

HOUSING NEEDS FOR THE LOW-INCOME PEOPLE OF ENUGU METROPOLITAN AREAS OF NIGERIA: POLICY ISSUES AND CHALLENGES

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Abstract

The main purpose of this dissertation was to determine whether income, education, gender, family size, and constraints like high cost of building materials, high house rents, etc. are the factors that contribute to the Enugu residents decision to dwell in slums of Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle where they generate pollutions that devastate environment and human health, warranting the need for the low-income housing for these groups to avoid environmental devastation. Therefore, a survey design was applied using constructed questionnaires, oral interviews with policymakers, professionals, bankers, and contractors. Hypothesis was used to determine the source of the significance. Statistical testing of the following null hypotheses include: HO₁: That there is no significant different between income levels of the Enugu residents and those of slum residents and their decision to live in slum areas. HO₂: That there is no significant different between education levels of the Enugu residents and those of slum residents and their decision to live in slum areas. HO₃: The conclusions were that the data collected from the study revealed that low-income groups could not afford rent for a house in the city due to their low monthly salary (contributed by their educational background), large family size and strict government rules on land/housing, which pushed them to dwell in slums where there were no infrastructural services, no running clean water, no garbage pickups, and sewage services. Therefore, low-income housing was needed in Enugu Metropolitan areas of Nigeria to avoid environmental and health devastations caused by these groups in their slum dwellings, and future research was needed in these areas.

INTRODUCTION

Cities can provide healthy and stimulating environment for their dwellers without imposing any unsustainable demands on natural resources and ecosystems. A successful city is one which meets multiple goals like adequate housing, working environment for her dwellers, water supply, and provision for sanitation, garbage collection/disposal, paved roads, and other forms of infrastructural services essential for healthy achievement. This implies an understanding of the link between built environment (soil, water resources and climate) and biological environment (local flora and fauna) (Todaro, 1981).

Environmental problems become particularly serious where there is a rapid expansion in urban population with little or no considerations for the environmental implications. In most third world countries like Nigeria, urban populations have expanded without any associated expansion in the services and facilities essential for adequate healthy urban environment, which usually occurs with little or no effective pollution control. Most of the cities in the developing countries have inadequate affordable housing and their residential environments are commonly characterized as slums. The present study focuses on slums in Enugu, Nigeria in West Africa.

Location and Geographical Features of Enugu

The City of Enugu, is located within latitude 6° 25'N of the equator and longitude 7° 25'E. It is 2545m (meter) above the mean sea level, with an area of about 79.25 square kilometers. The city is lying mainly on the Asata Nkporo Shale sedimentary rock.

The soil characteristically consists of hydro orphic soil which is mineral rich soil and whose morphology is influenced by seasonal water logging caused by underlying impervious shale. The annual rainfall varies between 100 to 200 meters with its peak occurring between mid March and September. The rainfall average is 1412 millimeters per month, with the lowest rainfall in February. The temperature is generally high throughout the year with monthly maximum temperature ranging between 28.1°C and 32.2°C. The mean monthly minimum has been recorded at 22°C and 24.9°C in July and March respectively. The vegetation is generally losing its original rainforest nature to Guinea Savanna type. The city has a moderate undulating temperature with slopes ranging between 1-25%, hence enhancing effective drainage as runoff which easily empties into the network of natural drainage channels crossing the city like Mmiriocha River, which is a tributary of Ajalli River (Government of Enugu State of Nigeria, 1992).

Enugu, which literally means hilltop, derives its name from its position among the Udi Hills, which is at an altitude of about 223 meters above sea level (State Land Use Decree, 1976, 78). It is an important administrative, Industrial and Commercial Center in the eastern part of Southern Nigeria (Appendix A). These led to its population growth primarily through immigration from the surrounding rural areas.

Rapid urbanization and industrialization in Enugu Nigeria from the 1960s through 1989 resulted in two housing related problems. The first was the shortage of low-income housing units, and the second was the increasing price of affordable housing. The affordable housing shortage coupled with the rising cost of available units made it increasingly difficult for low-income households to maintain an acceptable standard of living in Enugu, thereby pushing them to live in slums where they caused devastations to the environment. People demonstrated in huge numbers to make the government aware of their needs, and to show how desperate the citizens needed the government's support. The issue turned into an environmental threat to the government because of the pollution generated by the "slum" dwellers.

Enugu, as one of the Nigerian cities, lacks adequate infrastructure for housing, sanitation, clean water supply, solid waste management and open space amenities like parks and recreation. These are the basic facilities needed for the growth and functioning of a city. Much of these are due to the land use planning statutes that encompass the evolving functions and responsibilities of urban areas, as numerous Nigerian research studies have documented (Aka, 1993).

The availability of shelter, which is one of the three basic human needs, is considered in this study as a social problem which not only affects the environment, but also, affects population growth development. Housing provides a combination of services like space amenities which creates privacy without squatting six to ten persons in a room. As family size increases in the slum with ten to twelve to a room, the waste generated impacts the environment leading to diseases like cholera, dysentery, chicken pox, premature death, and tuberculosis, while damaging or destroying natural resources.

Housing also requires other services to sustain the communities like water supply, waste/solid waste disposal, and environmental pollution control. Enugu, being a major administrative center since the colonial times, became an industrial and commercial center, which led to its population growth. Its anomalies in the indigenous land tenure system (due to its topography) became more apparent and resulted in the overcrowding measures of housing quality in the slum areas of Enugu. As a result, this increased environmental pollution which then warrants housing needs for these low-income groups. Upon this is what this research is based.

Enugu is the Capital City of its state (the Enugu State), which covers an area of 85 square kilometers (km), having a population of over one million people (Government of Enugu State of Nigeria, 1992). The city is a well developed coal mining, commercial, financial, and industrial center. It is a Central Business Center (CBC), with a booming economy and vast investment opportunities. Being a well known coal mining city has earned it the euphemistic name of “Coal City.” Historically, the city in 1917 was declared a second-class township and its political career grew very fast. Its political accomplishments are as follows:

- 1927 to 1939, capital of the Southern Province
- 1939-1951, capital of the Eastern Province
- 1951-1967, capital of the Eastern Region of Nigeria
- 1967-1970, capital of the Republic of Biafra
- 1970-1976, capital of the East Central States, when the Nigerian states were born
- 1976-1991, capital city of the Old Anambra State
- 1991-1996, capital city of Enugu including Abakaliki Administrative Division
- 1996-present, capital of Enugu State which excludes Abakaliki because by then Ebonyi State was created with Abakaliki as its capital. (Government of Enugu State, 1992)

All these attract people from their farmlands for job search, sustainable living and security. These contribute to its heavy population growth without sustainable housings, thus forcing low income and non-educated residents to settle for slums at Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle. Since Enugu’s growth has exceeded infrastructural capacity, these slums lack social infrastructure and government services like fire services, police post, running water, electricity and solid waste management.

Research Questions

To what degree do income, education, total population (gender) household size, and constraints like implementation of government policy on land and housing, the affordability of building materials, and high house rent contribute to the factors that affect the overcrowded housing in Enugu, Nigeria? The resulting problem is the environmental devastation, which manifests at three major levels: (1) adequate affordable housing, (2) clean water problems, and (3) solid waste management.

Statement of the Problem

An important goal of the international development agencies for the past three decades has been “shelter for all.” Unfortunately, what has been happening in less developed countries of the Sub-Saharan Africa, which includes Nigeria, made things very difficult for these nations to provide shelter for their people due to certain constraints. Enugu’s housing problem evolved because the majority of low-income housing policies had been developed in time of political and economic crisis rather than as a strategy for economic change. Enugu’s low-income housing policy was viewed as reactive rather than proactive because changes occurred to avoid crisis and not to address the housing conditions faced by the poor.

The planning authorities in most states of Nigeria including Enugu had concentrated on building control and not on city planning, per se, which normally could have dealt with such things like urban infrastructural service provisions, growth management, zoning, subdivision regulation, urban design, sewages, economic development and waste disposables (Aka, 1993).

Mabogunje (1995) discovered that major rural areas in Nigeria need affordable housing and basic sanitation instead of engaging in misguided macroeconomic policies which never work and lack of adequate infrastructure. Important factors affecting shelter include availability of land, affordable building materials and supplies that is being dominated by foreign building materials, income that is not evenly distributed, large family size among low-income groups, occupancy ratio, and strict government policy on financing that does not follow the 6,000 income rule.

These constraints have contributed to slum livings in many Sub-Saharan Africa communities within Nigeria creating environmental pollution. As a result, this study examines if income, population (gender), educational status, and family size are significant factors that affect the measures of housing quality in Enugu, Nigeria, thereby creating the need for the low-income housing developments to prevent the problem of environmental devastation. The ensuing devastation manifests itself at three major levels: inadequate housing, water problems, and solid waste management. In a place like Enugu where family planning is non-existent, families of 8 to 12 share a room to avoid high rent prices, while some choose to shelter their large families in slum dwellings because of high cost of available units which is out of the reach for the low-income earners.

