Household Welfare Implications of Housing Infrastructural Affordability in Enugu, South Eastern Nigeria

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ABSTRACT

Propelled by the need for affordable housing in an economy, this research explored the effects of housing infrastructure affordability on household welfare in Enugu, South Eastern Nigeria. The research utilized a survey approach with a sample of 399 typical households residing in rented accommodations chosen from neighborhoods in the three local government areas of Enugu urban, employing a multi-stage sampling method and the chosen households were examined using a validated and dependable questionnaire. The survey focused on evaluating, among other aspects, the portion of household income allocated to rent, whether housing costs have a catastrophic impact on household welfare, and the statistical variation in rental prices across the three local government areas in Enugu urban. To achieve this, the research created a housing expenditure to income affordability index (HEIAI) and a shelter poverty affordability index (SPAI). It also employed Analysis of Variance (ANOVA), a dummy variable regression approach alongside additional general descriptive evaluations. The findings indicate that a typical household in Enugu urban allocates more than 30% of its monthly income to rent, which differs from the commonly accepted threshold of 25% to 30% established by Scholars, suggesting that housing is largely unaffordable in Enugu. Over 50% of the households (53.11%) experience rent burdens, with 30.57%, 15.54%, and 5.18% of them allocating over 40%, 50%, and 60% of their income towards housing costs, respectively. It indicates that more than 90% (90.67%) of the households surveyed have shelter induced poverty, indicating that more than 90% of households struggle to meet other essential non-housing needs after unavoidable housing costs. This distribution was nearly uniform across the three Local Government Areas (LGAs), with 36.57%, 31.43%, and 32% in Enugu East, Enugu North, and Enugu South LGAs, respectively. The ANOVA regression findings indicate that housing expenses are significantly greater in Enugu North, followed by Enugu East and Enugu South in that order. Other general evaluations suggest that 47.93% of surveyed households lived in inadequate number of rooms for their family size, with 94.05% of them noting that high housing costs in Enugu were the cause. All findings typically suggest a significant negative effect of housing costs on household welfare or the issue of housing affordability in Enugu. Among other suggestions, it was advised that the Enugu State governments should generate additional jobs or employment options to allow more household members to find work, thereby lessening the burden of rent and shelter-induced poverty in their households and subsequently enhancing the welfare of families in Enugu. The government must also oversee and regulate the actions of landlords of rental properties and their agents in Enugu to prevent or lessen the imposition of unreasonable and unjust housing fees on vulnerable tenants motivated by excessive profit.

Key Words: Housing Affordability, Household Welfare, Rent Burdened

INTRODUCTION

Affordable housing is crucial for the wellbeing, survival, and health of people since shelter is globally recognized as the second most vital human necessity after food. The United Nations (1996) defines affordable housing as housing of sufficient quality that requires no more than 25% to 30% of a household's income. The Enugu rent edict established a cap on house rent at a maximum of 20% of annual income for middle and low-income workers, while those in the upper-income group pay no more than 25% of their annual income (Osondu, 1992). Consequently, high rents exceeding 25% of income often lead to rent-burdened tenants and

poverty related to housing in Enugu. Enugu serves as the capital of Enugu state in Nigeria. Enugu state is among the six states in Nigeria's South-Eastern geopolitical region, with a population of 3,267,837 individuals and a land area of 7,161 km² (data from the 2006 population census), located at coordinates 6°N and 70°30'E. The state is bordered by Abia State and Imo State to the south, Ebonyi State to the east, Benue State to the northeast, Kogi State to the northwest and Anambra State to the west (Chuba & Eziyi, 2011).

House rent in this context denotes the sum of money a tenant consistently pays to occupy a house, while welfare signifies the overall happiness, health, and safety of an individual, animal, or collective group (Hornby, 2005). Therefore, it can be strongly contended that when essential housing costs are overly high or unaffordable for a household, ensuring sufficient provision of other fundamental non-housing necessities that improve household well-being is significantly challenging. UN-Habitat (2020) states that sufficient housing is a key element in influencing socioeconomic growth and human welfare. It offers a basis for security, productivity, dignity, and health along with housing. Nonetheless, large portions of the population in numerous developing countries, such as Nigeria, lack access to this essential need, particularly those employed in the informal sector with daily wages. The housing crisis is escalating in cities such as Enugu State, where daily low wage earners struggle to find suitable and affordable housing choices.

Moghayedi & Ellmann (2023) indicate that Enugu State, similar to numerous Nigerian urban regions, is experiencing an increasing gap in housing affordability. Most low-income workers can no longer afford to enter either the rental or ownership markets because of increasing land prices, inflation, and stagnant wages. Numerous individuals are compelled to reside in destitute regions or in slums that lack essential amenities such as electricity, safe drinking water, and sanitation. These conditions worsen cycles of poverty, illness, and social exclusion while also diminishing their quality of life. In the housing market, daily low-wage earners such as artisans, vendors, transport workers, and day laborers often face various structural challenges. Due to their irregular and inadequate income, they do not qualify for formal mortgage programs or long-term rental contracts. Consequently, they are unfairly forced to reside in small, poorly maintained housing with inadequate or communal facilities. Many individuals live in informal settlements without legal rights, leaving them susceptible to eviction and poor living conditions (Odoanyanwu et al. 2025; Olotuah & Bobadoye, 2009).

Chukwu, Aniagolu, and Obodo's study (2016) on the trend and growth of rental values for residential properties in various Enugu cities revealed a consistent rise in housing rents for different types of units from 2005 to 2014. The research indicates that the typical yearly rent for a three-bedroom apartment in New Haven rose by approximately 128.57% from ₦140,000 in 2005 to ₦320,000 in 2014. Achara Layout's value rose by approximately 142.105% from ₦114,000 in 2005 to ₦276,000 in 2014 (see table 1.1).

Table 1.1: Trends and Growth in Rental values of Residential Houses in New Haven and Achara Layout Enugu Nigeria.

NEW HAVEN										
Housing Unit	2005 ₦	2006 ₦	2007 ₦	2008 ₦	2009 ₦	2010 ₦	2011 ₦	2012 ₦	2013 ₦	2014 ₦
Tenement Room	34,400	35,200	43,600	43,600	52,000	52,000	59,000	60,000	66,000	67,000
Flat of 2 Bedroom	112,000	122,000	162,000	186,000	186,000	212,000	220,000	254,000	254,000	254,000

Flat of 3 Bedroom	140,000	156,000	192,000	192,000	216,000	216,000	240,000	250,000	320,000	320,000
Bungalow	292,000	304,000	386,000	386,000	470,000	470,000	550,000	560,000	664,000	664,000
Duplex	466,000	466,000	554,000	574,000	635,000	638,000	850,000	880,000	1090000	1130000
ACHARA LAYOUT										
Housing Unit	2005 ₦	2006 ₦	2007 ₦	2008 ₦	2009 ₦	2010 ₦	2011 ₦	2012 ₦	2013 ₦	2014 ₦
Tenement Room	23,600	24,800	32,800	33,400	38,200	39,400	45,200	50,600	55,800	56,800
Flat of 2 Bedroom	87,000	88,000	115,000	123,000	140,000	140,000	174,000	194,000	218,000	218,000
Flat of 3 Bedroom	114,000	114,000	156,000	160,000	178,000	178,000	218,000	242,000	276,000	276,000
Bungalow	232,000	232,000	286,000	286,000	398,000	398,000	466,000	524,000	572,000	582,000
Duplex	336,000	342,000	398,000	408,000	524,000	524,000	730,000	860,000	960,000	1160000

Source: Survey Study by Chukwu, Aniagolu and Obodo (2016) and Author's tabulation

As of July 2026, it is a confirmed reality that in Enugu urban, yearly rent for a decent three-bedroom flat reaches ₦1.8 million, ₦1.5 million, ₦1.2 million, and ₦1 million depending on the specific conditions. The ₦1.5 million for an adequate three-bedroom apartment in New Haven compared to ₦320,000 in 2014 signifies an increase of approximately 368.75% from 2014 to 2026. A single tenement room in areas such as New Haven costs as much as ₦500,000 to ₦600,000 at present, reflecting an increase of approximately 795.5% from 2014 to 2026.

