Comparative Analysis of the Impact of Settlement Size (Urban & Rural) on Vital Registration Coverage in Gombe State, Nigeria

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ABSTRACT : This paper focuses on comparing the impact of settlement size/residential sectors (urban and rural) on birth registration coverage in Gombe state. It thus, assesses the levels of spatial accessibility and efficiency of the vital registration centres to the people of Gombe State in different locations in six sampled Local Government Areas (LGAs). Reconnaissance survey of the study area was undertaken and a questionnaire/interview schedule was administered to 1560 respondents. In-depth interviews were also conducted at the vital registration centres, LGA headquarters, emirs and chiefs' palaces. The data obtained were discussed and presented using simple descriptive statistical techniques like percentages, tables and charts. The results reveal that urban areas which are mostly the LGA headquarters lead in terms of birth registration coverage. Major problems encountered by the rural areas include inadequate knowledge on the importance of the registration/birth certificates and of registration centres which are inadequate and located on the large and dispersed settlements of the study area to cover large expanse of land. Thus, accessibility to the registration centres and lack of knowledge on the importance of birth certificate hinder effective registration in the rural areas of the state. It is therefore recommended that massive enlightenment campaigns be carried out to the door steps of the rural basket and marginalized areas and more registration centres be established so as to increase accessibility.

Keywords: Birth Registration Coverage, Registration Centre, Accessibility, Residential Sector, Urban, Rural.

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1. INTRODUCTION

In Nigeria, vital registration took off in 1988 as a project after an elaborate preparation under the technical assistance of a United Nations expert in vital registration. Decree (now Act) No 39 of 1979 marked the commencement of universal registration system in the country. The births and deaths decree (now Act) no. 69 of 1992 saddled National Population Commission with the responsibility of establishing and maintaining a national system of registration of births, deaths, marriages, migration etc and made the registration compulsory. Section 24 of the third schedule of the 1999 constitution further strengthened the registration system. The responsibility is therefore core to the Commission because it is a continuous and permanent exercise which transcends the census period. Thus, a fully functional civil registration system should be compulsory, universal, permanent and continuous and should ensure the confidentiality of personal data it collects, transmits and stores in an effective way, guarantees their quality and integrity. Such a system and its

instruments value in safeguarding human right, contributes to the normal function of any society (UNICEF, 2005; Zubema, 2009).

At inception, implementation of the law on birth registration nationwide was preceded by two experimental phases undertaken in eight Local Government Areas (LGAs), mostly urban areas in four selected States namely, Anambra, Oyo, Plateau and Kano from July, 1988-june, 1990. These were followed by expansion phase 1 and **2.** The expansion phase 1 lasted from July, 1990 to December, 1992 and covered all the LGAs. The second expansion phase was embarked upon from January, 1993 during which at least two registration centres were established in each of the 774 LGAs nationwide. Urban areas have advantages over rural in terms of infrastructural development, and therefore most of the centres are located in them (NPC, 2004; 2006 and 2008).

Generally, vital statistics generated from the vital registration system is very important for development planning, especially in the areas of education, health, housing, water and food security (Lucas, 2003; Aves, 2004). A complete coverage of vital events provides data to complement the census and when sustained over time reduces the need for census taking. But, complete coverage is only found mostly in the developed countries (Duze, 1995 and Raimi, 1993). However, Nigeria as a developing country cannot afford to lag behind in the comity of nations in the production of vital statistics for socio-economic planning and development of the nation (Makama, 2006). Therefore, with the development of strategy document that covers the period 2008-2013, the goal of the National Population Commission is 60% by 2010 and 100% by 2015 in line with the United Nation's Millennium Development Goals (MDGs) set target. With only two centres per local government which in some places are poorly located since they are mostly sited at public health centres which themselves have irregular distribution throughout the developing world according to World Bank (1993) and Olorunsaiye (2007) the level of birth registration has been low. The degree of coverage is still very low, just in the range of 2% to 20.6% (Makama, 2006).

In the light of the above, all steps to gradually reduce the population of catchment areas of registration centres from 60,000 to 40,000 by 2008, 30,000 by 2009 and to 20,000 by 2010 were included in the NPC's work plan. That will make accessibility to registration centres easier and reduced disparity.