This study therefore was concerned with the empirical analysis that was based on these factors to examine if income, population (gender), educational status, household size and constraints in building own homes, were the reasons why residents of the Enugu dwell in slums of Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle. These slum areas lack good roads, clean water supply, and solid waste management to mention but a few (Appendix J). Secondly, because of the intimate relationship of housing to the family and to the structure as a whole, this study is intended to highlight the factors affecting the growth of slum dwellings. In every nation of the world, every family deserves affordable housing.

Objectives of the Study

In major cities of the developing world like Enugu Metropolitan where changes are typically rapid, economic and social relationship are diverse. Patterns of development are often different, and in some ways, more complex than these of the cities of industrialized nations such as the United States and Japan. The factors which shape the character of urban life are numerous and confusing – these lead the objective of the research to run as follows:

1. To examine the methods of meeting the Enugu housing needs for the low-income groups to provide quality housing to maintain a good healthy environment;
2. To analyze the factors to prevent pollutions generated from these slums; and
3. To examine the policy measures that can assist decision makers in Nigeria, particularly in Enugu, to gain insights into the problems of sustainable housing for all, especially for those in densely populated areas of Enugu.

A number of studies have been conducted on Enugu/Nigerian low-income housing problems, but most of the research has concentrated on reviewing the policies that led to this systemic problem. This study examines a number of successful housing programs in the United States (e.g. Hope 8, Hope VI) housing policy that have resulted in better living conditions for citizens with less support from government. Housing programs such as community land trusts, deed-restricted owner-occupied housing and limited-equity flats (condominiums) have been reviewed. This study examined how these programs could be applied to the Enugu housing situations, taking into consideration the country's political obstacles and land topography.

As mentioned earlier, the increase in population results in the increase in solid waste generated by the population which impacts human health and the environment. There is also a lack of solid waste management in Enugu which prevents effective utilization of organic waste in form of compost. There is a lack of segregation of solid waste, which has not gained attention. There also is a lack of centralized system of collection of solid waste generated by the overcrowding housing quality. Grigsby and Bourcassa (2003) stated that slums were breeding-grounds for fires, disease and various social pathologies that could easily endanger the general population. These affect human and the environment, since environmental pollution has no political boundaries.”

Importance of the Study

This study focused on recommending an affordable regional housing policy for low-income people in Enugu. It will do so by examining existing housing programs in the United States. American housing programs are significant for several reasons; for example, studies of low and moderate income housing policy in Nigeria did not take into account how residents could actively participate in the planning process. Furthermore,

public housing structures were being vandalized or neglected by tenants due to their feeling of a lack of ownership.

Without these in mind, many of the environmental and housing defects in Ibadan Core of Nigeria could be successfully rehabilitated by the inhabitants of some areas aided by the government agency, civic bodies, community leaders and other agencies, and not to leave these houses in worst deplorable conditions, which contribute to the environmental hazards and pollutions (Onibokan, 1995). Therefore, it is important to find alternative programs from other countries that would help to reduce Enugu's low-income housing problem. By examining specific programs implemented in the United States, Ghana, South Africa, and Bogota, it would be possible to determine what lessons could be adopted to improve the Enugu housing problem. In addition, this study attempted to address the practical issue of applying planning knowledge to real situation so that housing practitioners and planners could apply findings from this study to their everyday practices.

Statement of the Hypotheses

In order to analyze views and opinions of the public, the following five null hypotheses were tested for this study:

1. HO₁: There is no significant difference between income levels of Enugu residents and those of the slum residents and their decision to live in slum areas.
2. HO₂: There is no significant difference between education levels of the Enugu residents and those of the slum residents and their decision to live in slum areas.
3. HO₃: There is no significant difference between the population (gender) of the Enugu residents and those of the slum residents and their decision to live in slum areas.

Significance of the Study

In Enugu, Nigeria, the problem of supplying low-income houses to the actual low-income groups and the poor still exists. This study is expected to shed some light into low-income housing in Enugu. Most of the low-income houses built for these groups were not actually occupied by the groups; instead, these units were purchased from the groups by the rich, who turned back to resale them at a hundred percent (100%) gain, making it impossible for these units to be within the reach of the low-income groups. In light of this study, efforts would be made to propose policies and implement programs that would facilitate reduction in the cost of building materials and so enable these groups to remodel their homes. They could as a result come out of the slums of Agangwu, Ugwu-Aaron (Aaron's Hill), Ngele-Effor and Ugwu-Bottle, where these inhabitants lack locational services and infrastructure. This study therefore will attempt to rationalize these phenomena.

LITERATURE REVIEW

Population growth and its implications on urban low-income housing in the developing countries and its environment population is a critical factor in planning to provide the urban low-income groups in developing countries with low-income housing. Accordingly, Asiamma (1990) suggested that in Ghana two people per room indicated crowding, and overcrowding occurs when there are 2.5 or more people per room. His study indicates that roughly 44.5% of all households live in overcrowded housing in West Africa. This situation has serious implications for unhealthy environments both in the short and long run. The current housing conditions in Enugu, the Capital City, are far from ideal. With some perceived inadequacies in housing policies and programs of various governments in Enugu since the civilian regime. After the Civil War of 1967, there have often been housing policy and programs implemented on an ad-hoc basis lacking sound empirical analysis. It goes beyond hindering sustainable development because development usually has major effects on the environment. The Asiamma review stands as the first step in attempts to improve the housing situation in Enugu and to suggest policies that may aid in improving the housing balance to be within the reach of the low-income group in Enugu. However, both population-growth and poverty are growing rapidly in the urban centers of the developing countries, especially in Enugu Metropolitan areas of Nigeria without economic growth.

Magnus (1998) mentioned, "there should be some cautions in the solid waste services throughout Sub-Sahara Africa, due to the population growth which has effects on the consumption patterns." Increase in population, he mentions reflects to the expansion of cities, which however does not have effects on the financial resources due to the poor states of living and income per head, It then results in slum dwelling where solid waste generated by the dwellers cause devastation to the environment because there was no solid waste management. Magnus continues by saying that this urbanization and population growth should be controlled by providing them with affordable housing. Solid waste management would greatly help to minimize the environmental pollution.

Houses are not available for all low-income earners in the urban centers of Nigeria more specifically, the Enugu metropolitan areas of this country. The rapid migration of the low-income people to this city for sustainable living worsened the housing situation. To improve the situation of urban low-income housing situation, Enugu state government must be able to provide low-income housing for the existing population, and additional houses for the increase in population. Aka's (1993) work parallels this position by pointing out that since 1946, the planning authorities in most states of Nigeria had concentrated on building control and not on city planning. Effective city planning can address the need to build and maintain urban infrastructures, services provision, growth management, zoning, subdivision regulation, urban design, sewages, economic development, and waste disposable.

Planning in some areas in Enugu slums lack some infrastructures and social services. In Nigeria it involves the problems of poor maintenance of the urban environment which is due to limited financial resources, inadequate urban management machinery, and a lack of public support for planners to make a difference (Aka, 1993). Accordingly, urban infrastructure in most Nigerian cities is in an unsatisfactory condition because most urban environments are infested with dilapidated buildings with no space

for light and air between them, broken roads and streets, environmental pollution from poor drainage, sewage system, and uncollected garbage from industrial, commercial and domestic establishments. He calls on the city planners to engage their energies in city mending rather than city planning. Local government and planners should engage citizens with some necessary orientation for policy formulation, implementation and management on how to work communally in road building, drainage and sewage repairs, and communal garbage collection and disposal to minimize environmental pollution, since the shortage of funds for the urban and regional development planning is prevalent.

Tadaro (1981) opined out that there are 141 nations that make up developing countries. Of these countries, 42 are the poorest, 86 are non oil exporting nations, and 13 are petroleum exporting countries (OPEC). These countries are located in Asia, Africa, the Middle-East and Latin America. Economically, developing countries are characterized by absolute poverty, high rate of unemployment and low per capita income. "The gravity of the shortage is revealed by the percentage of households occupying one room and the number of persons per room in major urban centers in Nigeria" (Okewale, 1980, p. 4) as shown in Table 1. According to the United Nations, three or more persons per room constitute overcrowding. Same is also stated by Owyer (1979, p. 172) and Murison and Lea (1979, p. 32).

