A Spatial Analysis of Population Distribution and Housing Patterns: A Case Study of Abraka in Delta State of Nigeria

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Ugbomeh, B. A. - Department of Geography and Regional Planning, Delta State University, Abraka, Delta State, Nigeria
E-mail: ugbomehdelsu@yahoo.com
Tel : +2348036785022

Abstract

The paper examined the spatial patterns of population distribution and housing in Abraka in Delta State of Nigeria. Population is a vital component of development in any country including Nigeria. Housing is a physical and social necessity of life which holds a place of strategic importance in development. However, the high rate of population growth in Nigeria (3.2%) and associated rural-urban migration contribute largely to housing needs of the country. Data was collected from both primary and secondary sources. A total of 200 questionnaires were administered using the stratified random sampling technique. The study area was divided into three major zones based on existing quarters in Abraka. The Pearson product moment correlation was used to measure the strength of the relationship between the spatial patterns of population and housing in Abraka. Solutions to identified problems were proffered.

Keywords: Spatial, Population, Housing, Abraka, Nigeria.

Statement of Problem

Population constitutes a vital component of the resource base and the developmental potential of any country. The most relevant elements of the population in this regard are its size, rate of growth, spatial distribution,

demographic structure and quality in terms of the level of education, health, and social welfare. Development itself is only meaningful if it seen as a socio-economic process involving improvements in the quality of life of the affected population. Thus, the population factor is important not only as an indicator of the potentials level of development attainable but also as a measure of the cultural performance of the development efforts in a given country (Oguntoyinbo et al., 1983).

According to Onokerhoraye and Omuta (2005), housing a physical and social necessity of life, plays a number of fundamental, social, economic, psychological and environmental and health-roles in the well being of the people and economy. Consequently, housing is generally considered to hold a place of strategic importance in developments. Two fundamental factors underlie the housing problems in the country. First, the high rate of population growth and associated rural-urban migration contribute largely to housing need. From 30.4 million in 1952, the population of Nigeria grew to 55.7 million in 1963. By 1991, the population had risen to 88 million, and by 2006 it was 140 million. The rate of urbanization between 1980 and 1993 was among the highest in the world. Total urban population has increased enormously. At the estimate of 44.0 per cent level of urbanization, total urban population by the year 2000 was over 49 million. The number of cities also grew. From 50 urban centres in 1952, there were 357 in 1991. The last five decades of Nigeria's development was therefore a period marked by accelerated pace or urbanization. Consequently, urbanization has become one of the most intractable of the nation's urban problems.

Agunbiade (1983) has noted that housing is not simply shelter, although, this is an important component of it. Good housing implies not only structurally sound shelter but also the availability of adequate living space, in a secured environment with access to employment opportunities and essential social services and amenities and facilities such as portable water supply, energy supply, adequate toilet, kitchen, bathroom, refuse and sewage disposable be available (Orubuoloye, 1993). Thus, housing is a multi-dimensionally rather than a single commodity. It is a bundle of attributes, that is, a complex of goods and services including shelter, privacy, relative location (to employment centres and other urban resources) environmental amenities, investment and security (Smith, 1970; Agunbiade, 1983).

In addition, housing need is a measure of inadequacy of housing conditions. However, effective demand for housing relates to quantity and quality of

housing that can be affordable in terms of ability and willingness to pay, by householders, with or without loans, subsidized or unsubsidized (Nevitt, 1967; Bourne, 1981). It does not take account of social desiderata or personal aspirations that cannot be fulfilled due to insufficient purchasing power. Thus, housing need, broadly define; therefore, refers to the inadequacy of existing housing conditions when compared with some standard or norm of what is socially acceptable.

Furthermore, data on current conditions of housing in Nigeria are enormously, difficult to come by because there are no systematic regular and nationwide surveys on them. At best where data are available, they are out-dated and limited to segments of the housing markets of a few cities, mostly the large ones.