This rise over roughly ten years is concerning and will undoubtedly adversely affect the well-being of families living in rental homes in Enugu, as they will allocate a significant portion of their income to secure essential housing, consequently diverting most of their financial resources away from other fundamental non-housing aspects that improve household welfare. According to Odoanyanwu et al. (2025), Nzomiwu (2013), Chukwu et al. (2016), and Ononugbo et al (2010) has compelled numerous low-income families in Enugu to reside in slums like Agangwu, Ngene-Effor, Ugwu Aaron, and Ugwu-bottle, which are unsuitable for human habitation.

The majority of rental homes in Enugu are supplied by private persons or developers at elevated prices. This aligns with the Nigerian National Housing Policy's recognition that the private sector constitutes more than

90% of the nation's housing inventory (Federal Government of Nigeria, 2002). The private sector mentioned here encompasses property developers, businesses in industry and commerce, small builders, and individuals who invest in housing with the intention of earning profit. Numerous private homeowners in the Enugu urban area lease additional apartments and rooms in their residences to boost their household earnings and potentially recover their housing investment. Numerous individuals also construct and lease extra home(s) on a strictly commercial basis.

The national and international challenges and worries regarding housing affordability and overall housing conditions highlight it as a global problem. A household's well-being suffers when it faces rent or housing cost burdens. A household will experience shelter-induced poverty when essential housing costs limit its financial capacity to sufficiently address basic non-housing necessities that enhance welfare, including food, healthcare, education, clothing, and more. This perspective on housing affordability significantly justifies the study. Therefore, it evaluated the housing affordability conditions in Enugu and examined their effects on the well-being of households in the region. The study's specific goals are: to identify the proportion of household income spent on rent in Enugu, to evaluate whether housing costs significantly impact household welfare in Enugu, and to examine the statistical variations in residential house rents among the three local government areas in Enugu urban.

LITERATURE REVIEW

Rent Edict and Housing Supply in Enugu

The growing demand for and delays in housing supply in Enugu provided residential property owners the chance to raise their rents. New tenants were required to make advanced payments ranging from six months to three years, while existing tenants had to pay raised rent or face the possibility of eviction from their homes. The situation was so alarming that the state government felt obligated to comply with the Federal government mandate to implement the rent decree of 1976. The rent decree emerged from government initiatives aimed at enhancing the quality of life and housing affordability for families while assisting the working class amid the ongoing rise in rental prices by private landlords. The government's objective in enacting the rent decree was to regulate the rental rates of residential properties throughout the state. To accomplish this, the state government implemented the following measures, as noted by Osondu (1992):

- books on rent.
- classification of accommodation into three different types namely bungalows, tenement blocks of flats and tenement rooming houses in relation to fixing of house rents.
- classification of residential areas into low and high density areas for the aim of rent fixing.
- fixing of a maximum rent of not more than 20% of annual income to be paid workers in middle and low income group and not more than 25% of annual income to be paid by those in the upper income group.
- restriction of rent advances to not more than three months for individuals and one year for institutional tenants.

This introduction led to disputes in the Enugu housing market where rents were set arbitrarily. The only recipients of the rent decree were the Civil Servants residing in government-owned rental properties. Families in privately rented apartments were required to pay the prevailing market rent or risk eviction. The majority of private landlords opposed this rent mandate by not promoting housing openings or accepting new tenants at the rent set by the edict.

A rent tribunal was established by the government to guarantee adherence to the rent decree. The goal was to ensure that tenants in rented apartments were not displaced by their landlords and to mediate disputes between tenants and landlords regarding rental payments. Despite the rent decree and tribunal, landlords continued to raise rents in Enugu.

Legal Framework on Housing in Enugu State

Housing affordability in Enugu is presently regulated by the Landlord and Tenant Law (Cap. 101, Enugu State Laws, 2004). In order to mitigate high initial expenses for renters, the state government proposed an amendment bill to limit upfront charges and ban unfair rent-seeking activities. The legal structure and current reforms governing housing expenses in Enugu encompass:

- **Regulated Fees and Charges:** The suggested Landlord and Tenant (Amendment) Bill limits agency and legal costs to a maximum of 10% of the overall rent. It bans agents and landlords from requesting extra arbitrary fees—like "caretaker's wine"—and completely prohibits security deposits.
- **Agent Certification:** According to the bill, property agents and estate managers in Enugu must be certified and acquire permits from the Enugu State Housing Development Corporation, which need to be renewed annually.
- **Rent Increases and Eviction:** According to typical Nigerian rental agreements, landlords are not allowed to raise rent without justification. They are required to give a minimum of 6 months' written notice for annual tenants and 1 month's notice for monthly tenants. Additionally, landlords are required to secure a court order for tenant evictions; illegal are any coercive "self-help" eviction methods.
- **Public Housing Interventions:** To tackle the fundamental challenge of housing availability, the Enugu State Government has entered into Private Partnerships (PPP) to build thousands of budget-friendly housing units throughout the state, designed to offer affordable options for civil servants and low-income individuals.

The revised Tenancy Bill has ignited discussions among real estate investors and landlords concerning property upkeep and investment safeguards, yet it aims to significantly reduce initial rental expenses for tenants.

Theoretical Framework of the Study

This study is hinged upon the economic principle of opportunity cost introduced in 1914 by Fredrich Von Wieser. It addresses what one (Household in this context) relinquishes or sacrifices (other fundamental household needs in this context) to obtain or enjoy something (housing in this context). As per David (1978), the sacrifice can either be tangible or intangible. It could be cash, products, time, safety, ease, or anything else.

Empirical Literature

Only a small number of researchers have examined housing in Enugu. Odoanyanwu et al. (2025) evaluated the living conditions of daily wage earners with low incomes in Enugu State, Nigeria. A multi-stage stratified random sampling technique along with purposive sampling was employed to obtain 349 valid participants. Results indicate that 57.9% receive daily wages and 65.9% are tenants, with 41.0% residing in units requiring significant repairs and 26.1% in inadequate conditions. The majority live in one-room apartments (37.0%), while merely 4.9% occupy three-bedroom or larger apartments. The highest ranked urgent issues were unaffordable housing (RII = 0.92), overcrowding (RII = 0.90), substandard quality of life (RII = 0.87), lack of access to essential services (RII = 0.86), and insecure housing situations (RII = 0.84). These outcomes emphasize the importance of low-cost housing, infrastructure development that benefits the poor, tenure security, and microfinance options for workers with irregular incomes.

Egbara et al (2023) analyzed the impact of urbanization on housing amenities in Enugu urban, Enugu State, Nigeria. They examined the influence of urban spatial arrangement on housing conditions and the impact of population increase on housing affordability in Enugu urban, Enugu state, Nigeria, employing a descriptive survey design and purposive sampling method. The findings indicated that urban spatial structure negatively affects housing quality significantly. It also discovers that population growth adversely affects housing affordability in Enugu urban, Enugu State, Nigeria.

