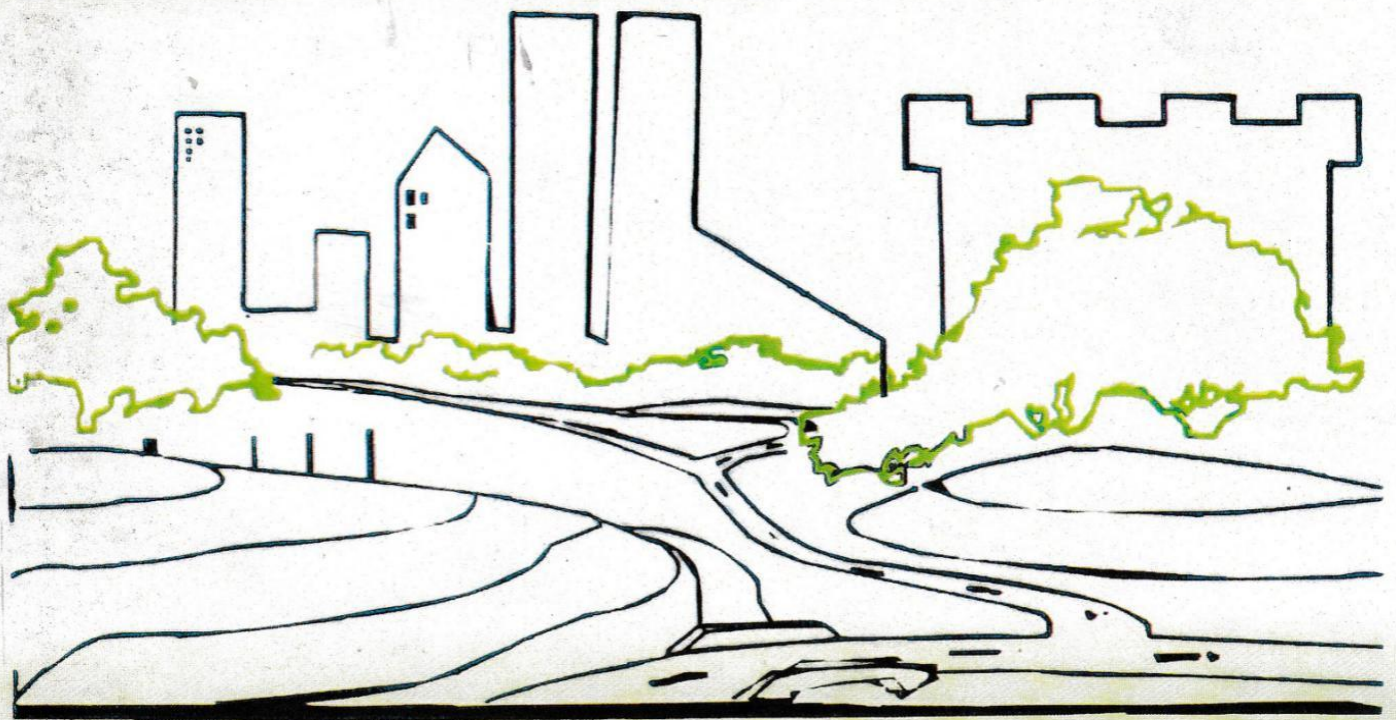


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## SPATIAL DISTRIBUTION OF PRIMARY HEALTHCARE FACILITIES IN IBESIKPO ASUTAN LGA, AKWA IBOM STATE, NIGERIA

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### Abstract

*Distribution of health care facilities in many developing nations has been observed to be politically biased, such that some areas are over serviced at the expense of other areas. This study examined spatial distribution and accessibility of primary healthcare facilities in IbesikpoAsutan LGA, AkwaIbom State. Data from official records of government establishments were obtained while field observations in 16 communities were carried out using spatial sampling framework. The data obtained were analyzed using locational quotient technique. The result indicates that about 30% of the wards were disadvantaged in the distribution of primary healthcare facilities, with locational quotients of less than 1.00 while 20% recorded total lack of primary healthcare facilities with a locational quotient of zero. On the whole, 50% of the wards had more than a fair share of the facilities with locational quotients greater than 1.00. The study concludes that there is strong empirical evidence in the data set to show that facilities within the study area are not evenly distributed. The study recommends the maintenance of existing facilities as well as provision of new ones in the areas not served by existing ones as a panacea for increased accessibility among the population in the study area..*