Table 1

Survey of Housing Conditions in Selected Urban Centers in Nigeria

Town	Household Occupying One Room (%)	Average Number of Persons Per Room
Lagos+	74.2	4.1
Ibadan+	48.1	3.2
Oshogbo+	36.4	2.2
Ilorin+	38.2	2.6
Kaduna+	73.5	3.8
Jos+	74.1	3.7
Port Harcourt*	51.5	2.4
Benin City*	48.0	2.2
Kano*	69.1	2.4
Warri*	59.9	2.6
Enugu**	64.9	3.8
Onitsha**	n.a	-
Owerri**	n.a	3.5
Abakaliki**	n.a	2.5
Nsukka**	n.a	2.5
Umuahia**	n.a	2.8

Sources: +Niser, University of Ibadan. Survey of Housing Conditions in Selected Urban Centers in Nigeria (Preliminary).

*Third National Development Plan 1975-80, Vol. 1 (p. 307).

**Field Survey of Housing Conditions in Seven Urban Centers of the (Former) East-Central State, by C.H. Tec., Inc., Waltham, Mass.

Groves (1999) reviews the impact of planning models imported from the West in general and Europe in particular on the development aspirations of Sub-Saharan African

countries. They constitute significant impediments to national economic, social, cultural and political development efforts. His work outlines human settlement development and planning in Su-Saharan Africa. Three chapters are of significance because they specifically address the settlement patterns that could possibly remedy the housing crisis that is being faced in Enugu.

The chapter on "pre-colonial" human settlement planning points out that prior to colonialist intervention, a well-established form of planning and urban development was commonly used throughout Sub-Saharan Africa. The advent of colonialism, the author argues that colonial officials found indigenous planning schemes incompatible with their imperialist/capitalist objectives and fervently embarked on supplanting them with European varieties. Hence, the zoning and separation of land uses became the central tenet of planning policies. The European standard of housing and urban development introduced and most importantly, traditional and familial forms of ownership and control of land became undermined and replaced the individualistic and capitalistic forms of land ownership (Groves, 1999). It enabled the transfer of parcels of land on a "freehold" or "leasehold" basis in return for a "market price." Not only were these forms of planning activity entirely alien to Sub-Saharan African countries, they also had some profoundly negative consequences. Zoning policies were used not merely to differentiate socio-economic groups within the residential market, but also to segregate groups according to race. The policies went so far as to debar the indigenous population from established urban areas, forcing the indigenous to live in slums, like the slums in Enugu metropolitan areas of Nigeria and the slums in townships of Suweto Township of South Africa (Groves, 1999).

The adoption of European standard in housing construction and neighborhood development encouraged the substitution of indigenous materials with expensive imported building materials. This, in turn, drove the cost beyond the affordability of all but the elite. Unfortunately, low-income groups cannot afford reasonable housing so they have no alternative but to choose to dwell in slums. The author's most fervent criticism is reserved for the land reforms. He argued that the permeation of capitalist forms of land ownership began the systematic dispossession of many indigenous communities and rendered them subject to grinding poverty as a proletarian mass dependent upon the grace and favor of the colonialist elite. Despite independence struggles of many in Sub-Saharan Africa, the incoming indigenous leadership also adopted "colonial models" of land use control and urban development. Rather than seeing an equitable release, governments have manipulated the ownership and control of land in order to maintain social class, and perpetuate their own form of elitism.

The portion on housing outlined initiatives that gave greater opportunities for resourceful Africans to address their housing problems themselves. It constituted changes in the role of governments in terms of housing and urban policy. The new sets of policies are a vast improvement over conventional housing policies, which never worked. It is worthy to say that social and economic aspirations of Sub-Sahara African countries have been much impaired by the effects of colonial powers and its inheritance on land use and urban planning. Mabogunje (1995) focused his review on affordable housing and basic sanitations. He emphasized that environmental degradation; inappropriate Western model housing, technological innovations, institutional development and family planning should receive maximum education that can improve an average person's standard of living.

Using Nigeria which appears to be the highest populated nation in Sub-Saharan Africa, he discovers that the major rural areas need affordable housing and basic sanitation instead of engaging in misguided macroeconomic policies and lack of adequate infrastructure. It is a challenge to Nigeria as a Nation whose interior urban slums still dumped solid waste anywhere without proper disposition either by landfill or by incineration. Mobogunje emphasized that sustainable development is possible with appropriate investment priorities that will provide needed infrastructure, services, and education. Urban areas need affordable housing for the poor, safe water, solid waste disposal and spatial planning to relieve congested spaces which is causing slum living. He emphasized that rural areas should focus on health education and basic sanitation. Regulatory measures and conservation measures are also importantly needed. Institutional development that promotes democracy, expands individual property rights, and increases the knowledge base should offer the most hope for alleviating poverty and protecting the environment. He concluded that this could be achieved through sustainable living like good roads, housing for the poor, clean water and solid waste management. Hansen and Williams (1993) accordingly state that most of the imported materials currently in wide use in urban housing in developing countries can, in principle, be replaced by locally produced, cheap materials. The problem is that local building regulations disallow materials traditionally used in rural areas.

Knowledge about the production and use of innovative building materials that can be locally produced tends to be limited to a few laboratories and research institutions (Hansen & Williams, 1993). Even World Bank (1993) states that low income majority are largely confined to poor quality structures built in informal settlements and overcrowded dwellings where households occupy a small space or share a dwelling with others. Shortages of housing are held to be largely caused by bottlenecks in the supply of affordable land, materials, skilled workers and other inputs to the housing system (World Bank, 1993). World Bank reports that existing poor environments affect a relatively large proportion of urban population, they may become insignificant when set against the future shortfalls likely of population growth that outstrips the current supply, mechanizing by ever increasing degree. Unless future supply can equate more closely the increasing demand seriously contributes to such dysfunctions as widespread homelessness and sleeping on the streets may become commonplace in Sub-Saharan Africa.

METHODOLOGY

In this study, the survey research design was applied using structured questionnaires and oral interviews where policymakers, professionals, bankers, contractors, as well as personal observations (photographs) were used to gather relevant data needed for the study. The questionnaires and oral interviews were directed to both the residents occupying the four slum areas of Agangwu, Ngele-Efor, Ugwu Aaron, and Ugwu-Bottle, while the face-to-face (oral interviews) was held between the policymakers, professionals, bankers and the contractors (developers) and to the staff of Enugu State Housing Development Corporation, Enugu State Ministry of Lands, Enugu State Survey Department and Land-Use Corporation. Data collection for this study

commenced on July, 2007 by first collecting the layout plan of the study area which showed the approach to the area, its physical location within the metropolis of Enugu. Thereafter a reconnaissance survey was conducted to have a view of the nature of the environment, the housing conditions, and the infrastructural services, water solid waste situations in and around these areas.

Statistical Analysis

It is important to note that data for this research already exists in Enugu State Ministry of Housing and Urban Development, Ministry of Lands and Survey, Ministry of Statistic, the Customary, Magistrates and High Courts, and the Population and Planning Commission with regards to Enugu City residences' distribution of living. Information obtained from these agencies and relevant documents would be used to upgrade the current housing problem and the slum dwelling in Enugu. Responses obtained from the survey questions for the housing of low-income groups were coded for analysis, transcribed and data interpreted using Statistical Package for the Social Sciences (SPSS). It is important to know that the dependent variable for this study was Enugu Resident's Decision to live in slums. It is the variable that receives the effect or influence. The independent variables are factors that enhance or create the effect or influence. These factors are income, education, population (gender), household size, and constraints in building their own homes, as stated in the attached analytical framework.

Response Rate

The questionnaire was self-administered to the four populations comprising the low-income residents of Agangwu, Ugwu-Aaron, Ugwu-Bottle, and Ngele-Effor. A total of 400 residents in this Enugu municipality were selected for the study. This included 98 low-income residents of Agangwu, 102 low-income resident of Ugwu-Aaron, 108 low-income residents of Ugwu-Bottle, and 92 residents of Ngele-Effor, all totaling four hundred (400) sample size (Table 2).

Table 2

Response Rates to Self-Administered Questionnaire to the Four (4) Population Samples

Population Sample	Population Sample Size (N)	Responses Usable	Unadministered Response	Response Rate
Agangwu Low- Income Residents	98	95	3	97%
Ugwu-Aaron Low- Income Residents	102	85	17	83%
Ugwu-Bottle Low- Income Residents	108	87	21	81%
Ngele-Effor Low- Income Residents	92	91	1	99%

Sources: Field Study, July 2007

Instrument Selection

Coming to this area of instrument selection, the researcher could not find any standard instrument that would measure the degree of Income, Education, Population (Gender), Family Size, High Rent, Strict Government Policy on Land/Housing and the Affordability of Building Materials that contributed to the factors that affected the overcrowding measures of housing quality in Enugu, Nigeria, thereby inducing the need for the low-income housing, which would prevent the problem of environmental degradation. This unavailability of standard instrument necessitated the researcher to design questionnaires that were self administered to the four populations to test their attitude towards dwelling in slums of Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle. These questionnaires concerned the four populations' demographic data and their environmental areas.