Jiboye et al. (2020), in their research titled "Urban Housing in Nigeria for Sustainable Development: Challenges and Prospects," examines the widespread issues in Nigeria's urban housing, primarily caused by swift urbanization. These problems present as elevated unemployment, congested housing, the spread of slums and informal settlements, environmental harm, insufficient infrastructure and social services, along with

increasing crime rates. The authors contend that these obstacles greatly hinder urban development and sustainability in Nigeria. Utilizing systematic review and observational techniques on chosen residences in Lagos and Ibadan (Southwest, Nigeria), the study uncovers the distressing living situations of city inhabitants.

Ononugbo et al (2010) assessed if factors such as income, education, gender, family size, and limitations like expensive building materials and high rent affect the choice of Enugu residents to live in slums like Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle, where pollution harms the environment and human health, highlighting the necessity for low-income housing for these populations to prevent ecological damage. A survey methodology was employed utilizing created questionnaires and face-to-face interviews with policymakers, experts, bankers, and contractors. Results from the research showed that low-income individuals were unable to pay for housing in the city because of their low monthly wages (linked to their educational status), big family sizes, and stringent government regulations regarding land and housing. This situation forced them to live in slums devoid of basic infrastructure, including running clean water, waste collection, and sewage systems.

Omole (2010) Evaluated the Living Conditions and Socio-Economic Lifestyles of Slum Residents in Akure, Nigeria. It highlighted housing's essential role in human survival, health, behavior, and national productivity. The research employed questionnaire distribution, building assessments, and facility evaluations, using a random sampling method to conduct interviews with residents in every fifth home throughout five district regions. Information regarding government intervention was additionally gathered from pertinent ministries. The results indicate that the examined region displays dire slum situations, adversely affecting the socio-economic standards and health of its inhabitants, along with the general environmental aesthetics.

Chukwu and colleagues (2016) examined the patterns in the rental prices of residential real estate in Enugu from 2005 to 2014. The stratified random sampling method in the survey research also analyzed the trend in house rental values in New Haven and Achara Layout utilizing the Analysis of Variance (ANOVA) estimation approach. The research revealed a consistent rise in housing rental prices in Enugu over the last ten years. It also revealed that housing costs were considerably greater in New Haven compared to Achara Layout.

Research Gap

The research by Chukwu et al. (2016) examining house rent growth in Enugu concentrated solely on New Haven and Achara Layout among the 17 neighborhoods comprising Enugu urban. In contrast to Chukwu et al. (2016), our research did not concentrate on the increase of house rents in Enugu; rather, it examined the housing affordability of households throughout the entire Enugu urban area, utilizing housing affordability indexes, with house rents serving as a proxy for households' housing expenditures. Odoanyanwu et al. (2025) evaluated the housing situations of daily low-income earners in Enugu State, but they did not employ affordability indexes and household income to assess the affordability of house rents, as this study did. Egbara et al (2023) examined how urban spatial structure impacts housing quality and how population growth affects housing affordability in Enugu urban, which is distinctly separate from the primary focus of our research. Ononugbo et al (2010), unlike our own study, examines if factors such as income, education, gender, family size, and limitations like elevated building material costs and high rent influence the choice of Enugu residents to live in slums like Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle.

This research distinctly contrasts with empirical studies examined by employing Analysis of Variance (ANOVA) and a Dummy Variable Regression Model to assess whether house rents are statistically identical across the three local government areas in Enugu Urban. Using the ANOVA model, we analyzed and compared the average rents for specific types of residential housing, including single rooms, one-room self-contained units, one-bedroom flats, two-bedroom flats, and three-bedroom flats across the three local government areas.

This study significantly enhanced understanding of the housing affordability issue in Nigeria, particularly concerning Enugu urban in Enugu state.

METHODOLOGY AND MODEL SPECIFICATION

Research Design

This study is a household survey aimed at gathering trustworthy data regarding the level of housing affordability issues faced by residents of Enugu urban. Its purpose is to offer percentage approximations of the income households in Enugu allocate to housing and how much they can afford for other essential household necessities after housing costs. The survey research method of administering questionnaires was employed to gather diverse household information to meet the research objectives outlined in the first chapter of this study. The survey aligns with and incorporates questions from the housing respondent section of the Nigerian Living Standards Survey (NLSS) household questionnaire of the federal statistics office.

Area of the Study

This research focuses on Enugu, Nigeria, which includes three (3) Local Government Areas: Enugu East, Enugu North, and Enugu South Local Government Areas. It focused on households residing in rented apartments within Enugu Urban Neighborhoods, including Ogbete, Ogui, Maryland, Nike, Abakpa, GRA, New Haven, Emene, Asata, Achara Layout, Gariki, Uwani, and Awkunanaw.

Population of the Study

The population for this study is the universe of regular households (RH) in Enugu as reported by the Federal Republic of Nigeria (2011) in the 2011 National Population Projection. Enugu is said to have a total of 173,061 of such households as at 2011.

Sample Size

This research used the Yamane Taro (1967) formula for determining sample size at a 5% significance level, represented as: $S = N/(1 + N(e2))$, where S denotes Sample size, N represents the Population of the Study (Total Households in Enugu), and e indicates the Level of Significance (5% in this instance, reflecting a 95% confidence level). Given that N from the aforementioned population of study is 173,061 households and the significance level 'e' is 0.05 (5%), the sample size 'S' is calculated as follows: $S = 173,061 / [1 + 173,061 (0.052)] = 399$. Thus, a survey was conducted with 399 metropolitan households from the three local government areas comprising Enugu to gather the necessary data on housing affordability in the city.

Sampling Technique

We collected the necessary research data from participants throughout the neighborhoods in Enugu employing a multi-stage sampling method. This represents a type of cluster probability sampling involving two or more stages for sample selection. This sampling method was selected because it breaks down large groups of the population into smaller groups in phases to facilitate the primary data collection process. We initially split Enugu into three (3) equal groups consisting of the three local governments that form the city: Enugu East, Enugu North, and Enugu South local government areas. The three local government regions were divided into Neighborhoods referred to as Enumeration Areas. A total of 30 Neighbourhoods were chosen from each local government area through simple random sampling, with ten (10) Neighbourhoods selected from each area. Trained researchers and enumerators randomly picked 13 households from each of the 10 neighborhoods, resulting in a total of 390 households. The final 9 households to reach our sample size of 399 households were chosen 3 from each local government area through accidental sampling. In instances where a chosen household declined our questionnaire or does not reside in a rented apartment, the tool was provided to the subsequent household, or random sampling was employed to administer it to any available and willing household in the Neighborhood that could provide the information. We employed accidental sampling in a limited number of instances to reach any household within our range that could provide information. Throughout the fieldwork, we found that a number of households were either unavailable to accept our questionnaire or were hesitant to respond due to personal reasons. We also took into account the literacy level of respondents as we are not employing an interview method. Consequently, we distributed questionnaires to households where potential respondents possess sufficient literacy to comprehend the concerns outlined in our instrument.

Data Collection and Instrumentation

Well structured and validated questionnaire was administered to selected households to obtain the needed data for our research analysis. We used fixed response questionnaire organized in sections where similar issues are in same sections. Questionnaire administration was adopted in other to guarantee comfortability for the respondents and eliminate related influence on Respondents' responses.

Validation of Instrument

We observed Face Validity by an expert to ensure the soundness of our questionnaire. That is, its ability to successfully elicit sound information on our targeted objectives. Uzoagulu (2011) states that face validation judges at face value, the appropriateness of a measuring instrument. According to him, almost all instruments need to be face validated to establish that they are right instrument for measuring the trait or the features to be measured.