The problems of vital registration are complex and have hindered many citizens from going to register in the vital registration centres in Gombe State. Principally, in addition to the inadequacy in the number of operational centres, some human factors and low level of awareness, spatial location and problem of accessibility, other issues related to the existing vital registration centres may be militating against having larger birth registration coverage.

Currently, vital registration is in the second expansion phase covering all the 774 LGAs of Nigeria, with an average of only two (2) registration centres per LGA, which is grossly inadequate considering the landmass, population size, diverse nature of the terrain and large number of localities. Disparity in terms of coverage occurs as a result of sizes of catchment areas depending on the available registration centres and or number of informants and or methods adopted, active or passive. In Gombe State, the percent distribution of registered live births by sector (urban/rural) as indicated in Zubema, 2009 is 65.33 for urban and 34.67 for rural.

A number of studies have indicated the effect of geographic barrier (though not in detail and locally specific), on the effectiveness of vital registration system, more especially using the passive model (the registrar waiting for the registrants at the registration center) of the registration. Examples of such studies include those by UNICEF, 2002 & 2005; Aves, 2004; Duze, 1995; Maigari, 2007. In fact, Maigari (2007) applied GIS in assessing existing birth registration centres in Gombe LGA. The study was however restricted to Gombe LGA which is an urban setting and the GIS application too was limited to locating the registration centres for easy access and retrieval of information only. Also, Olorunsaiye (2007) has applied GIS to study hospital availability and accessibility in Gombe LGA. Other similar studies whose studies touched on the critical issue of access to birth registration which varies across the country based on land mass and density of population in Nigeria, include: Akande, Sekoni, 2005; Cappa, Gregson, Wardlaw & Bissell, 2014 and Isara & Atimati (2015). The

quantification and understanding of such effects were however, not treated anywhere in detail. Hence, there is a knowledge gap in this regard, more especially, in terms of the magnitude of the effect of distance in a particular area.

Thus, in the light of the fact that location of registration centres plays very important role in the efficient conduct of birth registration exercise, research into it in a young but rapidly developing State like Gombe is quite worthy of being undertaken. This is the focus of this paper which is significant because the results and the recommendations will assist population planners and policy makers in the National Population Commission and Gombe State Government to achieve their goal of 100% coverage of the vital events by the year 2015.
The research questions answered in this paper: i. Are the locations of the current operational vital registration centres appropriate in relation to the localities within their catchment areas? ii. What are the levels of birth registration coverage, by residential sectors (urban and rural) and registration centres? iii. What is the relationship between level of patronage of the services and distance from the registration centres and population of the settlements in the study area? iv. What are the best practices for the improvement of birth registration?

The main aim of this study is to assess the levels of spatial accessibility and efficiency of the vital registration centres to the people of rural and urban areas of Gombe State. From this broad aim the objectives are as follow: i. Assessing the efficiency and accessibility levels of the existing vital registration centres in the study area; ii. Determining the influences of disparity of settlements/residential sectors on birth registration levels in the study area; iii. Advancing best practices for the improvement in the registration coverage and equity in Nigeria on sustainable basis. It is hypothesized that disparity in settlement (urban or rural) affects birth registration coverage.

2. STUDY AREA AND RESEARCH METHODS

The Study Area:

Gombe State occupies a total land area of about 20,265 sq. km and made up of eleven (11) local government areas. It is located between latitude 90 30' and 120 30' north and longitude 80 45' and 110 45' east. It shares boundaries with Yobe in the north, Borno State in the east, Adamawa and Taraba in the south and Bauchi in the west (see figure 1). It has a total provisional population of 2,353,879 which comprises of 1,230,722 males and 1,123,157 females (National Population Commission, 2006). The State is characterized by mixed ethnicity (Abba and Abba, 1999).
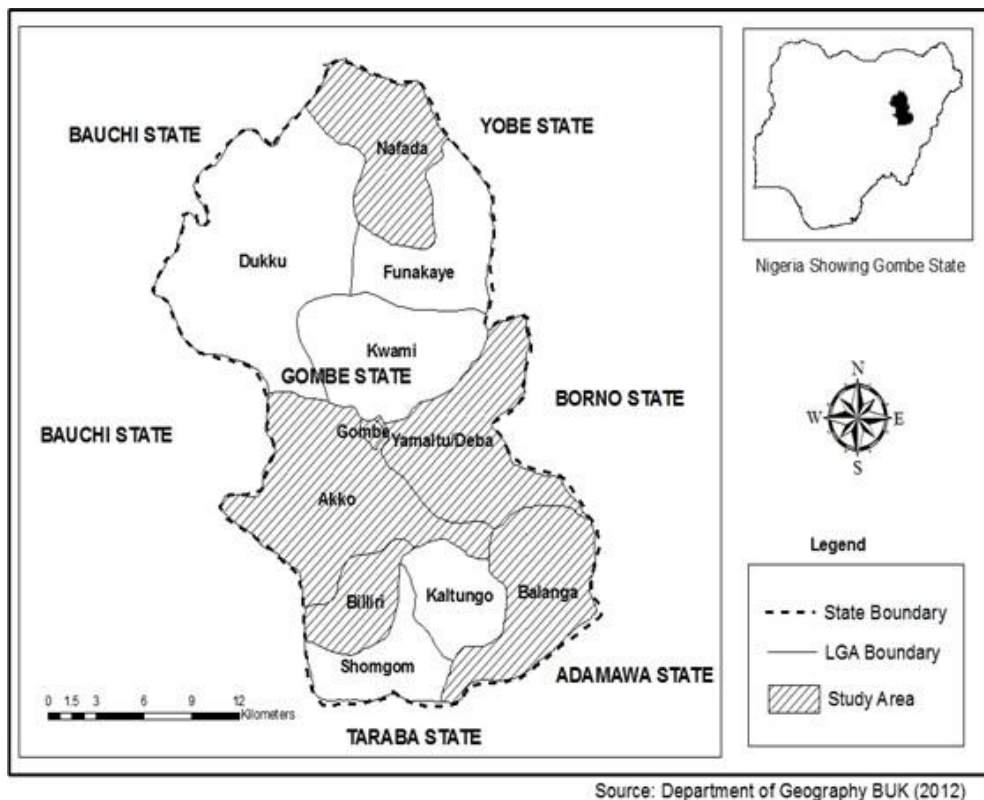
Figure 1: Gombe State Showing the Study Area (The Selected LGAs)

Research Methods

Data Types and Data Sources

To achieve the stated objectives of this study, two major sources of data (primary and secondary) were explored. Both quantitative and qualitative research strategies were adopted for this study.

Maps and locality lists were obtained from the National Population Commission and State Ministry of Land and Survey, Gombe and geo-coordinates and distances were also collected.

Geometric and Attribute Data Collection

Since all the above exercises were complemented conscientiously with field observations, geo-coordinate samples from the localities were collected at the sites, using GPS (one reading in each locality) and the list of the existing vital registration centres were obtained from National Population Commission. Euclidean distance measurement was used. For each sampled village, one GPS reading was collected, giving the total of about twelve (12) localities in each LGA (the two (2) vital registration centres and ten (10) sampled localities) and a total of about one hundred and ninety-nine (199) localities in the State.

The attribute data in the form of tables generated from vital registration forms generated on daily and monthly basis found in annual reports of Gombe State were obtained from National Population Commission. Other attribute data are the population of all the sampled locations and the number of captured events from each sampled locality and registration centre.

Reconnaissance survey of the study area was undertaken and a questionnaire/interview schedule was administered to 1560 respondents. In-depth interviews were also conducted at vital registration centres, LGA headquarters, emirs and chiefs' palaces. The data obtained were discussed and presented using simple descriptive statistical techniques like, ranking, percentages, tables and charts.

a) Ranking

Ranking of registration centers and LGAs were made based on the registration coverage which is the proportion of the registered births to the crude birth rate/estimated births in an area. The Crude Birth Rate (CBR) of 40 births per 1000 women was used for the calculation. The CBR was based on the localities' projected population, although not all the births were registered at age one.

To determine the positions of all the LGAs and the registration centres in terms of their coverage of birth events, two types of ranking techniques were used. First, by ranking according to percentage coverage of registered births and second, by year of registration in the six sampled LGA in Gombe state: 2000-2008.

b) Maps, Charts, Tables and Graphs

Maps, graphs, charts and tables were also produced using window based Arcview 3.2 version, SPSS 15.0 version and Excel to report the birth registration coverage in the sampled LGAs and the registration centre's, Maps are presented in this study.

