

Geospatial Distribution of Senior Secondary Schools and Gender Enrolment in Ankpa Kogi State, Nigeria

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Abstract

This study examines geospatial distribution of senior secondary schools and gender enrolment in Ankpa from 2011 – 2020. In order to obtain a comprehensive analysis for this study, the senior secondary schools in the area were identified, the gender enrolment of the students were obtained for ten years, the nature of senior secondary schools in the area were identified and examined and the spatial location of these schools were also examined with the help of their various coordinates. The data for this study were obtained from primary and secondary sources. The primary sources of data include: personal field survey and questionnaire administration, while the secondary data were sourced from articles in journal, unpublished thesis, published text books and other relevant materials to the study. Through field survey, the researcher identified twenty (20) senior secondary schools in the study area. Also, in 2011 to 2020, a total of 9732 male students were enrolled, whereas 9374 female students were enrolled respectively. From the coordinates picked from various identified points in the study area, and by the aid of average nearest neighbor analysis, the schools were randomly distributed in the study area. More also, the factors influencing gender enrolment in the area include: geographic, financial, religious and cultural beliefs. The study recommend that government and private sector should establish more senior secondary schools to commensurate the increase gender enrolment of students in the study area.

Keywords: Geospatial, Distribution, schools, students and Gender Enrolment.

Introduction

Education is a basic human right, and it is indispensable for the realization of other human rights and it is a means for accessing broader social, economic, political and cultural benefits. Because it is transformative and empowering, education contributes to building more just societies through reducing poverty and inequalities, enhancing acceptance of diversity, and promoting respect for the rule of law (Aliu, Sule and Young, 2012).

In recent years, the United Nation (UN) member states and the European Union have emphasized the necessity to strengthen the educational system promoting efficiency and equality (European Union, 2009). In particular, goal 4 of the 2030 gender for sustainable development launched by UN member states in 2015 aims to ensure an inclusive and equitable quality education and promote lifelong learning opportunities for all. Equity in education means that the school system is able to offer to each student the same opportunities to achieve the best possible outcome, in terms of academic skills, regardless of gender, ethnic origin, socioeconomic status and where one lives. To reach this goal,

monitoring the educational outcome and understanding the factors behind students and schools results have become paramount, accentuating the importance assumed by the large – scale assessments, able to guarantee comparable and reliable data on students achievements (Breakspear, 2012; Fullar, 2009).

Gender is one of the factors that have considerable effects on student's academic performance especially in science subjects. Gender is the range of physical, biological, mental and behavioral characteristics pertaining to and differentiating between the feminine and masculine (female and male) population. Different researchers such as Ezeliora and Ezeokana, 2010; Owolabi, 2001; Salman el at, 2011 and Yahaya, 2004) observed gender gap in the trend and pattern of enrolment in Nigerian universities. Contrary to this observation, Okeke, Okwo and Ureh (1996) examined that gender enrolment in East Central Nigeria are experiencing decline in male enrolment at secondary schools. The total number of males in 1996\97 was 21,419, with a sharp decline in male enrolment by 1000 in Anambra state.

The problem of inadequate secondary schools is aggravated by location inequalities in the location of the few available schools. The spatial disparity in the distribution of secondary schools is most severe between urban and rural areas. Ankpa is a settlement located in the eastern part of kogi state, Nigeria. The town is a home of various schools both private and public owned. On this backdrop, this study aim at beaming an academic satellite on the geospatial distribution of senior secondary schools and their gender enrolment.

Aim and Objectives

The aim of this study is to critically examine the geospatial analysis and gender enrolment of students in senior secondary schools in Akpa. The aim was achieved through these objectives:

1. To identify the number of senior secondary schools in Ankpa.
2. To examine the gender enrolment of students in the study area.
3. To examine the spatial distribution of senior secondary schools in the study area.

Materials and Methods

Ankpa is located in Ankpa Local Government Area of Kogi State, Nigeria. The town lies between latitudes 7°18"N and 7°43"N of the equator, and longitude 7°22"E and 7°52"E of the Greenwich Meridian. The town is situated at the eastern region of the state and serves as the headquarters of Ankpa Local Government Area (Aper and Aku, 2018). The settlement is bounded to the north by Ejegbo and Ogaji, to the south by Okpo, the east by Allor and to the west by Ogodo. Ankpa is in the humid tropical savanna climate according to Koppen's AW classification. It is characterized by the wet and dry seasons, the wet season has heavy rainfalls, starting from April through October, the dry season on the other hand start from November till March. The settlement Ankpa, has an undulating relief where interflaves alternative with valleys. The gentle undulating terrain is bisected by River Anambra and the

highland area is over 200 meters above sea level. The vegetation is that of the guinea savanna type and is characterized by scattered trees, most of which are deciduous.