In addition, the problem of hosing in Nigeria are enormous and characterized by regional variations, particularly in terms of rural-urban differences. The problem in the rural areas is according to the national housing policy, is primarily that of quality and inadequacy of infrastructural facilities (FRN, 1985). Water supply coverage in the rural areas is only 39.0 per cent, compared with national average of 57.9 per cent and 81.0 per cent for urban centres. Similarly, sanitation coverage is 45.0 per cent, compared to national average of 63.0 per cent (World Bank 2001). In many of the smaller rural areas, too, housing is characterized by poor parameters, moreso, in remote and or riverine areas. However, there is an overwhelming dominance and concentration of the housing problems in urban areas, where "overcrowding and high rents slum and squatter settlements are visible features" (FRN, 1985) (Delta State Household Survey 2006).

Deriving from the above, the present paper is an attempt to fill the lacuna in housing data inadequacy in Nigeria in general and Delta State in particular with reference to population and housing patterns in Abraka.

The Study Area
Abraka is located within latitudes $5^0 48^{"}$N and longitude $6^0 06^{"}$ E. The relief of Abraka falls within the lowland landscape, which is grouped under the interior coastal lowlands of Western Nigeria. Abraka is marked by uniformity in the topography. There are no highland areas in Abraka; rather, there is a gentle slope from the valley of river Ethiope. In addition, there are lakes in Sobo area of Abraka which serve as fishing grounds for the people.

Abraka and its environs are drained by river Ethiope and Ovwuvwe. River Ethiope flows in an east west direction from Umuaja in Ukwani Local Government Area of Delta State. It is characterized by meanders, flood plain and swamps. The river valley is about 50 metres wide and has an average depth of about 6 m (Orubu (1979, and Efe, 1994).

River Ovwuwe takes its source from Utagba-Unor in Ndokwa West Local Government Area of Delta State. It is also a fast flowing river, but unlike the Ethiope river, the river is dark grew and deep (Ojegun, 1981).

Abraka by the virtue of the two rivers mentioned above (i.e. River Ethiope and River Ovwuvwe) has a lot of tourist attraction; some of these include: the Abraka River Resort Motel at Ekrejeta, Gordon Motel at Urhuoka, Mudi Beach, and Turf Club at Oria.

Other socio-economic activities engaged in by the inhabitants of Abraka include the mining of sand stones and plastering sand along the banks of River Ethiope and River Ovwuvwe. Agricultural activities carried out here include the cultivation of maize, okra and water yam.

Conceptual Framework

The conceptual framework for the study is based on the Demographic Transition Theory. The Demographic Transition Theory (DTT) is a set of broad generalization describing important transformations that could be expected in the population of a community as it passes from a high fertility, high mortality regime to a low fertility regime. The DTT provides an analytical structure for examining the relationship between fertility declines and socio-economic development of a place.

The DTT interpret this process as a response to socio-economic changes resulting in a shift from agrarian economy to a modern urban and industrial economy. The theory is aid to be relevant in understanding the relationship between population and development, especially in less developed countries.

Initially, the DTT was employed as descriptive interpretation of the transformations that took place in the demographic patterns of European countries during the 19th century. It is assumed that the demographic structure of other countries would follow the same pattern, all other things being equal. The theory can be said to have evolved over time from the ideas of various authors such as Thompson (1929); Davis (1969); Cowgill (1945); Peterson (1960); Saton (1969) and Coale (1973).

The DTT is considered to have taken place in stages. For example while Thompson (1929) suggested three phases of population growth, Cowgill (1949, 1963) identified a four fold classification of population respectively. Thompson's three stage classification is adopted for the study.

Stage I of the DTT is said to be characteristic of human species throughout most of history. During this stage, an equilibrium in population size is maintained over a long period of time by high birth rate and high death rate. However, since most people desire health and long life, new methods of reducing mortality are readily adopted as they become known, resulting in a gradual decline in mortality. Further features of this early or pre-transition phase are short life expectancy, a youthful age-structure, traditional family forms and a peasant agricultural economy. The equilibrium of stage I is therefore, potentionally an unstable one.