3. RESULTS AND DISCUSSION

Table 1: Chi-Square Results of Influence of Residential Sector on Birth Registration:

Residential Sector	Respondents' Characteristics in percentage		Ever Obtained Birth Certificate From NPC or Never.		Chi-Square Value(χ^2)
	N	%	% Yes	% No	
Urban	413	27.0	39.0	61.0	
Rural	1117	73.0	30.4	79.5	
Total	1530	100	25.5	74.5	54.226**

Source: Field Survey, 2008   N= Number   %=Percentage

** Significant at 0.01 level

Selection of respondents by residential sectors (urban and rural) for this survey shows that, the rural sector dominates by having 73% and the urban sector has only less than 27% as shown in Table 1. This selection became necessary as a result of the fact that constraints facing effective birth registration especially the geographic ones are more serious in the rural areas than in urban areas as indicated by various studies including Duze (1995) and UNICEF (2005) as well as in the ranking of the registration coverage presented in chapter four. Thus, the χ^2 calculated value indicates that there is significant difference between urban and rural areas in terms of birth registration. Registration in urban is twice that of rural in the ratio of 4 in 10 and 2 in 10 respectively that have obtained certificates from the National Population Commission for their children. Rural areas are found to be having lesser coverage of birth registration than urban areas. In Tanzania, for instance, the rural registration rate of just 3% compared to an urban rate of 22%, while in Indonesia, coverage in rural areas is less than half that of urban areas (UNICEF, 2002). In Nigeria, the comparative study carried out by Zubema (2009) and Maigari (2007) indicate that more births were registered in the urban areas than rural areas of Nigeria over the past 7 years. NPC/ICF MACRO (2009) also shows that more births are registered in urban areas (49%) than in rural areas (22%).

This study also found that a considerable number of registration centres are located in the urban Gombe area which leaves rural residents' disapprotionately unable to fully access these registration centres. There are eleven (11) vital registration centres in Gombe town ship alone. That is about half of the total number in the state.

Efficiency and Spatial Accessibility levels of all the Registration Centres in Relation to Localities in their Catchments Areas

The effect on accessibility of adding 1-10 new registration centres in each of the five rural LGAs using total weighted distance/average settlement distance objective can be seen in Figures 2, 3, 4, 5 and 6 below. The Nagfur report in India as cited by Singh (2005) in Mohammed (2011) recommended that areas lying 4km from transportation point are 'fairly accessible', beyond 8km are 'inaccessible' and beyond 16km are 'very inaccessible'. For the purpose of this study, an area is considered as having a good access if it is located on a flat land within 4-5km radius (trekable distance) from a facility according to Oppong & Hodgson (1994) and within 10km as fairly inaccessible. Thus, Figures 1-5 highlight accessibility statistics for all the registration centres in the selected LGAs.
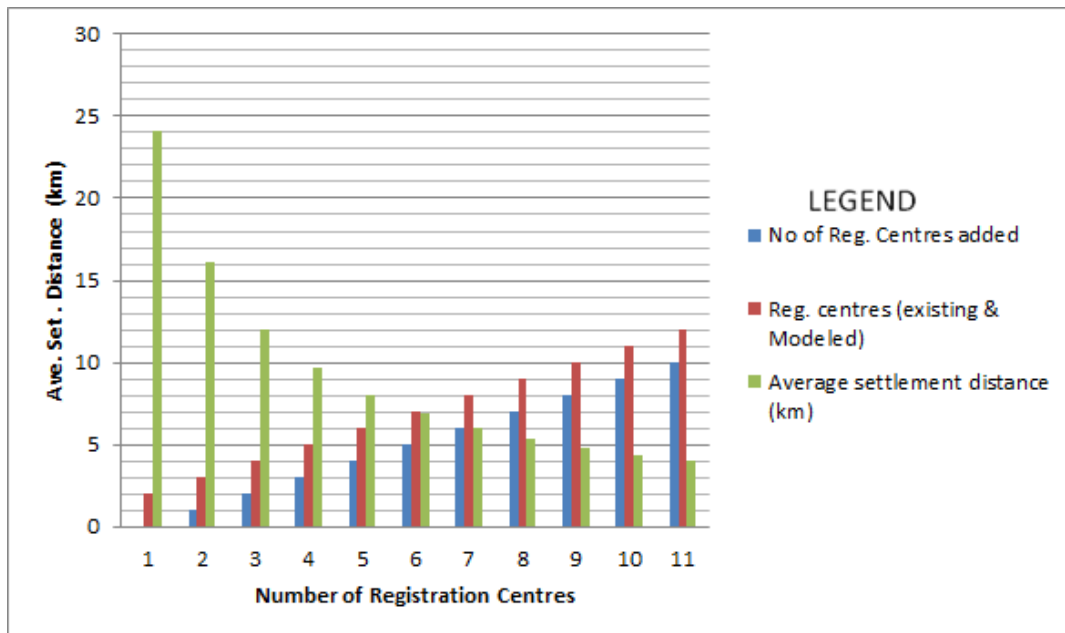