Reliability of Instrument

Prior to the main survey, a preliminary survey took place in all 3 LGAs to assess the reliability of the survey tool (questionnaire). Following the required modifications, the schedule was implemented, and a reliability test was conducted using the two survey responses. The Cronbach's alpha coefficient was employed to assess the instrument's reliability for the specific population being studied. This provides an indication of the precision or reliability with which a collection of items assesses one particular construct. The contrast lies between measurement and validity. The coefficient's theoretical range spans from 0 to 1. The outcome identified Cronbach's Alpha as the suitable statistical test yielding an Alpha coefficient of 0.769 (76.9%). This outcome suggests that the internal consistency of the responses from the research tool (Questionnaire) is 76.9% reliable, demonstrating a strong level of internal reliability.

Administration of Research Instrument

The researcher, together with employee research graduate assistants, administered the questionnaire to the respondents in the area. The research assistants employed are experienced people in academic process selected from the different Neighbourhoods that make up Enugu urban. We made this choice to ensure familiarity of the different parts of the study area which really facilitated the questionnaire administration.

House-Expenditure-to-Income (HEI) Affordability Index

The affordability index for household expenditure relative to income was created to reflect our first objective. It is commonly employed as a measure of housing affordability. This index indicates the share or percentage of a household's income allocated to housing costs. The result is assessed against the 30% housing affordability benchmark established by scholars; housing exceeding this threshold is considered unaffordable, and if it pertains to a rented apartment, the resident is classified as rent burdened. Typically, this ratio is calculated from monthly household housing expenses using the formula:

$$\mathrm{HEIRH_i} = \frac{\mathrm{MHEH_i}}{\mathrm{MHDI_i}} \times \frac{100}{1}$$

Where,

$\mathrm{HEIRH_i}$ = Houssing Expenditure-to-Income Ratio of household i

$\mathrm{MHEH_i}$ = Monthly housing expenditure of household i

$\mathrm{MHDI_i}$ = Monthly household disposable income of household i

This study adopts the widely used 30% affordability threshold to judge the housing affordability situation of the selected households.

To address research objective one, we employed our questionnaire to gather data on the monthly housing costs and the monthly household income of the selected households in Enugu. We subsequently replaced the values for MHEHi and MHDIi respectively to produce the House Expenditure-to-Income Ratio for every household. To achieve a negative or positive House – Expenditure to Income Affordability Index, a somewhat distinct method is required. Deducting a household's housing costs from 30% of their total yearly disposable income will indicate the affordability of their housing expenses relative to their income. To effectively obtain this index, two main steps were undertaken. Initially, we calculated the variable for 30% of income, and then we derived the initial housing expenditure to income affordability index as follows:

$$30\%\text{MHHDIV} = \frac{30}{100} \times \text{TMHHDI}$$

where,

30%MHHDIV = 30% of Household's Monthly disposable income

TMHHDI = Total Monthly household's disposable income

We then derived the required index as follows:

$$\text{HEXPIAINDEX} = 30\%\text{MHHDIV} - \text{THEXPH}$$

Where,

THEXPH = Total Housing Expenditure of household

HEXPIAINDEX = Housing expenditure to income affordability index

A zero (0) value outcome signifies a state of neutral affordability, indicating that those households allocate precisely 30% of their disposable income to rent and are not considered rent burdened. A negative value for any household indicates that it spends over 30% of its disposable income on rent and is considered rent burdened. In this scenario, a greater negative value signifies a larger rent burden. Conversely, households with positive values experience no rent burden, and as the positive value increases, the proportion of income allocated to housing costs decreases.

Shelter Poverty (SP) Affordability Index

We created a shelter poverty index to tackle the second research aim of this study. The shelter poverty method is a fundamental non-housing expenses approach. It mainly focuses on how housing costs impact a household's ability to meet essential non-housing requirements like food, clothing, healthcare, education, and so on. Therefore, it assesses how well the After Housing Expenditure Disposable Income (AHEDI) of a household can manage its non-housing expenditures.

We employed the poverty line threshold approach in conducting this shelter poverty index evaluation. This is attributed to the probable challenges in establishing a unified family budget standard in the research region. Regarding household income, we utilized disposable income, which reflects the amount households can truly allocate to housing and non-housing necessities after meeting their tax responsibilities. Therefore, the index will show whether the expense of housing has a devastating impact on the welfare of any household.

A two-step method was utilized to create this index. The initial step involved calculating the disposable income after housing costs by deducting the total monthly housing expenses from the overall monthly household disposable income in the following manner:

MNNAHEXDINCH = TOTMNNHDINC – TOTMNNHEXPH

where,

MNNAHEXDINC = Monthly after housing expenditure disposable income of household

TOTMNNHDINC = Total monthly household disposable income

TOTMNNHEXPH = Total monthly housing expenditure of household

The shelter poverty affordability measure was thus defined as the degree to which the calculated monthly disposable income after housing expenses of a household meets their essential non-housing needs, as indicated by their individual non-housing household consumption poverty threshold. In the second step, we deducted the non-housing household consumption poverty threshold estimates from the disposable income after monthly housing expenditure. Therefore, we resolved the subsequent equation to determine the shelter poverty affordability index for various households in our research sample:

HSHEPOVAFFINDEX = MNNAHEXDINCH – HNHCPTHD

where,

HSHEPOVAFFINDEX = Household Shelter Poverty Affordability Index

HNHCPTHD = Household Non-Housing Consumption Poverty Threshold

Households with a value of zero (0) are at the threshold of neutral shelter poverty affordability, indicating that their disposable income after housing costs precisely meets their non-housing consumption poverty level, and these households are not considered to be experiencing shelter-induced poverty. Therefore, negative index values signify households experiencing poverty due to shelter and a shortage of disposable income after housing costs. That is, families whose housing costs have significantly hindered their capacity to sufficiently meet other essential household needs, resulting in a catastrophic effect on their welfare. Households with positive values experience no shelter-related poverty and will possess disposable income surplus after covering housing expenses.

Analysis of Variance (ANOVA)

To fulfill our research objective three, we employed Analysis of Variance (ANOVA); a Dummy Variable Regression Model, to assess whether house rents are statistically equal among the three local government areas in Enugu Urban. ANOVA is a regression model featuring regressors that are entirely dummy or qualitative in nature (Gujarati and Porter, 2009). Therefore, we performed a regression of house rent on three distinct characteristics of households in Enugu Urban, specifically those residing in Enugu East, Enugu North, or Enugu South local government areas. Using the ANOVA model, we assessed and contrasted the average rental prices of chosen residential housing types including single rooms, one-room self-contained units, one-bedroom flats, two-bedroom flats, and three-bedroom flats across the three local government areas.

We noted carefulness in applying dummy variables to steer clear of the dummy variable trap, which occurs due to perfect collinearity. Given that our qualitative variable (local government of residence) has three categories (Enugu East, Enugu North, and Enugu South), we included only two dummy variables in the model to prevent the dummy variable trap. Dummies were allocated to Enugu North and Enugu South, with Enugu East serving as our reference category for all comparisons.

In line with our explanation above, we specified our ANOVA equation as follows:

$$HR = \beta_1 + \beta_2 ENORTH + \beta_3 ESOUTH + \mu$$

where

HR = House rent of selected type of residential houses in Enugu Urban.

β_1 = Intercept of the model, representing mean house rent of residential houses in Enugu East which is our benchmark category.

β_2 = differential intercept coefficient of Enugu North category, indicating by how much the mean house rent of Enugu North residents differ from that of Enugu East.

β_3 = differential intercept coefficient of Enugu South category, indicating by how much the mean house rent of Enugu South residents differ from that of Enugu East.

ENORTH = 1 if the household resides in Enugu North LGA and 0 if otherwise.

ESOUTH = 1 if the household resides in Enugu South LGA and 0 if otherwise.