The second stage is characterized by declining mortality. A sustained declining mortality occurs as result of social and economic changes affecting living conditions. It is thought that better nutrition and improvement in the quality of sewage disposal and food hygiene which accompanied the socio-economic development of the 19th century and which contributed to the decline in the incidence of infectious disease, were important factors in this downward trend in mortality. However, fertility remains at the previous high level under the control of traditional social institutions. The stage of the population explosion results from the imbalance in birth rates and death rates. The fertility level lags behind mortality because, the decline in fertility level cannot take place until the traditional, social and economic institutions supporting fertility are weakened and new institutions emerge that favour a reduction in the fertility levels that commensurate with lower mortality levels. This implies that traditional family forms begin to crumble and differences in the demographic structure of the social classes and of rural/urban population become obvious. These and related changes appear first and strongest in urban places. They are reinforced by progressive urbanization that is manifest in the development of an industrial economy.

Finally, the third or late transitional phase is distinguished from the first and second stages by decline in fertility which results from widespread knowledge and effective practice of contraception. Fertility in other words converges on an already low level of general mortality. The theory suggests that decline in fertility was partially a response to the decline in mortality and to associated pressures of raid population growth. It could also be explained

as a response to the changing social and economic factors associated with socio-economic development and modernization.

Methodology

The data for this study was collected from both primary and secondary sources. The primary source is the administration of questionnaire and interviews, while secondary sources were textbooks, journals, government publications to mention but a few.

A total of 200 questionnaires were administered in the study area based on the constraints of time an cost. The stratified random sampling techniques was used in dividing the study area into three major zones based on existing quarters in Abraka as well as services rendered there. These include the Ekrejeta zone where Banks and other financial institutions were located; the Abraka Urban (P.O) where tourism resorts are located; and the Urhuovie area, where, the lowest population concentration as well as social amenities.

In the administration of the questionnaire based on their population concentrations, both Ekrejeta and Abraka urban each had 70 questionnaires distributed within them, while Urhuovie had 60 questionnaires. The variables included in the questionnaire administered included: demographic variables of age, sex, marital status, economic variables of occupation, income, education and housing data such as type of housing units, rentage and facilities in the house such as electricity, water and light to mention but a few.

The Pearson product moment correlation was the statistical technique used to measure the strength of the relationship between the spatial patterns of population and housing in Abraka. The formula for the Pearson Product Moment correlation is stated below:

$$r = \frac{n \Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{(n \Sigma x^2) - (\Sigma x)^2 (n \Sigma y^2) - (\Sigma y)^2}}$$

Where

r = correlation coefficient

Σ = summation

x = population

y = Household size

In addition, the student t-test was used to test the significance of the correlation coefficient.

Hypothesis
The hypothesis tested in the study is that:

H_o: There is no significant relationship between the spatial patterns of population distribution and housing in Abraka

H_i: There is a significant relationship between the spatial patterns of population distribution and housing in Abraka.

Discussion
Results and Findings
This section of the paper examines the major results and findings from the data collected.

The spatial distribution of the male/female component of the population (sex) of the study area was examined in table 1.

The data in Table 1 shows that there are more females (52.5%) than males (47.5%) in Abraka. However, there were more female concentration in Ekrejeta (44) than in Abraka (29) or Urhuovie (32). Again, there are more males in Abraka P.O (41) than in Ekrejeta (26) or Urhuovie (28).

Other characteristics of the population examined in Abraka include the Age distribution, occupation, status of respondents and their educational background as shown in tables 2, 3, and 4.

The information on the spatial pattern of age distribution in Abraka in Table 2 above shows that 24.5 of the population were 16 years old, with Abraka P.O having the highest figure of 21. The 26 – 36 age cohort represent 30.8% of the respondents with Abraka P.O having the highest figure of 23. The 36 – 45 age group is represented by 18% with Ekrejeta area have the highest figure of 18. Finally, the 56 years and above age group has the least representation of 7.5% with Abraka P.O having the highest figure of 6.

Furthermore, the various types of houses found in Abraka were examined in Table 3.

It was observed from Table 3, that 45% of the population in the study area occupy single room apartment; 32.5% of the population occupy self contain self contain buildings; 14% of the respondents occupy two bedroom flat; 7% of the population occupy three bedroom flats; 4.5% of the population occupy from bedroom flats; 4.5% of the population occupy four bedroom flats.

Furthermore, the quality of housing in Abraka such as power supply, good toilets, pipeborne water, recreational ground and good drainage system were examined in Table 4.