Survey research method was chosen for this study because it was wisely used for practical and policy goals. Again the researcher used statements in the questionnaire because the researcher felt that statements were better alternatives to questions in attitude measurement for obtaining information. The respondents had the choice to either "Very Poor," "Poor," "Average," "Good," or "Excellent." The weights were assigned as follows: Very Poor = 1, Poor = 2, Average = 3, Good = 4, and Excellent = 5.

Two major steps were used in pretesting the questionnaire. 1.) The questionnaire was made available to the Nigerian Community in the City of Houston for criticism and scrutiny. This is the organization made up of 1300 members and from this selected people, 400 were chosen. 2.) Because respondents sometimes misunderstand the intention of the researcher in responding to statements, these selected people for pretesting were also asked to feed back in their own words their understanding of the meaning of each statement. And being Nigerians they understood the areas very well, and some statements were reconstructed and retained in the questionnaire, and the conditions or smoothness of the streets was added. The Nigerian community in Houston used in pretesting the questionnaire were pleased with the topic.

For this research the response rate of at least 50% is adequate in the real world, for analysis and reporting of any study. Also, a response rate of 60% is good and a response rate of 70% or more is very good. Therefore with the above summary, the response rates in this study were very good because of the response rate from Agangwu 97%, Ugwu-Aaron 83%, Ugwu-Bottle 81%, and Ngele-Effor 99% respectively.

Table 3

Survey Summary of Demographic and Personal Data on Low-Income Residents of Ngele-Effor in the Metropolitan of Enugu

Characteristics	N = 92	Frequencies	Percentages
Space # of Persons Per Room 0 to 12: (Household Size)*			
Under 8		8	9%
8 to 12		22	24%
12 or more		62	67%
# of Persons Per Household Working (Employment Status):			
Self employed (petite trade)		17	18%
1 employed in family with paid job		60	65%
2 employed in family		5	5%
More than two		10	11%
Monthly Salary (in Naira):*			
Under ₦7000.00		75	81%
₦7000 to ₦9000		10	11%
₦9000 to ₦12000		7	8%
₦12000 to ₦15000		0	0%
₦15000 to ₦20000		0	0%
Electricity:			
Available		6	7%
Not available		86	93%
Running Water:			
Available		6	7%
Not Available		86	93%
Street Drainages:			
Available		3	3%
Not Available		89	97%
Pit Latrine (Toilet):			
Available		5	5%
Not available		87	95%
Tarred Roads:			
Available		0	0%
Not available		92	100%

Municipal Council		
Garbage Pick-ups:		
Available	0	0%
Not available	92	100%
Sewage Services in the Area:		
Available	0	0
Not available	92	100%
Education*:		
Secondary School or less	81	88%
Bsc. Degree	11	12%
Masters Degree	0	0%
Doctorate Degree	0	0%
Others	0	0%
Employment Status:		
Daily Paid Worker (minimum wage)	52	57%
Staff Employee	0	0%
Self Employed (traders)	40	43%
Part-time employed	0	0%
Marital Status:		
Single	20	22%
Married	70	76%
Widowed	2	2%
Divorced	0	0%
Separated	0	0%
Religious Affiliation:		
Catholic	60	65%
Protestant	30	33%
Muslim	0	0%
Others	2	2%
Sex: (Gender)*		
Male	52	57%
Female	40	43%
Duration for Low-Income to Obtain Accommodation in the City (exclude slum areas):		
0 to 8 weeks	4	4%
8 to 16 weeks	31	34%
16 weeks and above	57	62%
Smoothness of Your Community:		
Available	4	4%
Not available	88	96%
Street Drainages:		
Available	3	3%
Not available	89	97%

<hr/>		
Municipal Council Garbage Pick-ups:		
Available	0	0%
Not available	92	100%
<hr/>		
Emergency:		
Available	0	0%
Not available	92	100%
<hr/>		
Fire Service:		
Available	0	0%
Not available	92	100%
<hr/>		
Street Flooding:		
Available	83	90%
Not available	9	10%
<hr/>		
Open Streams/Canals:		
Available	87	95%
Not available	5	5%
<hr/>		
Hospitals in the Area:		
Available	4	4%
Not available	88	96%
<hr/>		
Flood Control of the Area:		
Available	0	0%
Not available	92	100%
<hr/>		
Potholes/Bumps on the Street:		
Available	69	75%
Not available	23	25%
<hr/>		

The Demographic and Personal Information Data on Low-Income Residents of Ugwu-Aaron Enugu Metropolitan are tabulated on Table 4. About 71% of the respondents lived on crowded houses with a density of 12 or more persons per room. The rest lived in houses with density of less than eight persons per room, and 8 to 12 persons per room. Coming to the employment status, out of 68% of the households, only one person in the family worked with regular pay. And the rest had two persons contributed to the family with irregular flow of income. With this, one could see that lack of employment is a factor. Concerning facilities, 85% of the respondents do not enjoy electricity, 84% had no tap running water. 80% had no benefit of street drainages while 8% had not pit toilet available and not to talk of flush toilets available in their houses. 100% of the respondents indicated there were no garbage pickups in the area, and 100% had no sewage services in the area. Educationally, 4% of the respondents held university degrees and 83% had secondary school certificate, which are the appropriate

qualification for the professional group and who later converted to the professional position (rank) through many, many years of service and experience.

The Marital Status of the respondents showed that 60% were married, 38% were single or never married, 9% were widowed, 2% had trouble in their marriage and 0% was divorced. In the Religious Affiliation, 58% were Catholic, 39% were Protestants while only 3% belonged to none, while none indicated of belonging to the Muslim religion. Among the respondents gender, 62% were males while 38% were female and these set of groups indicated that it requires low-income persons more than 16 weeks or more to find accommodations in the Enugu metropolitan which was at the rate of 72%. Among the respondents, 100% indicated the roughness of their community. 80% had no street drainages, 100% had no municipal council garbage pickups, and there was 100% indication of no emergency medical services in their area. Also was 100% of non availability of fire services in their areas. 10% had Police Services because they live close to the tarred road, while 90% of the police services were not available in the area. Also there was 100% of the street flooding in the area. Only 14% had elementary schools in their area, while 86% had no secondary and with 0% of universities, 5 % had hospitals in the area and these were not fully maintained by the Enugu State Ministry of education/health because there was 100% non availability of flood control of the area. The respondents indicated that once it rained, the children stayed home to avoid being swept away by the flood. Also, 79% of the respondents indicated they have potholes and bump on the street and these also increase pollution of air and community.

Table 4

Survey Summary of Demographic and Personal Data on Low-Income Residents of Ugwu-Aaron In Enugu Metropolitan

Characteristics	N = 102	Frequencies	Percentages
Space # of Persons Per Room 0 to 12: (Household Size)*			
Under 8		3	3%
8 to 12		27	26%
12 or more		72	71%
# of Persons Per Household Working (Employment Status):			
Self employed (petite trade)		12	12%
1 employed in family with paid job		69	68%
2 employed in family		8	7%
More than two		13	13%
Monthly Salary (in Naira):			
Under ₦7000.00		78	76%
₦7000 to ₦9000		18	18%
₦9000 to ₦12000		6	6%
₦12000 to ₦15000		0	0%
₦15000 to ₦20000		0	0%

Electricity:		
Available	13	13
Not available	87	85%
Unadministered	2	2%
Running Water:		
Available	16	16%
Not available	86	84%
Street Drainages:		
Available	5	5%
Not available	82	80%
Unadministered	15	15%
Pit Latrine (Toilet):		
Available	8	8%
Not available	94	92%
Municipal Council Garbage Pick-ups:		
Available	0	0%
Not available	102	100%
Sewage Services in the Area:		
Available	0	0
Not available	102	100%
Education*:		
Secondary School or less	85	83%
Bsc. Degree	13	13%
Masters Degree	4	4%
Doctorate Degree	0	0%
Others	0	0%
Employment Status:		
Daily Paid Worker (minimum wage)	61	60%
Staff Employee	0	0%
Self Employed (traders)	41	40%
Part-time employed	0	0%
Marital Status:		
Single	39	38%
Married	61	60%
Widowed	2	2%
Divorced	0	0%
Separated	0	0%