**Keywords:** *Spatial distribution, Primary Healthcare facilities, location quotient, Akwa Ibom State*

### Introduction

Health is a universal human right and a focus of social and political concern worldwide. According to World Health Organization (WHO) (1948), health is a state of complete physical, social and mental wellbeing, and not merely the absence of disease or infirmity. Good health has also been adjudged as a sine-qua-non for a healthy and economically buoyant society because it serves as a catalyst for the development of a vibrant and productive community. Consequently, a non-viable economy is viewed as one where the majority of the people are poor in health. Indeed, the better the state of health of a country, the better able it is to mobilize, develop and utilize the minds, energies, and resources of the people for the task of development (Omotoso, 2010). Accessibility to health facilities is strongly linked to people's earning capacity and it is fundamental to people's ability to enjoy and appreciate other aspects of life (Alabi, 2011). Thus, adequate and effective distribution of health care facilities contributes immensely to health care service provision and needs of the people (Ujoh, and Kwagbende, 2014). Accessibility in this regard is spatially construed and connotes the ease with which potential healthcare seekers get to points (healthcare facilities) where healthcare services are delivered. Access to healthcare facilities influenced by spatial location of available facilities. This is because uneven distribution of healthcare facilities invariably impinges on level of utilization of existing facilities because increased distance between the prospective user and location of such facilities influences the decision prospective health seeker to travel to enjoy health services (Buor, 2003 and Kwaku, 2008). Other authors also similarly established that fewer people are willing to travel to patronize a particular facility as their distance from it increases (Balogun and Alaegor, 2006; Adetunji, 2013, Olugbamila et al, 2017).

In Nigeria, many studies revealed that providing the basic needs of the people is a strategy to reduce the level of poverty in the society. Hence, the concern for the spatial distribution of the basic infrastructure that affects the wellbeing of the people (Atser and Akpan, 2009). Consequently, much attention has been expressed pertaining to the pattern of distribution of health care facilities and level of utilization. According to Marcus, and Makanjuola, (2011), the Third National Development Plan (1975 – 80), witnessed government's concerted effort to remove the constraints posed by inadequate health facilities. Hence, the primary health care system which came into being in 1975 was reorganized and expanded to cater for the needs of the population at the grassroots level. To achieve the articulated tasks of implementing the programmes, three levels of responsibilities were identified; federal, state and local governments. Under this tri-partite arrangement, the Federal Government is responsible for policy and implementation guidelines, resource assistance in the area of manpower guidelines and the coordination of all the agencies involved in the implementation of the policies. The States Government through their

respective Ministries of Health would execute the delivery of services in the States. The Local Governments were saddled with the responsibility of also providing basic health care services to the people because of their close proximity to the people (Marcus, and Makanjuola, 2011). As a follow up to the above, Olawuni, (2007) cited in Adetunji and Aloba (2013), both noted that every successive Nigerian government in collaboration with other non-governmental agencies had devoted substantial part of their annual budgets to health care provision and delivery.

IbesikpoAsutan has over time witnessed a steady increase in population which called for the provision of additional primary health care facilities to meet the needs of the teeming population. The federal, state, local governments, the private concerns have responded to this scenario by providing health facilities in the area. In line with this resolve by the government to improve access to healthcare services, primary health facilities have been sited in different locations in the area, oftentimes without spatial justifications. Also, there seems to be no rationale as regards the spatial spread of healthcare facilities. Observably, as noted in reconnaissance survey; some areas are better served, while others appear disadvantaged. This disparity in primary health care facilities distribution has implication not only in terms of accessibility but also on the health condition of the people. The observed imbalance in the distribution and the spatial location of primary health care facilities in the study area is also very crucial to the overall assessment of the healthcare management system in the area. In the same vein, information on the pattern of distribution of health care facilities in the study area is necessary in understanding the level of success or otherwise of health care delivery system in IbesikpoAsutan L.G.A. Hence, this study is premised on the fact that a careful analysis of the spatial location of primary health care facilities in study area and its implication on health care can provide the much needed information on the availability, management and accessibility of health care facilities in the study area.