RESULTS AND DISCUSSIONS OF FINDINGS

Housing Expenditure-To-Income Affordability Index

As detailed in our methodology, we created the Housing-Expenditure-To-Income Affordability Index to address our first research objective. We applied the method to calculate the fraction of household income allocated to rent in Enugu and identified those households facing a Housing-Expenditure-To-Income Affordability issue or not. The findings are as presented in table 4.1:

Table 4.1: Mean Percentage Monthly Income that go into House Rent in Enugu

Group of Percentage Income that go into House Rent	**Frequency (F)**	**Percentage**	**Mid Group Value (X)**	**FX**
1% - 10%	41	10.62	5.5	225.5
11% - 25%	120	31.09	18	2160
26% - 30%	20	5.18	28	560
31% - 40%	87	22.54	35.5	3088.5
41% - 50%	58	15.03	45.5	2639
51% - 60%	40	10.36	55.5	2220
61% - 70%	18	4.66	65.5	1179
71% - 80%	2	0.58	75.5	151
Total	**386**	**100**		**12223**
Mean Percentage Monthly Income = $\frac{\sum FX}{\sum F} = \frac{12223}{386} = 31.67\%$				

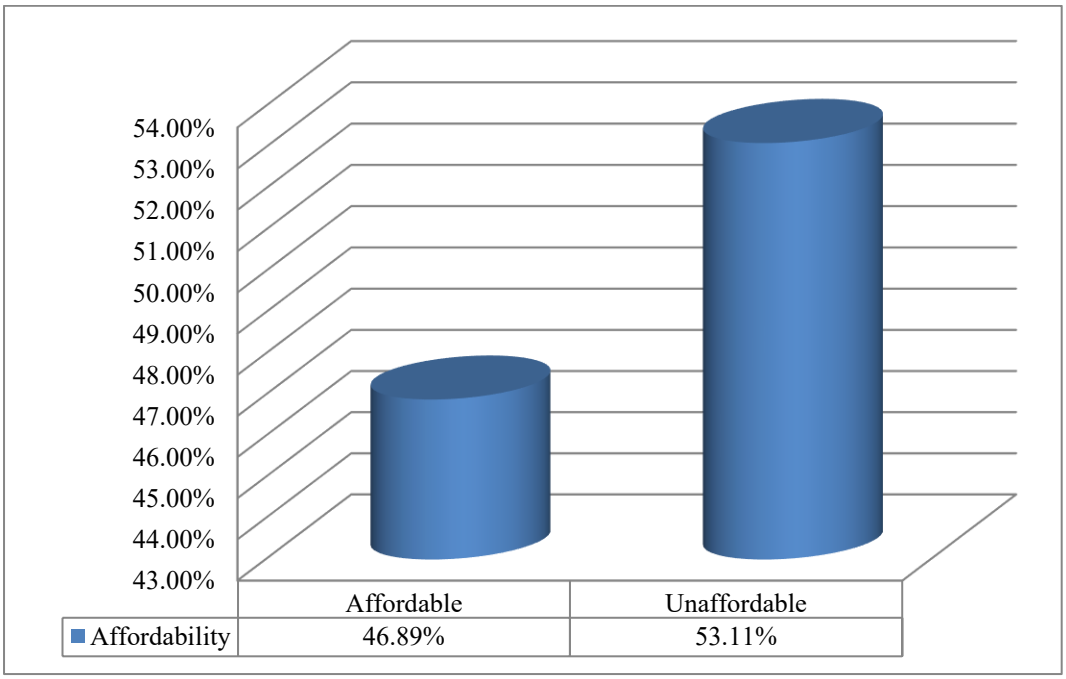
Source: Authors' Computation and tabulation

Table 4.1 indicates that the average percentage of monthly income spent on house rent by households in Enugu is approximately 31.67% of their monthly earnings. This indicates that, on average, a typical household in

Enugu allocates approximately 31.67% of its monthly income to housing expenses. A more detailed analysis of the table reveals that approximately 58.25% of households in Enugu allocate over 25% of their monthly income to rent, while 53.1088% spend more than 30% of their monthly income on housing costs. This finding aligns with Aribigbola's (2006) research in Akure, which indicates that approximately 57% of households allocate over 30% of their income to housing. It aligns with the findings of Abimaje et al. (2014), which reveal that a higher percentage of households in Idah, Nigeria, allocate over 30% of their income to housing.

Judging with the 30% threshold we adopted for this study, the mean monthly income of 31,67% spent on house rent in Enugu indicates that housing is generally unaffordable for households in Enugu. From the result also, a policy simulation can be formed that at the adopted 30% threshold, 53.11% of the households in Enugu will be rent burdened. Reduction of the threshold to 25% in line with the Enugu rent edict, will increase the percentage of rent burdened households in Enugu to58.29%. Recall that Enugu rent edict introduced fixing of a maximum rent of not more than 20% of annual income to be paid workers in middle and low income group and not more than 25% of annual income to be paid by those in the upper income group. If the threshold is increased to 40%, about 30.57% of the households in Enugu will be rent burdened.

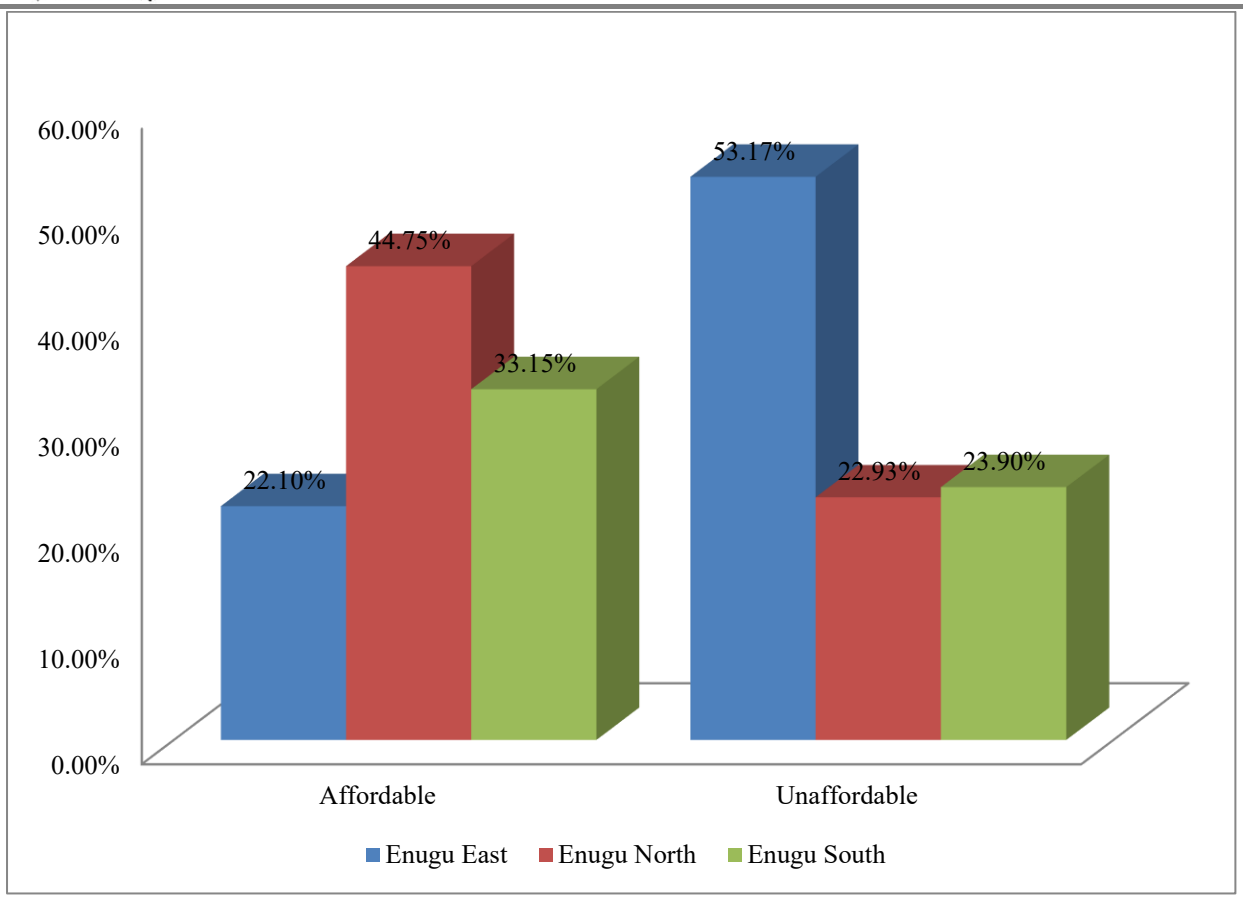
Figure 4.1: Percentage Distribution of Housing – Expenditure – To – Income (HEI) Affordability Index across Households in Enugu