<hr/>		
Religious Affiliation:		
Catholic	59	58%
Protestant	40	39%
Muslim	0	0%
Others	3	3%
<hr/>		
Sex: (Gender)*		
Male	63	62%
Female	39	38%
<hr/>		
Duration for Low-Income to Obtain Accommodation in the City (exclude slum areas):		
0 to 8 weeks	0	0%
8 to 16 weeks	29	28%
16 weeks and above	73	72%
<hr/>		
Smoothness of Your Community:		
Available	0	0%
Not available	102	100%
<hr/>		
Municipal Council Garbage Pick-ups:		
Available	0	0%
Not available	102	100%
<hr/>		
Emergency:		
Available	0	0%
Not available	102	100%
<hr/>		
Fire Service:		
Available	0	0%
Not available	102	100%
<hr/>		
Police Service in the Area:		
Available	10	10%
Not Available	92	90%
<hr/>		
Street Flooding:		
Available	102	100%
Not available	0	0%
<hr/>		
Open Streams/Canals:		
Available	102	100%
Not available	0	0%
<hr/>		
Schools in the Area:		
Available	14	14%
Not Available	88	86%
<hr/>		

Hospitals in the Area:		
Available	15	15%
Not available	87	85%
Flood Control of the Area:		
Available	0	0%
Not available	102	100%
Potholes/Bumps on the Street:		
Available	81	79%
Not available	21	21%

Table 5

Survey Summary of Demographic and Personal Data on Low-Income Residents of Ugwu-Bottle in Enugu Metropolitan

Characteristics	N = 108	Frequencies	Percentages
Space # of Persons Per Room 0 to 12: (Household Size)*			
Under 8		3	2%
8 to 12		16	15%
12 or more		85	79%
Unadministered		4	4%
# of Persons Per Household Working (Employment Status):			
Self employed (petite trade)		8	72%
1 employed in family with paid job		66	61%
2 employed in family		10	9%
More than two		24	22%
Monthly Salary (in Naira):			
Under ₦7000.00		73	68%
₦7000 to ₦9000		33	31%
₦9000 to ₦12000		2	1%
₦12000 to ₦15000		0	0%
₦15000 to ₦20000		0	0%
Electricity:			
Available		0	0%
Not available		91	84%
Unadministered		17	16%
Running Water:			
Available		0	0%
Not available		91	84%
Others		17	16%

<hr/>		
Street Drainages:		
Available	19	18%
Not available	89	82%
Unadministered	0	0%
<hr/>		
Pit Latrine (Toilet):		
Available	27	25%
Not available	81	75%
<hr/>		
Tarred Roads:		
Available	0	0%
Not available	108	100%
<hr/>		
Municipal Council Garbage Pick-ups:		
Available	0	0%
Not available	108	100%
<hr/>		
Sewage Services in the Area:		
Available	0	0
Not available	108	100%
<hr/>		
Education*:		
Secondary School or less	88	81%
Bsc. Degree	0	0%
Masters Degree	0	0%
Doctorate Degree	0	0%
Others	20	19%
<hr/>		
Employment Status:		
Daily Paid Worker (minimum wage)	81	66%
Staff Employee	0	0%
Self Employed (traders)	37	34%
Part-time employed	0	0%
<hr/>		
Marital Status:		
Single	39	36%
Married	69	64%
Widowed	0	0%
Separated	0	0%
Divorced	0	0%
Others	0	0%
<hr/>		
Religious Affiliation:		
Catholic	62	57%
Protestant	46	43%
Muslim	0	0%
Others	0	0%
<hr/>		

Sex: (Gender)*		
Male	65	60%
Female	43	40%
Duration for Low-Income to Obtain Accommodation in the City (exclude slum areas):		
0 to 8 weeks	0	0%
8 to 16 weeks	30	72%
16 weeks and above	78	72%
Smoothness of Your Community:		
Available	21	19%
Not available	87	81%
Street Drainages:		
Available	0	0%
Not available	108	100%
Municipal Council Garbage Pick-ups:		
Available	0	0%
Not available	108	100%
Emergency:		
Available	0	0%
Not available	108	100%
Fire Service:		
Available	0	0%
Not available	108	100%
Police Service in the Area:		
Available	13	12%
Not Available	95	88%
Street Flooding:		
Available	108	100%
Not available	0	0%
Open Streams/Canals:		
Available	108	100%
Not available	0	0%
Schools in the Area:		
Available	7	6%
Not Available	101	94%

Hospitals in the Area:		
Available	4	4%
Not available	104	96%
Flood Control of the Area:		
Available	108	100%
Not available	0	0%
Potholes/Bumps on the Street:		
Available	108	100%
Not available	0	0%

Table 6

Survey Summary of Demographic and Personal Data on Low-Income Residents of Agangwu in Enugu Metropolitan

Characteristics	N = 98	Frequencies	Percentages
Space # of Persons Per Room 0 to 12: (Household Size)*			
Under 8		5	5%
8 to 12		10	10%
12 or more		80	82%
Unadministered		3	3%
# of Persons Per Household Working (Employment Status):			
Self employed (petite trade)		7	7%
1 employed in family with paid job		70	71%
2 employed in family		18	18%
More than two		3	3%
Monthly Salary (in Naira):			
Under ₦7000.00		76	78%
₦7000 to ₦9000		19	19%
₦9000 to ₦12000		3	3%
₦12000 to ₦15000		0	0%
₦15000 to ₦20000		0	0%
Electricity:			
Available		0	0%
Not available		98	100%
Tap Running Water:			
Available		0	0%
Not available		98	100%

<hr/>		
Street Drainages:		
Available	26	27%
Not available	72	73%
<hr/>		
Pit Latrine (Toilet):		
Available	8	8%
Not available	90	92%
<hr/>		
Tarred Roads:		
Available	0	0%
Not available	98	100%
<hr/>		
Municipal Council Garbage Pick-ups:		
Available	0	0%
Not available	98	100%
<hr/>		
Sewage Services in the Area:		
Available	0	0
Not available	98	100%
<hr/>		
Education*:		
Secondary School or less	91	93%
Bsc. Degree	7	7%
Masters Degree	0	0%
Doctorate Degree	0	0%
Others	0	0%
<hr/>		
Employment Status:		
Daily Paid Worker (minimum wage)	77	79%
Staff Employee	13	13%
Self Employed (traders)	8	8%
Part-time employed	0	0%
<hr/>		
Marital Status:		
Single	29	30%
Married	61	62%
Widowed	8	8%
Separated	0	0%
Divorced	0	0%
Others	0	0%
<hr/>		
Religious Affiliation:		
Catholic	69	70%
Protestant	29	30%
Muslim	0	0%
Others	0	0%
<hr/>		

Sex: (Gender)*		
Male	58	59%
Female	40	41%
Duration for Low-Income to Obtain Accommodation in the City (exclude slum areas):		
0 to 8 weeks	0	0%
8 to 16 weeks	16	16%
16 weeks and above	82	84%
Smoothness of Your Community:		
Available	0	0%
Not available	98	100%
Street Drainages:		
Available	0	0%
Not available	98	100%
Municipal Council Garbage Pick-ups:		
Available	0	0%
Not available	98	100%
Emergency:		
Available	0	0%
Not available	98	100%
Fire Service:		
Available	0	0%
Not available	98	100%
Police Service in the Area:		
Available	0	0%
Not Available	98	100%
Street Flooding:		
Available	81	83%
Not available	17	17%
Open Streams/Canals:		
Available	83	85%
Not available	15	15%
Schools in the Area:		
Available	21	21%
Not Available	77	79%

Hospitals in the Area:		
Available	9	9%
Not available	89	91%
Flood Control of the Area:		
Available	11	11%
Not available	87	89%
Potholes/Bumps on the Street:		
Available	92	94%
Not available	6	6%

From the researcher's summary observation, major problems inducing the low-income groups to dwell in slums were identified and include the following:

1. High standards for building
2. High cost of imported building materials that impedes urban low-income housing in the city
3. High price of urban land and poor system of urban land tenure
4. Lack of liberal policies on financing and unfair income distributions
5. Lack of technical manpower to assemble foreign imported building materials
6. Rapid industrial growth concentrated only on Enugu Urban Center
7. Increased wave of public ignorance and lack of public participation
8. Lack of control on natural growth of population
9. Lack of specific low-income housing policies that will bring low-income housing within the affordability of the low-income group.

From the researcher's observation, major problems inducing the low-income groups to dwell in slums were identified by these professionals/policy makers, bankers and contractors. High standards for building involved high cost of imported building materials that impeded urban low-income housing in the city. It accounted for the high cost of housing in Enugu City itself. The question then became how could building costs be reduced? Accordingly, this could be achieved by increasing and encouraging use of locally made building materials. The researcher's suggestion to them was for everyone to have positive attitudes towards local building materials that can cut the cost of building and rent for housing.