#### **The Study Area and Methodology**

IbesikpoAsutan L.G.A occupies the central part of AkwaIbom State and lies between latitudes 4° 32' to 5° 33' East and longitudes 7° 25' to 8° 25' North. It is bounded in the north by Uyo Local Government Area, in the south by NsitUbium, south-east by NsitAtai, in the north-east by Uruan and in the west by NsitIbom Local Government Areas as shown in figure 1. Existing data from National Population Commission (N.P.C, 2006) shows that in 2006, IbesikpoAsutan Local Government had a population of 72,795 males and 64,306 females and total population of 137,101 persons. The predominant settlement pattern in the area is the dispersed pattern. The dwellings are sparsely located from each other while some areas, especially along most transportation routes, exhibit a similitude of the linear settlement pattern.

Primary and secondary sources of data were used for this study. Secondary data was extracted from the list of existing primary health care facilities obtained from the Ministry of Health, AkwaIbom State. Other relevant information on health matters such as existing national and international standards for measuring accessibility levels to health care services were obtained from relevant literatures. The primary data were collected through the administration of questionnaire, personal interviews, and field observations with the aid of Global Positioning System (GPS). The Global Positioning System (GPS), with aid of the street map obtained from Google earth, was used to capture the geographic coordinates of all the locations of primary health care facilities, and those that were not included in the list were updated. To assess the levels of accessibility to primary health care facilities in the local government area, field observations were conducted in sixteen (16) spatially sampled rural villages in the area. Spatial sampling framework was employed and a political map of the area was divided into one hundred and eight (108) quadrants (grid cells) measuring 1cm by 1cm. To sample the selected villages, a table of random numbers was used and 16 out of 108 spatial units were selected and in each of the selected grid cells where more than one village was found within the selected cell, a village with the largest population was selected. The study employed the technique of locational quotient to investigate the degree of concentration of healthcare facilities in the study area, with the aim of highlighting its implication for regional development in the region. In this case, locational quotient relates the proportion of the facility within a particular political ward to the proportion of the local government council area's population. This is computed using the formula:  $LQ(X, A) = \frac{\text{No of-} \text{PHC facilities (X) in Ward (A)}}{\text{Total No of PHC facilities in the LGA/Population of Ward A / Population of the LGA}}$ . Where  $LQ(X, A)$  = the locational quotient of PHC

facilities (X) in Ward A. Descriptive statistics were used in the analysis of data while results of analysis were presented in tables and maps.

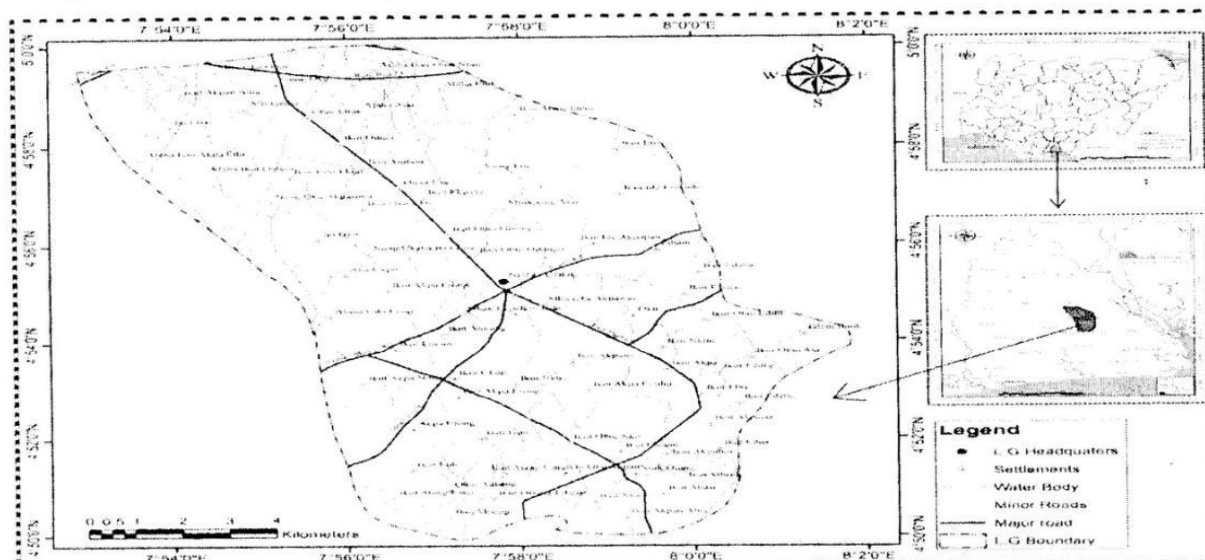


Fig. 1. Map of Ibesikpo Asutan Local Government. Area  
Source: Office of Surveyor General of Akwa Ibom State (2015)