Source: Authors' Computation and Graphing

Figure 4.1 indicates that 46.89% of households in Enugu possess affordable housing, whereas 53.11% reside in housing that is considered unaffordable according to the Housing-Expenditure-To-Income Affordability Index. This indicates that approximately 53.11% of households in Enugu allocate over 30% of their monthly earnings to housing costs, making them rent burdened. Our survey reveals that approximately 30.57%, 15.54%, and 5.18% of households allocate over 40%, 50%, and 60% of their monthly income, respectively, towards housing rent in Enugu. This aligns with the results of Abimaje, Akingbohungbe, and Baba (2014), which show that a larger proportion of individuals in Idah Town, Nigeria, allocate more than 30% of their monthly earnings to housing, while some exceed 50% of their monthly income on housing. Such a situation contradicts the 30% widely recognized benchmark established by scholars.

Figure 4.2: Percentage Distribution of Housing – Expenditure – To – Income Affordability Index across LGAs in Enugu

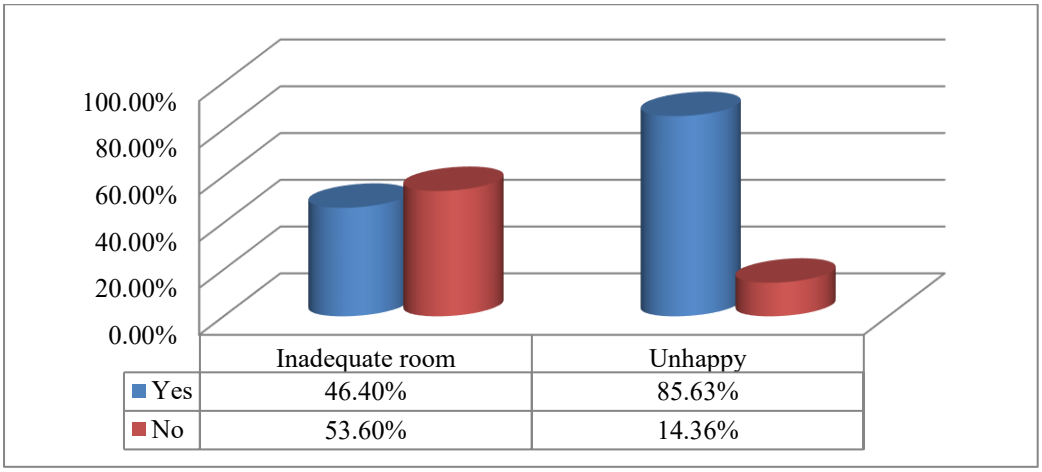


Source: Authors' Computation and Graphing

Figure 4.2 shows that 22.099% of households experiencing no Housing-Expenditure-To-Income Affordability issue come from Enugu East LGA. 44.75% and 33.149% of the households are from Enugu North LGA and Enugu South LGA, respectively. This indicates that the percentage of households that are not rent burdened in Enugu is 22.099% in Enugu East LGA, 44.75% in Enugu North LGA, and 33.149% in Enugu South LGA.

Rent-burdened households are allocated as 53.17% in Enugu East LGA, 22.93% in Enugu North LGA, and 23.90% in Enugu South LGA. It's important to mention that Enugu North has the highest percentage of affordable housing and the lowest percentage of unaffordable housing. This can be attributed to the fact that many well to do homes reside in Enugu North Urban Neighbourhoods such as New Haven and Independence Layout.

Figure 4.3: Percentage Distribution of Non – Rent Burdened Households with Inadequate Rooms and/or Unhappy about Physical and Environmental Nature of their Housing

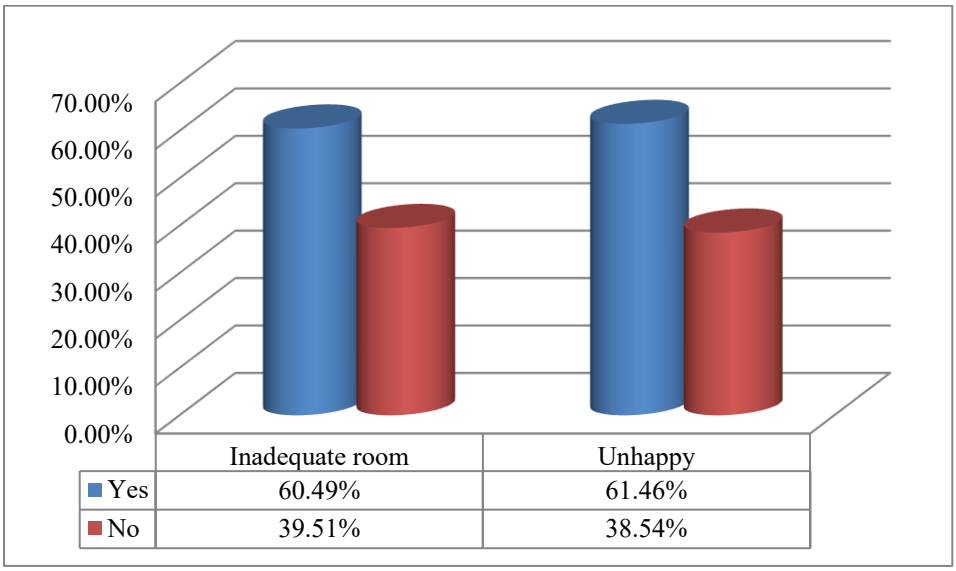


	Inadequate room	Unhappy
Yes	46.40%	85.63%
No	53.60%	14.36%

Source: Authors' Computation and Graphing

Our survey results in figure 4.3 additionally indicated that 46.40% of households that are not experiencing rent burden stated they have an insufficient number of rooms for their household size. 86.63% of these households also reported dissatisfaction with the physical and environmental aspects of their housing. This clearly shows that these households, while not facing rent burden, reside in unsuitable housing regarding the number of rooms and/or the physical and environmental quality of their homes. Our survey also found that 96.17% of families living in insufficient rooms are attributed to expensive housing costs in Enugu. Likewise, 88.07% of households dissatisfied with the physical and environmental aspects of their housing stated that they could not pursue better options because of high rental prices in Enugu. As a result, the issue of housing affordability or elevated rental prices in Enugu is significantly affecting the welfare of its residents adversely.