On the issue of high price of urban land and poor system of urban land tenure, the researcher attributed that to be responsible for the scarcity and high cost of housing for the low-income groups because land in most Sub-Saharan African was collectively owned by elders of communities and its use was controlled by the Chief of the community. Buyers found it a big task to negotiate with groups of people for the purchase of suitable land and at suitable location. The effect of this difficulty in securing land reduces the quality of housing. The professionals narrated that the housing

corporation in Enugu State of Nigeria encountered this problem in obtaining land for housing purpose due to inability to pay adequate compensation to the group land owners, and this is the problem facing urban lands for housing. These contractors and professionals suggested that the fundamental role of government is to remove the constraints of land availability and tenure, and then provide planning for low-income settlement in order to preserve minimum public health and accessibility standard.

Coming to the liberal policy on the financing institutions, the researcher noticed that there was no availability of liberal financing institutions for low-income housing. Again, the lending terms are not within the financial capability of the low-income groups. From the face-to-face discussion with the bankers and professionals, the researcher gathered that the low-income are not qualified for the mortgage loan, and those who were bold enough to apply for loan were first screened by income qualification which would automatically disqualify. Secondly those groups would never meet up with the Federal Mortgage Bank rate which was very high. So these groups could never secure building loans from any bank because of this stringent policy.

In elaborating the technical manpower which was lacking, the researcher during the face-to-face discussion with the professionals and bankers that building industries need highly skilled workers to build the needed houses were lacking and this brought about the non-progressive of the housing project. The research noted through this meeting that human capital was lacking because there was great needs for levels of technicians, which if well built-up would increase housing output. The researcher noticed that training was needed and there was no money to train technicians. All these contributed to unnecessary delay in building construction.

Table 7

Land Prices: Land Purchase/Price, Bureau of Lands Enugu State PMB 01078 ENUGU

Fees Payable On Lands in Government Layout in Enugu State

The layout in the state are classified under five (5) groups V₁₃ 1-5. the rates are as follows:

Group:	Layouts	Rate
1	(a) Ekulu Layout	
	(b) Ekulu West Extension I and II	
	(c) Independence Layout (I)	₦150/M ²
	(d) Uwani Layouts	
	(e) Works Road Layout	
Group:	Layouts	Rate
2	(a) River Bank Pocket Layout and its Extension	
	(b) Trade Fair Layout	
	(c) Trans Ekulu Pocket Layout	₦125/M ²
	(d) Uwani and Coal Camp Layouts	

Group: 3	Layouts (a) Trans Ekulu New GRA (b) China Town Pocket Layout (c) Asata Layout (d) Ogui Township	Rate ₦90/M ²
Group: 4	Layouts (a) Obi-Agu Layout	Rate ₦75/M ²
Group: 5	Layouts (a) Ama Awusa Layout	Rate ₦55/M ²

*Source: Enugu State Bureau of Lands
LEN9331093/HODLANDS/97.*

Table 8
Enugu Low-Income Housing Price

ALLOCATION OF HOUSES AT TRANS EKULU PHASE VI – LOW-INCOME HOUSE ENUGU IN 1996			
House Allocation	Selling Price	Amount Deposited	Date of Allocation
A1 Road 32 Trans Ekulu Phase VI, Enugu Nigeria	₦130,000.00	₦130,000.00	<u>Day</u> <u>Month</u> <u>Year</u> 12-1-96
A6 Road 32 Trans Ekulu Phase VI, Enugu Nigeria	₦130,000.00	₦130,000.00	6-2-96
C6 Road 32 Trans Ekulu Phase VI, Enugu Nigeria	₦130,000.00	₦130,000.00	10-1-96
C3 Road 32 Trans Ekulu Phase VI, Enugu Nigeria	₦130,000.00	₦130,000.00	11-6-96
C5 Road 32 Trans Ekulu Phase VI, Enugu Nigeria	₦130,000.00	₦130,000.00	10-1-96
C2 Road 32 Trans Ekulu Phase VI, Enugu Nigeria	₦130,000.00	₦130,000.00	30-5-96
C1 Road 32 Trans Ekulu Phase VI, Enugu Nigeria	₦130,000.00	₦130,000.00	12-1-96

B4			
Road 32 Trans Ekulu	₦130,000.00	₦130,000.00	6-2-96
Phase VI, Enugu Nigeria			
B6			
Road 32 Trans Ekulu	₦130,000.00	₦130,000.00	6-2-96
Phase VI, Enugu Nigeria			
B5			
Road 32 Trans Ekulu	₦130,000.00	₦130,000.00	6-2-96
Phase VI, Enugu Nigeria			
B2			
Road 32 Trans Ekulu	₦130,000.00	₦130,000.00	6-2-96
Phase VI, Enugu Nigeria			
B1			
Road 32 Trans Ekulu	₦130,000.00	₦130,000.00	6-2-96
Phase VI, Enugu Nigeria			

Source: Enugu State Housing Development Corporation Schedule of Allocation of Property
1/1/94 to 31/7/006

Table 9

Enugu Low-Income House Price

ALLOCATION OF PROPERTY MADE OVER HEAD TANK AREA HOUSE TYPE C3/09D TRANS EKULU HOUSING ESTATE PHASE VI – ENUGU SEWAGE AREA			
Plot No.	Selling Price	Amount Deposited	Date of Allocation
69/14 and 69/15 Trans Ekulu Housing Estate	₦420,000.00	₦420,000.00	<u>Day</u> <u>Month</u> <u>Year</u> 5-1-97
6A/1 Trans Ekulu Housing Estate	₦50,000.00	₦50,000.00	5-1-97
6A/2 Trans Ekulu Housing Estate	₦50,000.00	₦50,000.00	5-1-97
6A/3 Trans Ekulu Housing Estate	₦50,000.00	₦50,000.00	5-1-97
6A/4 Trans Ekulu Housing Estate	₦50,000.00	₦50,000.00	5-1-97
6A/5 Trans Ekulu Housing Estate	₦50,000.00	₦50,000.00	5-1-97
6A/6 Trans Ekulu Housing Estate	₦50,000.00	₦50,000.00	5-1-97
16/19 H/TR2/06 Trans Ekulu Housing Estate	₦50,000.00	₦40,000.00	5-1-97

13/7A Trans Ekulu Housing Estate	₦10,000.00	₦10,000.00	5-1-97
12/IN H/T B2/05 Ph-1 Trans Ekulu Housing Estate	₦10,000.00	₦10,000.00	5-1-97

Source: Enugu State Housing Development Corporation Schedule of Allocation of Property
MDK.1/Vol. 1. 1997

Table 10
Enugu Low-Income House Price

ALLOCATION OF HOUSES AT HORMONY ESTATE PHASE I – FROM NOVEMBER 20, 1998 TO JANUARY 26, 1999			
Plot No/House Type	Selling Price	Amount Deposited	Date of Allocation
			<u>Day</u> <u>Month</u> <u>Year</u>
3/10 UC/S/02	₦150,000.00	₦150,000.00	20-11-98
9/16 UC/S/02	₦50,000.00	₦50,000.00	23-12-98
6/30 UC/S/01	₦50,000.00	₦50,000.00	23-12-98
4/15 UC/S/02	₦150,000.00	₦150,000.00	01-12-98
6/28 UC/S/01	₦50,000.00	₦50,000.00	23-12-98
3/17 UC/S/01	₦50,000.00	₦50,000.00	04-1-99
3/16 UC/S/01	₦50,000.00	₦50,000.00	04-1-99
3/12 UC/S/01	₦250,000.00	₦250,000.00	05-1-99
1/15 UC/S/01	₦50,000.00	₦50,000.00	06-1-99
6/38 UC/S/01	₦250,000.00	₦250,000.00	28-12-98
11/7 UC/S/02	₦50,000.00	₦50,000.00	28-12-98
10/8 UC/S/02	₦50,000.00	₦50,000.00	28-12-98
6/8 UC/B5/09	₦50,000.00	₦50,000.00	14-1-99
6/5 UC/S/01	₦250,000.00	₦250,000.00	14-1-99
6/3 UC/S/01	₦125,000.00	₦125,000.00	14-1-99
6/14 UC/B5/09	₦120,000.00	₦120,000.00	14-1-99
6/12 UC/B5/09	₦120,000.00	₦120,000.00	14-1-99

9/1 UC/S/02	₦150,000.00	₦150,000.00	15-1-99
9/20 UC/B5/09	₦120,000.00	₦120,000.00	15-1-99

Source: Enugu State Housing Development Corporation MKD.37/Vol. 1. 1998

Testing of the Hypotheses

HO₁: There is no significant difference between income levels of Enugu residents and those of slum residents and their decision to live in slum areas.