### Literature Review

Studies on the health sector with focus on the pattern of distribution of health care facilities and level of utilization have received widespread investigation. As put forward by Inyang (1994), the question of distributive equity in healthcare facilities indexes accessibility. Impliedly, he asserts that the level of access to health care facilities is a function of the degree of fairness in spatial distribution of the facilities. Similarly, other authors have noted that inequality in facilities' distribution is of crucial significance particularly in developing societies where there are dual problems of limited facilities and low personal mobility (Smith, 1987; Atser and Akpan, 2009). In Nigeria, explicit consideration has not been given to the need for equity in the planning and distribution of health care facilities over the years. This has led to the emergence of many regions within the country where both public and private health care facilities are sparsely provided (Agaja, 2012). With regards to location of health facilities, numerous factors affecting location of public facilities have been put forward. Reid (1984) and Omotoso (2010) observed that in recent times, the issue of access, equity and efficiency criteria that consider the distributional aspect of public facilities have received attention. Filani (1991) shared the same opinion when he asserted that accessibility questions have assumed greater importance among researchers and policy makers in recent years. This is because, it is recognized that, who gets what depends on where one lives. The implication connotes that location of a facility on a transport network is an important determinant of the availability of public facilities and services.

The enquiry into the spatial distribution of Primary Health Care (PHC) facility is to provide people with the basic health services in line with the objectives of health care delivery system of the country as expressed in Minimum Standards for Primary Health Care in Nigeria put forward by the National Primary Health Care Development Agency (NPHCDA). In this regard, it is important to consider the locational standards for health care facilities in terms of threshold population and the range. Theoretically, threshold refers to the minimum population that will justify the location of a given facility in any given area or that will make the facility viable (Abiodun, 2013). Therefore, the National Primary Health Care Development Agency (NPHCDA) specified criteria for health care planning for third world countries and indicated that for Primary health centres, one should be located per ward with an average of 10 wards per LGA, thus a total of 7,740 will be expected throughout the nation. For location of Primary Health Clinics, it is expected that one (1) should be located per group of villages/ neighbourhoods with about 2,000 – 5000 persons, while for Health Posts, it is expected one (1) should be provided per village or neighbourhood of about 500 persons as many as the number of villages. Similarly, World Health



Organization (WHO) (1997) specified criteria for health care planning for third world countries and indicated that for primary health care, each service area should have a threshold population of 2000 for clinic and 10,000 for health centre in order to have adequate and equity of access to health care. These threshold requirements provide the basis for analyzing the pattern of health care facilities distribution in the study area.

The spatial pattern of health care facilities is concerned with the arrangement of the facilities across a geographical space (Jimoh, and Azubike, 2012). The provision of health services in developing countries is characterized by large regional disparities (Rodrigues, 2002). According to Nwakeze, (2011), health establishments in Nigeria are concentrated in the industrial and commercial parts of the country. He noted that there is a disparity in the distribution of health facilities in both the developed and the developing nations as documented in so many literatures. Studies on health care facilities have also shown the existence of inequality in the distribution of health care facilities (Ayoade 1982; Inyang, 1994). Naturally, (Olugbamila, *et al*, 2018) observed that a dichotomy exists between the rich and the poor, majority and minority groups, urban and rural localities in the distribution of public facilities as a result of governments' locational decisions and policies which are generally skewed in favour of those with power to influence the process of allocation of such facilities.