The data in Table 4 shows that 92.5% of the respondents in the study area live in houses with some facilities such as electricity, water toilet facilities to mention but a few. However, only a few 7.5% agreed that their houses had all the basic facilities. According to the World Bank (1966), urban infrastructure services in Nigeria are not just poor, but worsening. Clearly, over 50.0 percent of houses in urban areas lack access to four of the five basic facilities viz: in-house water supply, flush toilet, in-house kitchen in exclusive use, in-house bath with running water in exclusive use and electricity. These indicate the magnitude of the number of existing houses that would need to be improved upon with respect to the provision of facilities, in order to meet the housing needs of the existing population (Onokerhoraye and Omuta 2005).

Testing of Hypothesis
   The hypothesis of the study was tested in this section:

H_o: There is no significant relationship between the spatial pattern of population distribution and housing in Abraka.

H_i: There is a significant relationship between the spatial pattern of population distribution and housing in Abraka.

The Pearson Product Moment correlation was used to test the hypothesis with the following formula

$$r = \frac{n\Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{(n\Sigma x^2) - (\Sigma x)^2 (n\Sigma y^2) - (\Sigma y)^2}}$$

Where

x = Population

y = Household size

x	y	xy	x^2	y^2
17	6	102	289	36
21	9	189	441	81
28	8	224	784	64
30	5	150	900	25
25	10	250	625	100
29	7	203	841	49
19	4	76	361	16
14	3	42	196	9
9	2	18	81	4
8	1	8	64	1
200	55	1262	4582	382

$$r = \frac{10(1262) - (200)(55)}{\sqrt{10(45821) - (200)^2 - 10(385) - (55)^2}}$$

$$r = \frac{12620 - 11000}{\sqrt{10(4582) - (4000)(3850) - (3035)}}$$

$$r = \frac{1620}{\sqrt{(5820)(825)}}$$

$$r = \frac{1620}{2191.27}$$

$$r = 0.74$$

The relationship between the spatial pattern of population distribution and housing in Abraka is high and positive as represented by the r – value of 0.74.

The student t-test was used to test for the significance of the correlation at 0.08 level of significance and n-2 degrees of freedom giving a table value of 2.31. However, the calculated value was 2.99.

Since the calculated t-value was greater than the table value, H_i was accepted. The implication is that there is a significance relationship between the spatial pattern of distribution of population and housing in Abraka.

Policy Implications

The government should subsidize the cost of building materials so that low income earners can afford these materials. The government should also provide low cost housing for civil servants and the public and students hostels in Abraka.

Credit facilities for housing construction should be made available to low income earners through mortgage financial institutions.

Government and private individuals should also locate industries in the rural areas to provide employment opportunities for the youths, thereby reducing rural-urban migration.

Conclusion

The paper examined the spatial pattern of population distribution and housing in Abraka. A high positive correlation of r = 0.74 was recorded between population and housing patterns in Abraka. The policy implications of the study highlight the need for government to provide more housing units in Abraka in particular and Delta State in general.

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Table 1: Spatial distribution pattern of sex in Abraka

Sex	Abraka Urban (P.O)	Ekrejeta	Urhuovie	Total	Percentage
Male	41	26	28	95	47.5
Female	29	44	32	105	52.5
Total	**70**	**70**	**60**	**200**	**100**

Source: Fieldwork 2009

Table 2: Spatial pattern of age distribution in Abraka

Zone	16 years	26 – 35 years	36 – 45 years	46 – 55 years	56 and above	Total
Abraka urban (P.O)	21	23	10	10	6	20
Ekrejeta	12	20	16	18	4	70
Urhuovie	16	18	10	11	5	60
Total	49	61	36	39	15	200
Percentage	24.5	30.8	18	19.5	7.5	100

Source: Fieldwork 2009

Table 3: Types of housing units in Abraka

House unit	Frequency	Percentage %
Four bedroom flat	9	45
Three bedroom flat	14	7
Two bedroom flat	28	14
Self contain	65	32.5
Single room	84	42
Total	**200**	**100**

Source: Fieldwork 2009

Table 4: Housing quality in Abraka Town

Facilities	Frequency	Percentage
All facilities	15	7.5
Some facilities	185	92.5
Total	**200**	**100**

Source: Fieldwork 2009