These hypotheses say that there is no significant difference between income levels of Enugu residents and those residents dwelling in slums of Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle. The null hypotheses that tested for the differences among income level of Enugu residence and the low-income levels of the slum areas of Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle concerning their decision to live in slums was that there was no significant difference between income levels of Enugu residence and their decisions to live in slums of Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle. Item 11 of the survey questions was used to test these hypotheses between Enugu Metropolitan residence and the low-income residents of the slums of Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle. This depends on their rank and their years of working. The dependent variable was Enugu residents' decision to live in slums. The analysis of variance comparison among the residents of Enugu Metropolitan, and the slum dwellers of Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle was used to determine if there were significant differences at an Alpha Level of 0.05 or less ($\alpha \leq 0.05$).

HO₂: There is no significant difference between education levels of Enugu residents and those of the slum residents and their decision to live in slum areas.

For the statistical purposes, null hypotheses were developed to test for the differences in Education among the residents of Enugu Metropolitan residents and the low-income dwellers and their decision to dwell in slums of Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle. The null hypotheses that investigated the educational ability of the low-income residents of the slums relate to the type of houses they dwell because the higher the education; the higher the income and this has an effect on their residential dwellings. Again, Item 5 of the survey question was used to test this hypothesis at an alpha level of 0.05 or less ($\alpha \leq 0.05$). The null hypothesis that investigated the educational level of the low-income residents of the slum areas of Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle is relative to the type of houses they dwell in comparison to their level of education. Analysis of variance comparison

was performed in item 5 of the survey questionnaire which deals with the educational level indicating that the educational level below secondary education was meant to be standard six educations and this was the data from the survey. The respondents had indicated during the survey that their highest educational level was less than secondary education and this places the low-income at the slum dwelling since they could not afford high house rent in the city.

HO₃: There is no significant difference between the population (gender) of the Enugu residents and those of the slum residents and their decision to live in slum areas.

This hypothesis states that there is no significant difference between the gender of Enugu residents and those of the slum residents and their decision to live in slum area.

Results and Summary of Hypotheses Testing

HO₁: There is no significant difference between income levels of Enugu residents and those of slum residents and their decision to live in slum areas.

Presented in Table 11 are the two way Analysis of Variance results regarding the difference between income levels of Enugu residents and their decision to live in slum areas. A statistically significant difference was not found in the income of Enugu residents ($F = 1.997$, $df = 69$, $sig > 0.05$) regarding their decision to live in slum areas at the 0.05 level. Therefore, hypothesis one was not rejected.

Table 11

Distribution Table of the Two Way Analysis of Variance on Income Level of Enugu Residents and their decision to live in slum.

Sources of Variation	SS	df	ms	f	P. value	f.crit
Between Groups	60.035	1	654.10	1.997	0.154	3.980
Within Groups	37.122	68	545.92			
Total	97.157	69				

Significant at alpha level of 0.05

HO₂: There is no significant difference between education levels of Enugu residents and those of slum residents and their decision to live in slum areas.

Presented in Table 12 are the two way Analysis of Variance results regarding the difference in education levels of Enugu residents and their decision to dwell in slum

areas. A statistically significant difference was not found in the education level of Enugu residents ($F = 3.569$, $df = 69$, $\text{sig} > 0.05$) regarding their decision to dwell in slum areas at the 0.05 level. This hypothesis meant that education was a factor why low-income residents of Enugu Metropolitan dwell in slums. Therefore, hypothesis two was not rejected.

Table 12

Distribution Table of the Two Way Analysis of the Education level of Enugu Residents and their decision to live in slum is shown.

Sources of Variation	SS	df	ms	f	P. value	f.crit
Between Groups	22.857	1	22.85	3.569	0.187	3.980
Within Groups	43.714	68	0.64			
Total	66.571	69				

Significant at alpha level of 0.05

HO₃: There is no significant difference between the population (gender) of the Enugu residents and those of slum residents and their decision to live in slum areas.

Presented in Table 13 are the two way Analysis of Variance results regarding the difference between the population (gender) of the Enugu residents and their decision to live in slum areas. A statistically significant difference was not found in the gender of Enugu residents ($F = 3.556$, $df = 69$, $\text{sig} > 0.05$) regarding their decision to dwell in slum areas at the 0.05 level. Thus, hypothesis three was not rejected.

Table 13

Distribution Table of the Two Way Analysis of the Gender level of Enugu Residents and those of the slum and their decision to dwell in slum is shown.

Sources of Variation	SS	df	ms	f	P. value	f.crit
Between Groups	22.857	1	22.85	3.556	0.114	3.98
Within Groups	43.714	68	0.64			
Total	66.571	69				

Significant at alpha level of 0.05

Analysis of the Results of Hypotheses

The purpose of this study is to examine the differences between income levels of Enugu residents and those of the slum residents and their decision to live in slum areas. More specifically, this study is designed to determine if there are significant differences between Enugu Metropolitan residents and those of the residents of slums of Agangwu, Ngele-Efor, Ugwu-Aaron, Ugwu-Bottle concerning their Income, Education, Population (Gender), Household Size, or Constraints to build individual houses. This chapter

outlines research questions, null hypotheses, type of design, population (gender), sampling procedure, and data gathering procedure, instrumentation, instrument validity, reliability, and statistical analysis.

Out of these five hypotheses, hypothesis one tested the significant difference between income levels of Enugu residents and those of the slum residents and their decision to live in slum areas compared to the low income residents of the slum. Statistically significant differences were not found in Enugu residents regarding (F = 1.997, df = 69, sig > 0.05) their income compared to the slum residents at the 0.05 alpha level. Therefore, hypothesis one was not rejected. The null hypothesis was not rejected. Hypothesis Two (2) tested the significant difference between education levels of Enugu residents and those of the slum residents and their decision to live in slums compared to the low-income residents of the slums. Statistically significant differences were not found in the Enugu residents (F = 3.569, df = 69, sig > 0.05) regarding their decision to dwell in slum areas at the 0.05 level. Thus, hypothesis two was not rejected. Hypotheses Three (3) tested the significant difference between the gender of Enugu residents and those of the slum residents and their decision to live in slums compared to the low-income residents of the slum areas. Statistically, significant differences were not found in Enugu residents (F = 3.556, df = 69, sig. > 0.05) regarding their decision to dwell in slums at an alpha level of 0.05. Therefore, hypothesis three (3) was not rejected. Finally there was no statistically significant difference found in this study, in regards to the decision of Enugu residents compared to the low-income residents of the slum.

Table 16
Summary of the Hypotheses Tested in the Investigation

HYPOTHESES	F	DF	P	RESULT
HO ₁ :	1.997	69	0.154	Failed to Reject
HO ₂ :	3.569	69	0.187	Failed to Reject
HO ₃ :	3.556	69	0.114	Failed to Reject

Therefore null hypotheses were not rejected.

Testing of the Dependent Variable Using Logistic Model

The dependent variable for this study is the “Enugu Residents Decision to Live in Slums.” This is the variable that received the effect or influence and this variable depends on Income, Education, Gender, Family Size and Certain Constraints. Item number 18 of the survey questions was again suitable to test for any significant between Enugu Metropolitan residents and the Low-Income residents of the slums of Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle. For statistical purposes, null hypotheses were developed to test for the differences in the mean score on the income, education, gender, family size and constraints among the populations in the study. Analysis of variance comparison was used to determine if there were significant differences among the income, education, gender, household size and certain constraints of Enugu residents compared to the slum residents at alpha level of 0.05 or less ($\alpha \leq 0.05$). The conservative Scheffe’s test was used to show specifically the source/sources of the significant differences if significant differences existed.

Table 17

Summary Output: Enugu Testing of Dependent Variable Using Logistic Model

Regression Statistics								
Multiple R		0.429111473						
R Square		0.566742999						
Adjusted R Square		0.452887187						
Standard Error		2922.6924						
Observations		35						
ANOVA								
	df	SS	MS		F	Significance F		
Regression	4	61693700.09	15423425.4		3.6111	0.016		
Residual	32	273349157.1	8542161					
Total	36	335042857.1						
	Coefficient	Standard Error	t Stat	P-Value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95%
Intercept	6860.248	4.752	2.3139	0.027	821.244	2899.25	821.244	12899.252
Education	16.196	1.856	65535	0.077	431.011	310.14	28.052	771.78405
Gender	216.596	61.856	2.5115	0.017	409.052	409.052	409.052	3920.1405
Household Size	191.215	54.357	0.1813	0.857	1956.44	1956.44	1956.44	2338.8702
Constraints	76.093	211.856	0.77541	0.065	133.052	409.052	409.052	39491.050

Result of Dependent Variable Using Logistic Model

In urban analysis, an increasingly wide range of geographers are now aware of the prospects of discrete choice models in urban analysis. These models are founded upon the fundamental premise that the utility of an alternative an individual can be decomposed into a systematic component V_{ia} , and (assuming the widely recognized inter-personal interpretation of utility maximization) or random component ϵ_{ia} . This random component represents the deviation of the tastes of individual from the group average, measurement errors and the impact of missing, omitted or unobserved socio-economic characteristic and choice alternative attributes of a (Wrigley, 1982; 1985). The second approach is to invoke prior theory to suggest an appropriate functional form. Thus, for example, an economist might postulate a non-linear form of the utility function based upon a theory such as the neoclassical goods/leisure trade off (Train & McFadden, 1978). In a transportation science travel demand study, Koppelman (1981a) represents the marginal disutility of travel time and travel cost using a power transformation. Within the

geographical and psychological literature, it is widely recognized that perceptions of space and time are non-linear in their objective surrogate measures (Cox & Golledge, 1969) and that the relationship between perception and the surrogate measures may be represented by Logarithmic power and other transformations. However, this approach becomes difficult to invoke in the absence of a clear, uncontentious body of urban theory appropriate to both the problem and the variable specification under consideration. It also raises some of the problems noted above in the context of interaction variables' approach.