Findings by Atser, and Akpan, (2009) while conducting similar study in Akwalbom State observed that the state had a total of 286 health facilities spread across the 31 Local Government Areas. However, the distribution of health care facilities in the state was not even as revealed by a significant disparity in facility provision observed across the 31 local government areas. Also, Ademiluyi and Aluko-Arowolo, (2009) further observed in their study of infrastructural distribution of healthcare services in Nigeria and found that the distribution of health care delivery in Nigeria is skewed in favour of the predominantly the urban areas at the expense of their rural counterparts. Also, in terms of infrastructural distribution of healthcare, the rural areas (mainly the majority) in Nigeria have been neglected in preference of the urban areas, where the educated, the rich and government functionaries reside. In terms of distribution pattern, Agaja (2012) studied the distribution patterns of the Primary Health Care Centres (PHC) in Ughelli South and Warri South LGAs of Delta State and established that the PHC distribution in the study areas is clustered. According to him, the swampy terrain of the area may be a major determining factor responsible for this pattern of distribution because majority of land mass (over sixty percent) for Warri South were not accessible for human settlement. The discourse above is significant owing to the issue of distributive justice. Thus, Okafor, (1990) had noted that despite the provision of additional facilities in different locations, the question of the population served by such facilities must be central to the assessment of the efficiency and optimality of such facilities, in this case, healthcare facilities.

### Results and Discussion

There were ten primary healthcare facilities in Ibesikpo Asutan Local Government Area (Table 2). A total of 70% of the political wards had at least one health care facility, while 30% had none. Findings revealed that the primary health care facilities were distributed without recourse to population. For instance, Ibesikpo ward 1, ward 3 and Asutan ward 2 had 20% PHC centres each, Ibesikpo ward 2, ward 4, ward 5 and Asutan Ward 3 had 10% each, while Asutan ward 3, ward 4 and ward 5 had no primary health care facility.

Table 2: Primary Healthcare facilities in Ibesikpo Asutan Local Government Area

s/n	Name/Location	Ward	Lat	Long	Ownership
1	PHC Nung Udoe	Ibesikpo 3	385387	543891	Public
2	Model Ikot Obio Odongo	Ibesikpo 4	384026	544006	Public
3	PHC Mbieribe Akpawat	Ibesikpo 3	386458	542976	Public
4	Health Centre Ikot Iko	Ibesikpo 1	377768	549695	Public
5	Health Post Ikot Udo Ekop	Ibesikpo 2	379409	547844	Public
6	Health Post Nung Oku	Ibesikpo 1	380228	552291	Public
7	Health Centre Afaha Udo Eyop	Ibesikpo 5	381046	543303	Public
8	Health Centre Okop Ndua Erong	Asutan 1	383557	539908	Public
9	PHC Ikot Iyan	Asutan 2	385349	538941	Public
10	Health Centre Ikot Obio Edim	Asutan 2	388404	542846	Public

Source: Field Survey (2017).

Clearly, it is evidenced from the study that some political wards are enjoy more than a fair share in the distribution of primary health care facilities in the area. Table 3 shows that five wards has more than a fair share of the primary healthcare facilities in that their locational quotients yielded values greater than 1.00. Prominent among this is Asutan ward 2 with locational quotient of 3.73. Other wards in this category were with high positive locational quotients values were: Asutan ward 1 (L.Q = 1.12), Ibesikpo ward 1 (L.Q = 1.13), Ibesikpo ward 5 (L.Q = 1.13), and Ibesikpo ward 3 (L.Q = 1.25). These constituted about 50% of the total number of wards. Two wards ( about 20%) namely: Ibesikpo ward 2 and ward 4 with locational quotients values of 0.76 and 0.88 respectively has less than a fair share of the primary healthcare facilities with locational quotients of less than 1.00. The remaining three political wards (about 30% ) namely: Asutan ward 3, Asutan ward 4 and Asutan ward 5 with locational quotients of zero (0) were highly disadvantaged because field observation revealed a condition of total lack of primary health care facilities in these wards.