Figure 2: Accessibility Statistics for Registration Centres in Akko LGA
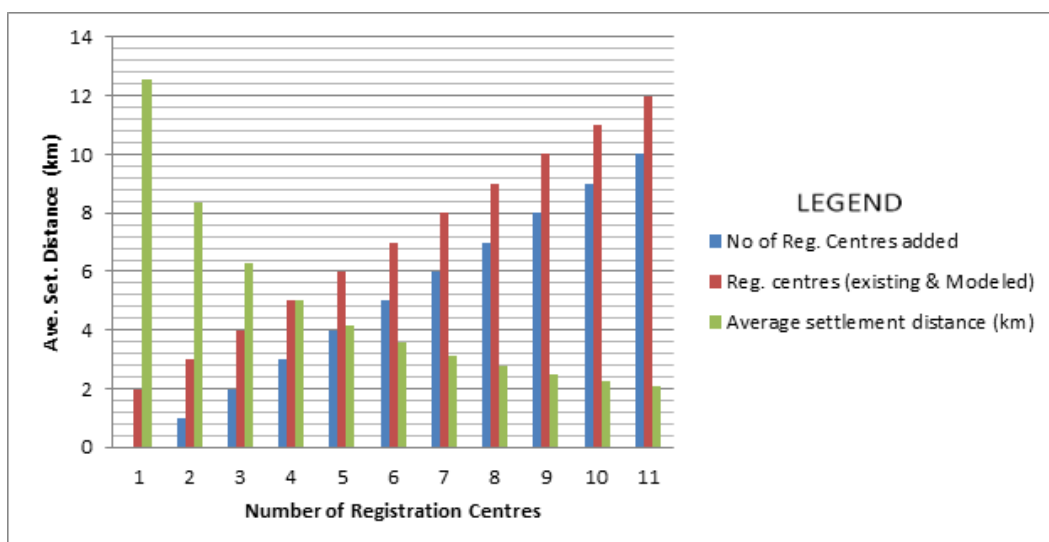**Source: Field Survey, 2019**

Figure 3: Accessibility Statistics for Registration Centres in Balanga LGA
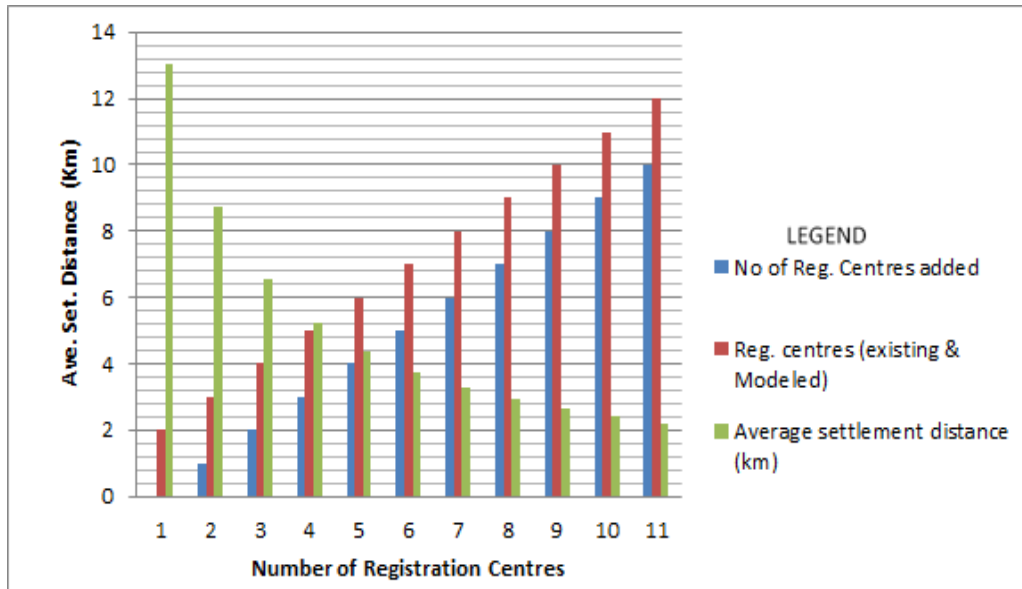**Source: Field Survey, 2019**