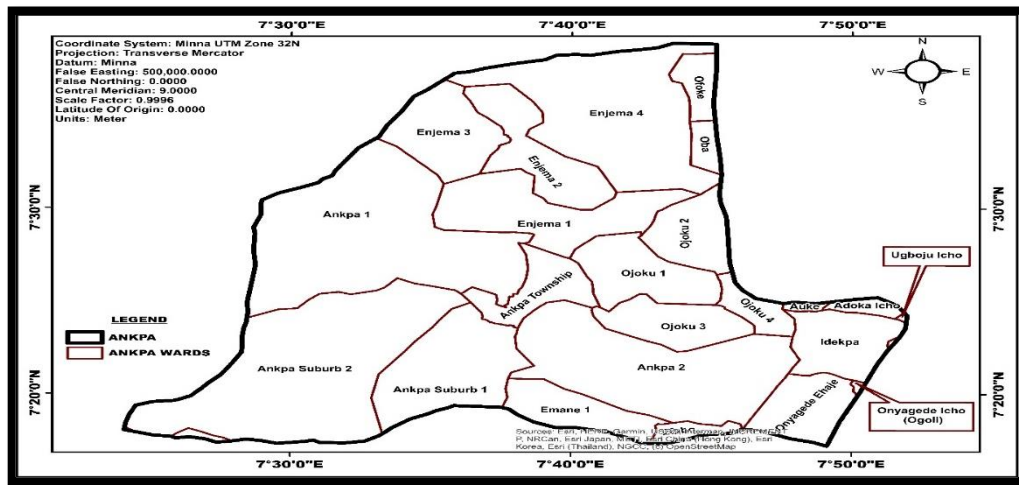


Fig.1: Ankpa

Source: GIS Lab, PAAU, Anyigba.

The data used for this study were obtained from both primary and secondary sources of data. The primary sources include personal field survey and questionnaire administration, while the secondary sources were obtained from articles in journal, published text books and other relevant materials. The questionnaires were administered systematically according to the number of schools identify through field survey.

Conceptual Framework

1. The Concept of Spatial Distribution
2. The Concept of School
3. The Concept of Gender

The Concept of Spatial Distribution

A spatial distribution is the arrangement of a phenomenon across the earth's surface and a graphic display of such an arrangement is an important tool in geographical and environmental statistics. A graphical display of a spatial distribution may summarize raw data directly or may reflect the outcome of more sophisticated data analysis ([http://en.wikipedia.org/wiki/spatial – distribution](http://en.wikipedia.org/wiki/spatial_distribution)). A spatial pattern, also known as a spatial distribution, is an analysis tool used to study people or objects in terms of their physical location. During spatial distribution analysis, many people or objects are considered to create a graphic depiction of how a particular factor is distributed over an area. Most often, spatial patterns take the form of a map and are color-coded to represent changes over a physical location. Our lives can be studied in terms of geography, and for that we turn to spatial distribution, or the study of things in terms of their physical locations. Spatial

distribution studies are most helpful in quantifying complex subjects, such as analyzing human behavior or the interaction of ecosystems.

The Concept of School

The word 'school' has been derived from the Greek word 'skole' that means leisure. It was before in the ancient Greek to utilize leisure time in a systematic way. But now this concept has changed to prime time activity. It is an essential investment field now on which the entire super structure of the life of the individual and nation will build. A school is referred to as an institution designed to provide learning spaces and learning environment for the teaching of students (or pupils) under the direction of teachers. Most countries have systems of formal education, which is commonly compulsory. In these systems, students' progress through a series of schools. The names for these schools vary by country but generally include primary school for young children and secondary school for teenagers who have completed primary education. An institution where higher education is taught, is commonly called a university college or university. In addition to these core schools, students in a given country may also attend schools before and after primary and secondary education.

The Concept of Gender

Gender refers to the socially constructed roles, behavior, activities and attributes that a given society at a given time and place considers appropriate for men and women, and boys and girls and the relationship between them. In other words, gender refers to the characteristics of women, men, girls and boys that are socially constructed. It is of key importance in defining the power, privilege and possibilities that some people have and some people do not have in a given society. It was in the 1970s that feminist scholars adopted the term gender as way of distinguishing "socially constructed" aspects of male-female difference (gender) from "biologically determined" aspects (sex). Why does gender matter in education? Evidence shows that educators need to have gender awareness to be open girls' and boys' choices in learning and development, this help children explore who they are, and make connections to people around them, as well as gain self- confidence, well-being, peer acceptance and social support.