Table 3: Locational Quotient (LQ) of PHC Facilities in IbesikpoAsutan

Name of Wards	Population Of Wards	No of PHCs In selected wards	Locational Quotient Value of PHC	No of L.Q > 1.00
Ibesikpo 1	33,330	2	1.13	1
Ibesikpo 2	24,695	1	0.76	0
Ibesikpo 3	30,064	2	1.25	1
Ibesikpo 4	21,349	1	0.88	0
Ibesikpo 5	15,953	1	1.13	1
Asutan 1	16,667	1	1.12	1
Asutan 2	10,051	2	3.73	1
Asutan 3	8,215	-	0	0
Asutan 4	10,556	-	0	0
Asutan 5	16,608	-	0	0
Total	187,488	10		
Wards with Q > 1.00				5

Source: Author's computations from Table 2

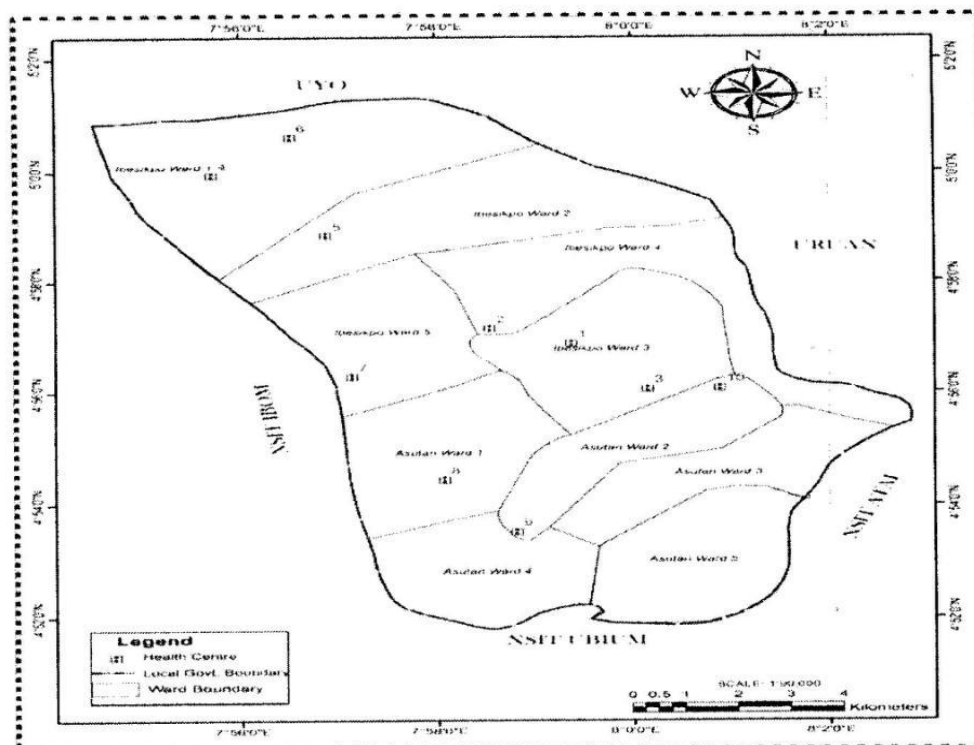


Fig. 3: Distribution of Primary Health care facilities by Wards in IbesikpoAsutan LGA  
Source: Author (2017).

### Conclusion and Recommendations

The paper investigated the adequacy in the distributional patterns of available healthcare facilities with a focus on the primary healthcare facilities using the locational quotient technique. Based on the findings from the study, it was shown that about 50% of the total number of wards had more than a fair share of the available primary healthcare facilities to the detriment of about 30% of the remaining political wards which had no primary healthcare facilities at all. As revealed by the study, the criteria for siting of the existing primary healthcare facilities do not also conform to any space requirements or standards, except that they are politically determined. From the foregoing, it is recommended that a long term comprehensive strategy for healthcare facilities planning and delivery should be undertaken in the area that will incorporate other major issues that affect locational patterns of facilities. Where those facilities exist, routine maintenance of these facilities should be undertaken periodically so as to maintain an optimum standard of health-care delivery in the study area. The government should provide good road networks and maintain existing ones, to link all the major settlements in the study area in order to ease mobility as this will also attract investors to establish private health facilities that will support the public ones. Furthermore, with the evidence that many questions concerning the provision of primary healthcare facilities are related to space and population, additional primary health centers should be provided in the affected wards that have no healthcare facilities at all as recommended in this study for improved healthcare delivery. Such provision of the facilities should take into consideration population distribution, planning standards and must be in line with Federal government's policies and guidelines as well as the World Health Organization standards. Consequently, improving the primary health-care delivery system will in the long run improve the quality of life of the people in the study area.

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