The third and probably most-widely used approach involves the use of statistical transformations to "search" for the most appropriate functional form. The most widely used example of this approach is the Box-Cox transformation and the derivative Box-Turkey (Gaudry & Willis, 1979) generation (see Gaudry, 1980; Hensher & Johnson, 1981; Hensher & Taylor, 1983; Koppelman, 1981b; McCarthy, 1982; for examples). Such transformations are of course, no perfect substitute for direct behavioral specification, but can assist in the specification of an improved initial set of assumptions upon which models are derived from theory (Hensher & Taylor, 1983).

Housing Market Analysis Using Discrete Choice Models

Many aspects of housing decisions involve choice of one alternative or option from a restricted choice set, for example, whether or not to move, dwelling type (house, duplex or flat), tenure (owning or renting), etc. for this reason the period since the late 1970s has been the development of discrete choice models of mobility behavior (e.g. Onaka & Clark, 1983; Veldhuisen, 1982), location choice (e.g. Cronin, 1979) and dwelling selection (e.g. Williams, 1979). However, although this is an obvious and intuitively plausible application of the discrete choice modeling methodology models of revealed housing market behavior is evidently far from straightforward. This is because the revealed discrete choices actually constitute a response to important qualitative and societal considerations which have hitherto lain towards the margins of mainstream housing economics (e.g. see Maclennan, 1982). For example, interdependencies between housing choice and other human activities, the intertemporal nature of housing decisions and the pervasive intervention of the state prevent just three reasons why cross-sectional social surveys are unlikely to penetrate fully the motives surrounding rarely revealed housing preferences. Such considerations cannot be assumed away in the names of analytical convenience or statistical elegance, and have restricted the range of plausible empirical applications to rather smaller domains than many analysts would intend. Other researchers refute the ability of microeconomic analysis to generate any fruitful insights into observed housing market behavior, and instead place their faith in other interpretations of less tangible dominant processes in the urban arena.

In moving away from the comparatively uncontentious domain of short-run travel demand forecasting, we therefore become embroiled in a conceptual maelstrom in which no single body of theory enjoys unchallenged status as the most productive means of pursuing empirical enquiry; there are simply many competing explanations of observed behavior. This is not to suggest, however, that previous research in housing economics has not exhibited in which tenure choice, residential mobility behavior and residential location/dwelling unit choices are revealed (see Longley, 1984, for review). On the

contrary, whilst some early logic model (e.g. Li, 1977) did relate revealed preferences exclusively to conventional individual socio-demographic characteristics and physical dwelling attributes, subsequent studies have developed choice contexts which embrace work-place location (Quigley, 1976), journey to-work decisions (Lerman, 1977), qualitative aspects of previous dwellings (Boehm, 1982), the learning process (Cronin, 1979), variable dwelling choice sets (Snickars, 1982) and public service provision (Anas, 1979; 1982).

Nevertheless, there remain the dual problems of clarifying the theoretical premises upon which any model is based and of reconciling normative preferences with the vagaries inherent in cross sectional revealed preference data. In part, these problems can be revealed by continued refinement of the choice context within which housing market behavior is modeled and current research presents some encouraging prospects. However, at a second and more pragmatic level, a possible way of sharpening the insights derived from revealed preference analysis involves supplementing purely inferential model-building with a more exploratory approach. In essence, this implies a commitment to understand our data both (a) in the light of the anticipated shortcomings of revealed preference surveys, (b) in the context of competing theories which might be involved in order to explain patterns in these data.

Public policy intervention through direct housing provision and also various indirect incentives is likely to introduce thresholds, non-linearities and discontinuities in to the variable specification which may not be precisely evident *a priori*. Experimentation with a variety of combination of functional forms thus becomes very desirable. Tenure choice analysis entails the interpretation of a very long-term and infrequently revealed preference, which may also be based upon household circumstances which are both personal and sensitive. As a consequence, housing surveys are notoriously vulnerable to *ex post facto* rationale and other response errors to a degree uncharacteristic of most social surveys. Analytical models of tenure choice are therefore likely to be prone to poorly-fitting and/or outlying observations.

This discussion reiterates the importance of functional form assessment of tenure choice models, but suggests that such assessment is likely to prove most successful if it is conducted in a sensitive and flexible manner. In the empirical example, we contrast the performance of the standard Box-Turkey approach to derivation of functional form with the graphical procedures outlined by Landwehr et al (1984). In empirical terms a single illustrative case study can only begin to scratch the surface of the much wider research agenda alluded to above. Nevertheless, we attempt to convey the spirit of a more exploratory approach to tenure choice modeling by diagnosing any glaring specification errors and by gauging the success of a series of models in portraying structure in our data; only then are causal links implied and causal mechanisms invoked (Everett & Dunn, 1983, p. 5) for a clear statement of this approach.

Conclusions

The following conclusions were drawn from this study: there were insufficient low-income houses for the low-income residents of Enugu. From the survey, it took more than eight weeks for a new arrival in the low-income groups in Enugu Metropolitan

to find residential accommodation in the city, and once this could not be met, the low-income and their large family had no other alternative than to settle for slums at Agangwu, Ngele-Effor, Ugwu-Aaron and Ugwu-Bottle. The low-income residents of Enugu Municipality could not conveniently afford the very few available low-income houses. This is due to their very low monthly salary, and to these low-income groups, housing is as basic a necessity as are food and clothing, due to their large family size, these then lead them to dwelling in slums, where they pay low house rent in order to greater their large family size. There was general overcrowding of the Enugu Metropolitan with a density of 8 to 12 per room among the four populations as was drawn from the survey.

Drainage, toilet facilities, and garbage pickups were totally inadequate in low-income areas of Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle areas of Enugu Metropolitan. Frequent visit to hospitals due to constant suffering of diarrhea, measles and cholera were highest among the low-income groups of Agangwu, Ngele-Effor, Ugwu-Aaron, and Ugwu-Bottle due to insufficient and in adequate medical facilities. There was high standing for buildings in Enugu city which made the house rent to be high and out of the reach of the low-income, thus, making them to settle for slum areas. Provisions of financial and tax incentives to low-income and to other people willing to build using a right combination of traditional and modern building materials should be introduced. In this case, National Shelter Strategy offers directions in this area, which will work through the use of seminars and workshops for building professionals and artisans, and management training for small-scale builders is some of the specific ways this can be achieved.

It is true that the Topography of Enugu contributes to this density. However, one method expanding the supply of land, or more accurately, pace, requires for low-income housing would be the construction of high-rise, multifamily units. This approach would wipe out slum dwelling, and replace with clean environment. According to Hansen and Williams, most of the imported materials currently in wide use in urban housing in developing countries can be replaced by locally produced, less expensive materials. The problem is that local building regulations disallow material traditionally used in rural areas and knowledge about the production and use of innovative building materials which can be locally produced tends to be limited to few laboratories and research institutions. This reason is not withstanding, for in using the locally building materials will involve important balance-of-payment reasons for replacing imported materials with locally made ones. In addition, many conventional building materials are made in processes which are highly sophisticated, using imported machinery and consume large amount of (imported) energy in their production and transportation. Small-scale, locally-based, relatively labour-intensive building materials manufacturing technologies are generally associated with large multiplier effects than with large-scale, capital-intensive technologies because they use locally made equipment, use local (and after renewable) energy and generate more employment per unit of output.

It is also recommended that: developing and promoting the use of locally produced building materials as a means of reducing housing construction cost which will also reduce house rental cost, enabling low-income groups to afford high house rent in the city with drainages and garbage pickups. By promoting the use of indigenous professionals, appropriate design and technology in housing delivery. Promoting

measures that will mobilize long term and affordable funding for the housing sector by restructuring and recapitalizing the Federal Mortgage Bank of Nigeria for better performance and improving access to finance by refocusing secondary mortgage market.

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