Figure 4: Accessibility Statistics for Registration Centres in Billiri LGA
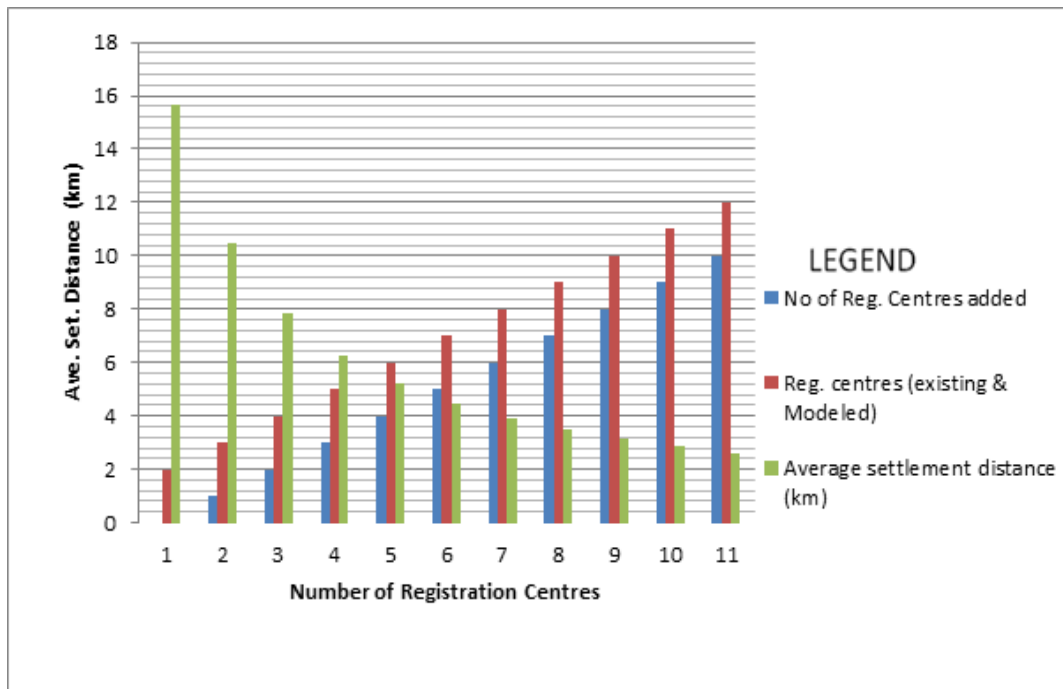**Source: Field Survey, 2019**

Figure 5: Accessibility Statistics for Registration Centres in Nafada LGA
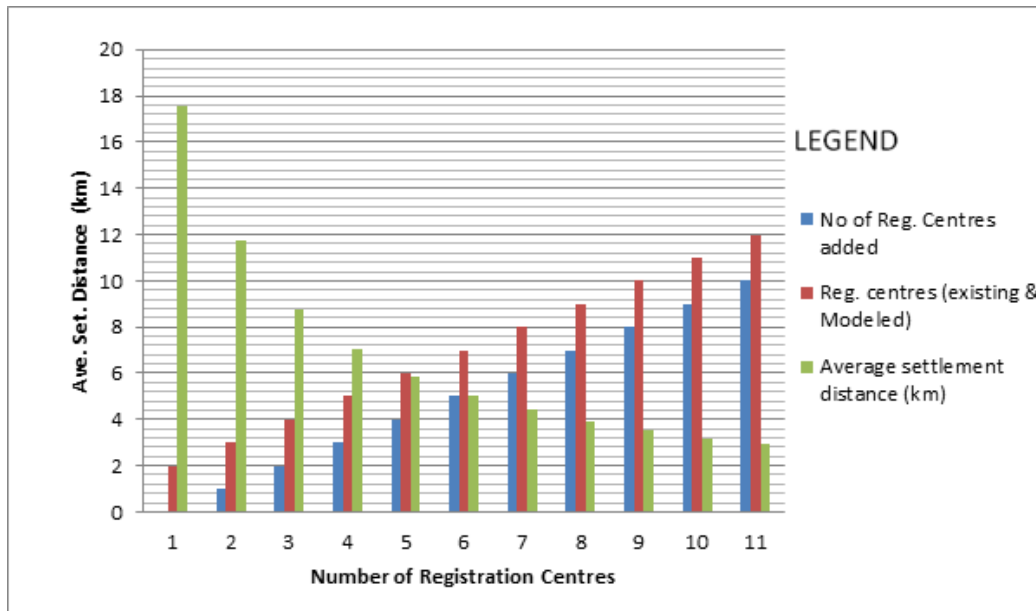**Source: Field Survey, 2019**