Literature Review

Identification of Schools

Olamiju and Olujimi (2011), put forward that education has provided the impetus for socioeconomic transformation in many parts of the world. The provision of educational facilities is crucial for producing literate citizens that are required to develop a nation. The literacy rate in Nigeria is estimated at 61.3% (UNICEF, 2010). Nigeria needs to revamp the educational system in order to attain the vision of becoming one of the largest economies by the year 2030. One way of achieving this is to have proper information on the location

and distribution of educational facilities across the various political regions of the country, in order to ensure equity in the distribution or provision of these facilities. According to Illiya et al (2020), provision of education as a global social service is champion by the public sector. Where these education facilities are located influences their utilization and efficiency. Proximity to these facilities also influences decisions to seek and patronize them.

Gender Enrolment of Students in Schools

The Revised National Policy on Education specified a maximum of 40 students in class in secondary schools (Federal Republic of Nigeria, 2004). Some researchers believe that enrolment in schools, especially in secondary schools should be based on the school size and location among others (Arop et al, 2018). No matter how laudable an educational program may be, if the number of facilities needed to carry out the programs is inadequate, the program will not be as good as expected (Adeyemi & Adu 2010). Okojie (1998) noted that in Nigeria enrolments have increased phonemically since 1960, yet few girls than boys are enrolled at all levels of education in Nigeria, and the gap widens at higher levels and in rural areas. The report of joint consultation committee on education in 1991 shows that the total population of boys in primary schools of the states and Abuja was 7,378,305 against 5,874,097 girls, giving an edge to boys of 1,478,208 over girls.

Spatial Distribution of Schools

School mapping is a plan for the distribution of school establishment nationwide. The main function of this plan is to ensure an equitable distribution of schools. School mapping is managed or regulated by the ministry of education. It is generally understood that these regulations have to be followed both by government and private schools for quality and affordable education to the population living in both rural and urban areas (Oke, 2011). The study of Zhang, Zhou and xu (2020) revealed that appropriate spatial distribution of primary and secondary schools for relocated children of migrant workers is extremely valuable to ensure the fair education of special groups and improve the quality of their education.

Results and Discussion

A. Secondary schools in Ankpa

Table 1: Senior Secondary Schools in the Study Area

SN	Name of Schools	Year of Establishment
1	St. Charles Secondary School	1967
2	Young Muslim College	1972
3	Community Secondary School	1985
4	Prison Staff Modern School	1990
5	College of Arabic and Islamic Studies	1992
6	Elite Foundation Secondary School	1993

7	Unity Comprehensive Secondary School	1994
8	Demonstration Secondary School	1995
9	Local Govt. Special Day Secondary School	1999
10	Aleka Academy Secondary School	2000
11	Redeemer Secondary School	2001
12	Hope Academy Secondary School	2005
13	College of Art and Islamic Studies	2006
14	Jema'atu Nasiru Secondary School	2006
15	Comsaldogg's Secondary School	2007
16	Dynamic Group of School	2015
17	Jabbs Academy Secondary School	2015
18	Royal Model Academy	2015
19	Al-Frukan Secondary School	2016
20	Joseph Akagu Secondary School	2016

Field Survey, 2021

Table 1 shows the various senior secondary schools in the study area. From the field survey, there are 20 senior secondary schools identified in Ankpa as at the time of this study. The 20 schools are distributed in different locations in the town.

B. Gender Enrolment of Students

Table 2: Gender Enrolment of ss1 – ss3 Students in the study Area

Years	Males	Females
2011	881	903
2012	996	882
2013	920	863
2014	881	834
2015	956	901
2016	934	899
2017	939	917
2018	1127	1015
2019	1040	1027
2020	1058	1133
Total	9732	9374

Field survey, 2021

Table 2 shows the gender enrolment of senior secondary school students in the study area. The result revealed that within the ten years under review in this work 2011 – 2020, 9732 male students were enrolled, whereas 9374 female students were enrolled respectively.

From these figures therefore, it is obvious that more males were enrolled than the females within this ten year. Some of the factors influencing gender enrolment could be geographic, financial socio-cultural and religious.

C. Nature of Senior Secondary School

Table 3: Nature of Senior Secondary School in the Study Area

Mode of Scholl	Public	Private	Total
Frequency	4	16	20
percentage	20	80	100
Types of School	Coeducation	Religion	Total
Frequency	17	3	20
Percentage	85	15	100

Field Survey, 2022

Table 3 shows the nature of senior secondary schools in the study area. From the result, four of the schools are public, whereas sixteen of them are private owned schools. Also, seventeen of them are coeducational while three are religious schools.