Figure 4.4: Percentage Distribution of Rent Burdened Households with Inadequate Rooms and/or Unhappy about Physical and Environmental Nature of their Housing



Source: Authors' Computation and Graphing

Figure 4.4 indicates that 60.49% of rent-burdened households also resided in inadequate conditions, and 61.46% of these households are dissatisfied with the physical and environmental aspects of their housing. Every household in this category cited high house rents in Enugu as the reason for their lack of access to sufficient rooms and better-quality housing. The welfare consequence is that the overall wellbeing, health, and security of these households have been significantly compromised by the generally high costs of housing in Enugu.

Shelter Poverty Affordability Index

We achieved objective two by creating a shelter poverty affordability index for every household as suggested, using the non-housing poverty threshold for families of a certain size. It demonstrated how much After Housing Expenditure Disposable Income (AHEDI) of households can finance or meet their essential non-housing costs represented by the non-housing poverty line. Therefore, the shelter poverty index showed whether housing costs have a disastrous impact on the well-being of families in Enugu.

Table 4.2 : Average Monthly Non – Housing Poverty Threshold for Households of Specified Size

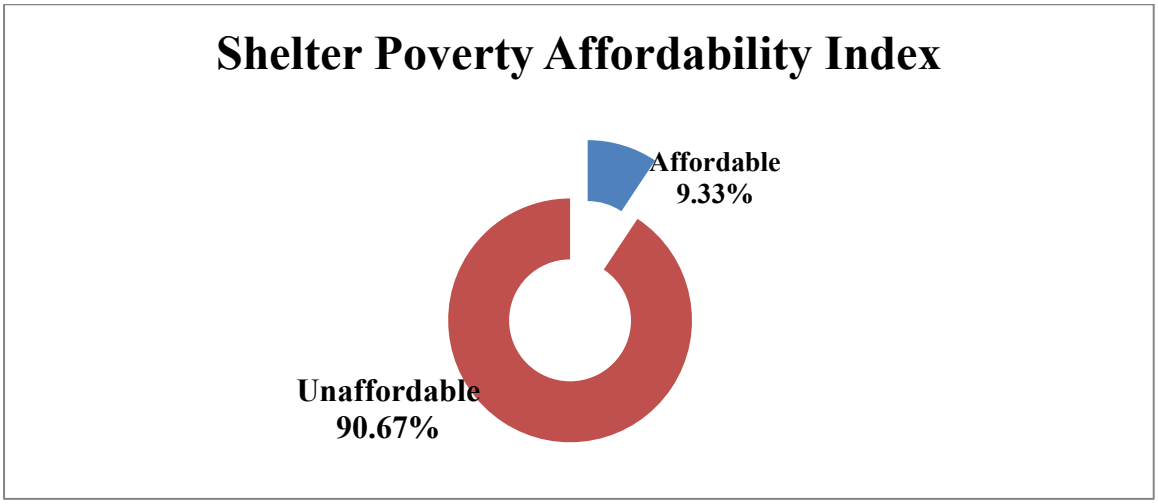
Household Size	**Average Non – Housing Poverty Threshold ($1 = ₦1,300)**		
	Annually ($)	**Monthly ($)**	**Monthly (₦)**
One Person	$10,053	$837.75	₦1,089,075

Two People	$13,626	$1,135.5	₦1,476,150
Three People	$17,200	$1,433.3	₦1,863,290
Four People	$20,773	$1,731.1	₦2,250,430
Five People	$24,346	$2,028.8	₦2,637,483

Source: World Bank Group, 2024

Table 4.2 indicates that a single-person household needs ₦1,089,075 to cover its non-housing costs each month. Two people need ₦1,476,150, three people require ₦1,863,290, and five people need ₦2,637,463 each month for basic non-housing expenses.

Figure 4.5: Percentage Distribution of Shelter Poverty Affordability Index across Households in Enugu



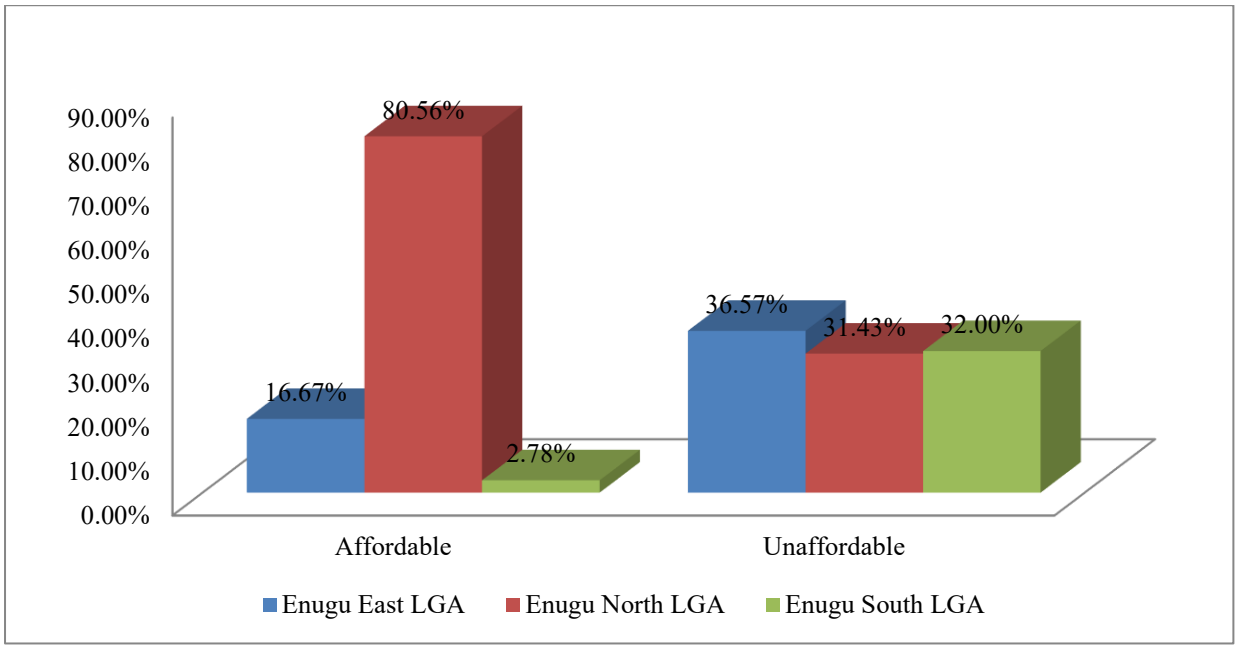
Source: Authors' Computation and Graphing

Our research reveals that 90.67% of the 386 households evaluated face shelter affordability issues based on the Average Non-Housing Poverty Threshold, with only 9.33% not experiencing such problems. This indicates that up to 90.67% of the surveyed households experience poverty caused by housing conditions. These households are unable to sufficiently cover other essential non-housing expenses like food, healthcare, education, clothing, and more after fulfilling their unavoidable housing costs. This result aligns with Okechukwu's (2009) research, which examined the state-level affordability of housing and determined that 3 in 5 urban households in Nigeria face poverty related to shelter. This situation may compel impacted families to move down the housing ladder or, in fact, confine them in a low-quality housing situation indefinitely. As a result, these households will face harmful and unwanted (physical, health, emotional, mental) repercussions associated with residing in inadequate, overcrowded, and dilapidated living conditions.

The significant percentage of shelter poverty affordability issues indicates that housing costs severely impact household welfare in Enugu. A significant and crucial detail is that the proportion of households facing shelter-induced poverty (90.67%) is substantially higher than that of rent-burdened households (53.1%), which is determined using the 30% income criterion. This aligns with the viewpoint of certain critics who argue that the 30% income limit for housing costs, as a standard for affordable housing, can occasionally be misleading. In other words, certain households might appear to have affordable housing based on the 30% income benchmark, yet their remaining income, after covering essential housing costs, may be insufficient to meet other fundamental household needs that contribute to well-being. Thus, the requirement for shelter poverty

affordability assessments, to determine if a household can meet its non-housing consumption level after housing costs.