Figure 6: Accessibility Statistics for Registration Centres in Y/Deba LGA
Source: Field Survey, 2019

Population's location also plays a very important role in determining efficiency and accessibility. According to Oppong & Hodgson (1994), the purpose of the population model within the location-allocation context is to provide precise information about the location of the population in order to assess the level of accessibility to the facility such as health centre. Accessibility can be quantified in many ways. The total (or average) travel distance, travel time or cost for all the people attending registration centre in the area may be used either as an absolute figure, which is compared to political/administrative goals, or a relative figure, which is compared to scenarios where health care, in this regard registration centres are opened, closed, moved or where district boundaries are changed. In this study Euclidean distance was used.

Figure 2 shows that for Akko LGA, the average weighted distance expressed in kilometer decreases from 24.12km with 2 registration centres to only 4.02km with 12 centres. That means, if the number of registration centres could be optimally increased to 12, all the localities within a catchment area would averagely be located within only 4.02Km. The same thing is applicable to all the LGAs as displayed by their respective figures. The furthest distance in the situation of 2 centres with respect to Akko LGA, is 52.62km, coming down to as low as only 8.77km in the event of 12 registration centres.

Figure 3 indicates that, the average weighted distance in Balanga LGA decreases from 12.54km with 2 registration centres to 2,09km with 12 registration centres. In this case, the furthest distance is 26.98km with 2 centres and only 4.50km with 12 centres. The average catchment population also reduced from 105,745 to 17,624 respectively. Balanga LGA however, has a difficult terrain and therefore, the lower the distance to be travelled by a registrant, the better.

Accessibility Statistics for Registration Centres in Billiri LGA depicted in figure 4 indicate that under the situation of additional 10 registration centres, the total becomes 12. Thus, the average weighted distance dropped from 13.00km to 2.00km which is still within walkable adopted by this study
As depicted in figure 5, Nafada LGA, under the situation of additional 6 registration centres brings the total to only 8, the average weighted distance dropped from 17.55km to 4.40km which is still within walkable adopted by this study

Figure 6 shows that Yamaltu-Deba LGA with additional 10 registration centres which makes the total number to be 12, the average weighted distance dropped from 16.80km to 2.40km which is still within walkable adopted by this study.

For Gombe LGA being an urban area, the average weighted distance is only 1km under the present situation of 11 registration centres. Each of the 11 centres serves only an average of 24, 259 people as against for instance, Akko LGA with only 2 registration centres, and each serving an average of 168,718 people. That means, in Gombe LGA with additional 10 registration centres, the average catchment population of 12,707 people would be served and thus fractions of a kilometer in terms of average weighted distance would be covered by registrants. In practical terms however, Gombe LGA registration centres may be serving the neighboring LGAs of Akko Yamaltu-Deba.

4. CONCLUSION AND RECOMMENDATIONS

Conclusion

This study indicates that apart from the fact that the number of the registration centres were inadequate especially in the rural areas, they were not also optimally located. Gombe LGA being the state capital and the most urbanized locality in study area was the only one with largest number catchment increases, registration levels decrease. For LGAs with very large areas, adding centres will increase registration whereas for those with large catchthe study area.ment, adding centres will decrease registration. Other factors may also have been responsible for low registration in the following recommendations are therefore made for the improvement in the registration system:

Recommendations
  i.   The number of the registration centres should be increased more especially in the rural LGAs based on their populations and land mass.
 ii.   The new centres should be optimally located.
iii.   Further studies should be conducted especially on the other determinants/factors responsible for low registration in the study area with the geographic barrier aside.

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