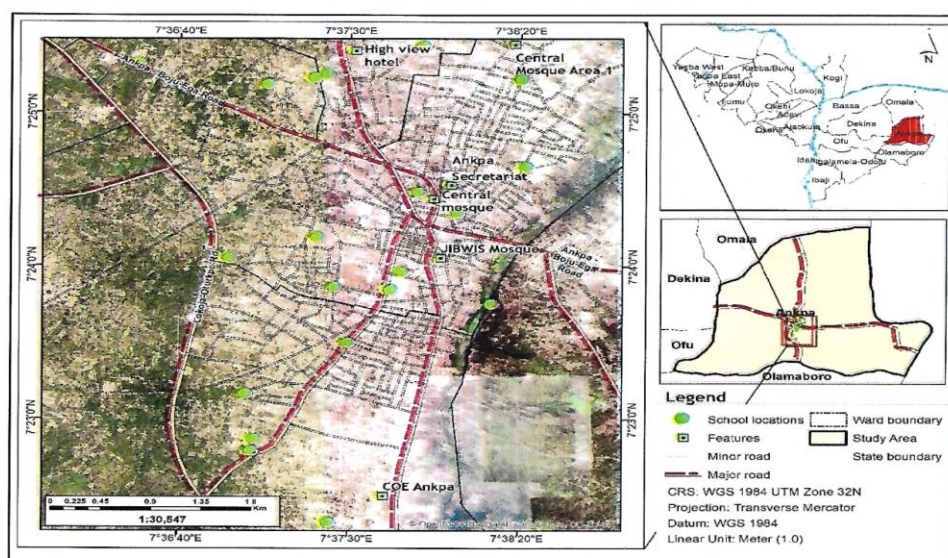


Figure 4.1; Mapping of Senior Secondary Schools in Ankpa
Source: Department of Geography, PAAU, Anyigba (2021).

Average Nearest Neighbour Analysis Summary of Senior Secondary Schools distribution in Ankpa

Parameter	Value
Observed Mean Distance:	570.2193 Meters
Expected Mean Distance:	489.7652 Meters
Nearest Neighbor Ratio:	1.164271
z-score:	1.405421
p-value:	0.159896
Distance Method:	EUCLIDEAN
Study Area:	19189595.234664
Input Feature Class:	School locations

Source: Author's analysis (2021)

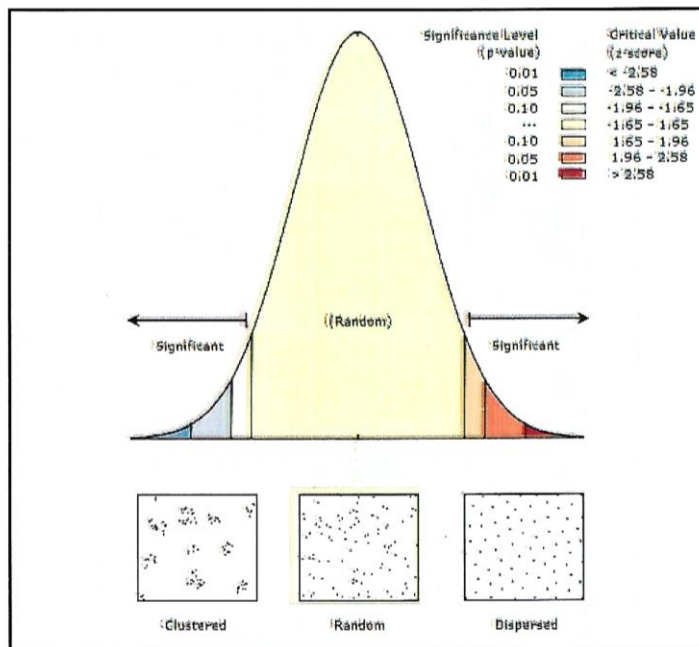


Fig 4.2: Average Nearest Neighbour Analysis Report

The result of the Average Nearest Neighbourhood Analysis shows that the ANN ratio is 1.164271 and a z = score of 1.405421 with a P= value of 0.15986. this implies that the distribution pattern of senior secondary schools in Ankpa is not significantly different from the random, given the Z= score of 1.41 which falls within the critical value of -1.65 to +1.65 and also an ANN ratio of 1.16 which tends to fall within the random to dispersed zone of the ANN ratio and also a P= value of 0.15 which is greater than the social science alpha level of 0.05. Therefore, we can infer that this random pattern of senior secondary schools in Ankpa is either systematically or purposefully distributed randomly across the study area.s

Conclusion

This study examined the geospatial distribution of senior secondary schools and gender enrolment in Ankpa, Kogi State, Nigeria. The work identified senior secondary schools, gender enrolment of students in these schools and the spatial distribution of the schools in the study area. The data used for this research were obtained through questionnaire administration. The result of the study revealed that there were twenty senior secondary schools in the study area as at the time of this study. And more male students were enrolled than female in the period under review, while the schools were randomly distributed in various part of the study area.

This study x-rayed the vital role education plays in the overall development of any nation. To effectively achieve this laudable role, the government and other stake holders should implement the recommendation made by the study.

Recommendations

Arising from the findings of this study, the following recommendations are made:

The government and private individuals should build more schools in the area to meet up with the ever growing population of the town.

More female students should be enrolled to bridge the inequality gap in gender enrollment of students in the study area.

Churches and mosque should expedite action on opening mission school in the area

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