Figure 4.6: Percentage Distribution of Shelter Poverty (SP) Affordability Index across LGAs in Enugu



Source: Authors' Computation and Graphing

Figure 4.6 illustrates the distribution of the Shelter Poverty Affordability Test results across the Local Government Areas (LGA). It indicates that 36.57% of households experiencing Shelter Poverty Affordability Problem or housing-induced poverty are located in Enugu East LGA. 31.43% come from Enugu North LGA, whereas the other 32% are from Enugu South LGA. This suggests a fairly uniform distribution of housing-related poverty throughout Enugu Urban neighborhoods. Therefore, all initiatives aimed at minimizing the adverse effects of high housing rents or expenditures on household welfare in Enugu Urban must be comprehensive or all-encompassing.

The figure shows that 16.67% of the 36 households not experiencing housing-induced poverty are located in Enugu East LGA. 80.56% and 2.78% are from Enugu North and Enugu South LGAs, respectively. The exceptionally high proportion of these households in Enugu North LGA could be due to numerous affluent tenants living in neighborhoods like Independence Layout and New Haven. Nonetheless, the primary concern to note is that the typical households not experiencing housing-induced poverty, which comprises only around 9% of the total 386 surveyed households, is quite alarming.

Based on the Economic Theory of Opportunity Cost that underpins this study, this result typically suggests that households in Enugu would forfeit considerable value of other essential non-housing consumption needs because of high rent costs or housing expenses. Therefore, we conclude that the expense of housing severely impacts household welfare in Enugu

Analysis of Variance (ANOVA)

In the third objective of this study, we aimed to determine whether the rental prices of residential houses are statistically uniform across the three Local Government Areas in Enugu Urban. We obtained this through Analysis of Variance (ANOVA), a regression model with dummy variables. We utilized a three (3) bedroom apartment rental unit for this ANOVA regression. Our choice was influenced by the observation that over half (51.81%) of the households surveyed in the three (3) Local Government Areas reside in 3-bedroom flats. Therefore, the three-bedroom flat housing unit serves as a more effective basis for comparing the average rental prices of residential properties in the three local government areas comprising Enugu Urban. The components of interest from that ANOVA result are summarized in Table 4.3 below.

Table 4.3: ANOVA Regression Output Summery

Variable	Coefficient	t Statistics	Probability
C	977,142.8	34.610	0.00000
ENORTH	175,415.28	4.095	0.0001
ESOUTH	-145,196.72	-4.125	0.0001
F Statistics = 35.832		**Probability F Statistics = 0.0000**	

Source: E-Views Estimation

The estimated result of the ANOVA regression contained in table 5.9 can be stated thus:

RENT = 977,142.8 + 175,415.28 ENORTH - 145,196.72 ESOUTH

The result indicates that on the average, house rent of a 3 bedroom flat in Enugu East Local Government Area (our benchmark category) is about ₦977,142.8 (the intercept of the model) per month. The slope parameters of dummy variables ENORTH and ESOUTH indicates that the house rent of a 3 bedroom flat in Enugu North LGA is greater than that of Enugu East LGA by ₦175,415.28 while that of Enugu South LGA is less than that of Enugu East LGA by ₦145,196.72. Hence, average house rent of 3 bedroom flat in Enugu North LGA is about ₦1,152,558.08 while that of Enugu South LGA is about ₦831,946.08. This outcome indicates an annual overall average of ₦987,215.7 house rent for a 3 bedroom flat in Enugu. These average values are on the high side for an average income household. For instance, all the average house rents of a 3 bedroom flat across the 3 Local Government Areas are higher than the Nigerian minimum wage of ₦70,000 per month and even above monthly take home salary of academic Professors in Nigerian unversities. Thus total income of a household earning just about the Nigerian minimum wage is nowhere close to the monthly cost of a 3 bedroom flat in Enugu on the average. Our field survey show further that some 3 bedroom flat across Enugu, especially in Enugu North LGA neighbourhoods are as high as ₦1.5 million and above monthly.

The absolute value of t statistic of dummy variables ENORTH and ESOUTH given as 4.09804 and 4.124932 respectively and their probability values 0.0001 and 0.0001 respectively are significant at 5% level of significance. It means that there is significant difference between house rent of 3 bedroom flat in Enugu East LGA and that of both Enugu North LGA and Enugu South LGA. Hence we can generally conclude that house rent is both numerically and statistically higher in Enugu North LGA, followed by Enugu East LGA and then Enugu South LGA. This result also agrees with the findings of Okechukwu (2009) that there exists significant difference in housing expenditure of households across the different states in Nigeria. It is also consistent with the work of Chukwu et al (2016) who discovered significant difference in house rent paid by households in New Haven and Achara Layout in Enugu. Consequently, households in rented apartments in Enugu North are most likely to suffer housing affordability problem more than others in Enugu urban.

CONCLUSION AND RECOMMENDATIONS

The overall importance of housing affordability and the implications of housing expenditure on households' welfare cannot be over emphasized. We have established in this study that 53.11% of the households surveyed in Enugu are rent burdened and 90.67% of them have shelter induced poverty. Consequently such households cannot adequately provide their basic non housing consumption needs after housing expenditure. Therefore it is the conclusion of this study that housing affordability or housing expenditure has serious negative implications for household welfare in Enugu.

Based on the research results mentioned earlier, we propose the following suggestions:

- The governments of Enugu State ought to generate additional job or employment prospects via direct investments, tax breaks, subsidies, direct hiring, loan options for small and large businesses, and various other strategies to allow more household members to secure jobs, thereby supplementing household income and ultimately aiding in lowering the proportion of household income allocated to housing, while also decreasing the After Housing Expenditure Disposable Income Deficit. Therefore, a decrease in rent stress and poverty caused by housing, along with enhanced well-being of families in Enugu.
- We advocate for a rise in the minimum wage for civil servants (whose earnings are fixed) from ₦70,000 at present to no less than ₦500,000. This will assist in closing the divide between the After Housing Expenditure Disposable Income (AHEDI) and the non- housing consumption limits of households within that classification.
- Monitoring and regulating the actions of landlords of rental apartments in Enugu, particularly in Enugu North LGA, is essential to diminish their unjust and excessive housing fees levied on vulnerable tenants driven by excessive profit desires.
- Due to dissatisfaction among households regarding the physical and environmental conditions of their housing, Enugu requires housing laws that compel landlords of unappealing rented residences to improve them for better habitability and to offer enhanced amenities to benefit their tenants' welfare.
- The government ought to establish more sustainable housing loan programs via the mortgage system in Enugu, enabling more families to acquire homes over time and subsequently allocate their full disposable income towards meeting other essential non-housing needs for enhanced welfare.
- We suggest that subsidies be provided for the local manufacturing and importation of modern construction materials, particularly tiles and aluminum roofing sheets, along with materials for borehole water supply. This will significantly lower the expenses of building homes with preferred modern materials that improve welfare and consequently decrease the frequency with which landlords raise or adjust rents for properties constructed with such costly materials.
- The federal and state governments of Nigeria must prioritize more qualitative and subsidized public education and healthcare to allow low-income households or tenants greater access to quality education and health services following housing costs.
- The Enugu State government ought to establish additional housing estates and offer them at reasonable prices to Enugu residents in order to alleviate congestion in the primary urban zones of Enugu and lessen the demand strain on current housing, which leads to elevated rents and subsequent housing affordability issues.

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