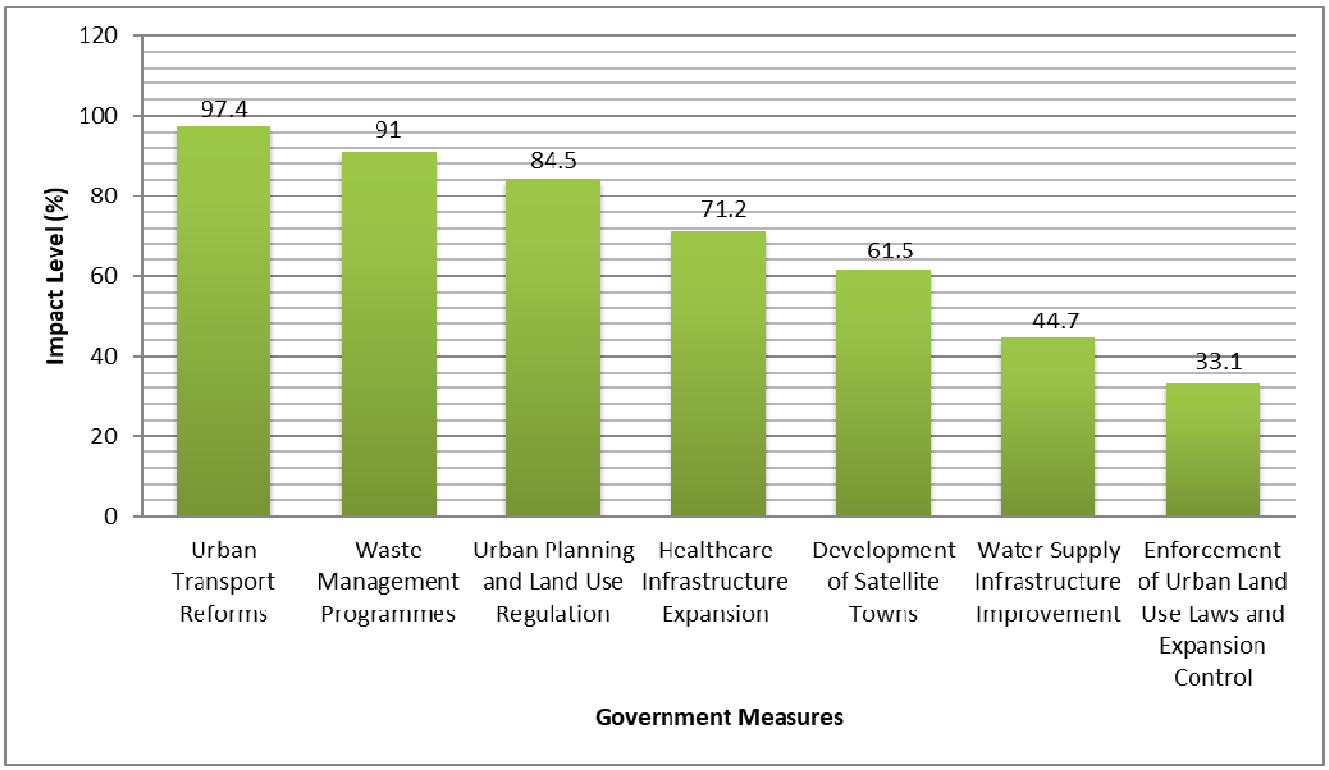

Figure 2: Bar Chart representing the impact level of government measures addressing population pressure in Enugu and Onitsha Metropolis

Figure 2 presents a structured overview of government interventions addressing population pressure in Enugu and Onitsha, categorized by their observed impact. Among the measures, urban transport reforms rank the highest in impact, due to visible improvements in traffic management through bus deployment, traffic regulation, and decongestion efforts. However, capacity gaps still exist relative to rapid urban growth. Waste management and urban planning regulations are rated as having high impact, reflecting functional but overstretched systems, especially in informal settlements where waste collection is inconsistent and land use enforcement is limited. Interventions in healthcare infrastructure and the development of satellite towns are moderately impactful. While physical infrastructure is improving, human resources and equitable distribution remain issues. Satellite town development, although promising, has been slow to show wide-reaching effects. At the lower end of the spectrum are water supply improvement and land use law enforcement, which suffer from weak institutional capacity, poor funding, and governance issues such as corruption. Despite visible efforts, these measures have not effectively addressed the needs of rapidly growing urban populations.

Conclusion and Recommendations

The study examined the sustainable ways of managing infrastructural challenges caused by population pressure as a result of rural-urban migration in major Nigerian cities, with specific focus on Enugu and Onitsha metropolises. Based on the findings from the first and second research objectives, it is evident that population pressure resulting from rural-urban migration has significantly strained the physical and social infrastructure in Enugu and Onitsha metropolis. The surge in urban population has led to overcrowded housing, expansion of slums, excessive demand on transportation systems, and overstretched healthcare and water supply services. The deterioration of waste management systems and worsening traffic congestion further highlight the inability of existing infrastructure to meet the growing demands. These challenges reflect broader urban development issues and mirror national trends in rapidly urbanizing areas across Nigeria, where urban migration often outpaces the rate of infrastructure development and service delivery.

In response to these challenges, successive governments have implemented various policies and interventions aimed at mitigating the effects of population pressure. Measures such as urban planning enforcement, expansion of public transportation, healthcare development, and establishment of waste management agencies have been initiated in both cities. While these efforts are commendable, the findings suggest that their effectiveness remains uneven, often limited by enforcement capacity, resource constraints, and the rapid pace of urban growth. For sustainable urban development in Enugu and Onitsha, there is a pressing need for integrated planning, consistent policy implementation, and scalable infrastructure investment that aligns with the realities of urban migration and population dynamics.

From the findings of the research, the following recommendations were made:

1. Government and private sector partnerships should focus on developing affordable housing and upgrading slum areas to reduce overcrowding and improve living conditions in Enugu and Onitsha metropolis.
2. More investments should be made to expand water supply systems, healthcare facilities, and public transportation networks to meet the increasing demands of urban residents.
3. Effective monitoring and enforcement of land use regulations should be intensified to prevent the proliferation of informal settlements and ensure sustainable urban growth.
4. Agencies like ECTDA, ASUDEB, ESWAMA, and ASWAMA should receive adequate funding, equipment, and trained personnel to enforce urban policies and manage city services efficiently.
5. Future interventions should be guided by a long-term, data-driven master plan that includes the development of satellite towns, improved zoning, and balanced urban-rural development.
6. There is need to engage local communities in urban planning initiatives and raise public awareness on proper waste disposal, land use, and the importance of maintaining urban infrastructure to ensure sustainability and compliance.
7. Finally, state governments should frequently review and update outdated urban laws, improve enforcement through transparency tools (e.g., digital land records), encourages legal compliance, reduces corruption, and curbs illegal settlements, and stablish an online land use registry to monitor and manage city growth.

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