Science World Journal Vol. 18(No 3) 2023
www.scienceworldjournal.org
ISSN: 1597-6343 (Online), ISSN: 2756-391X (Print)
Published by Faculty of Science, Kaduna State University
DOI: https://dx.doi.org/10.4314/swj.v18i3.1

Full Length Research Article

ASSESSING THE SPATIAL PATTERN OF PUBLIC PRIMARY SCHOOLS IN MORO LOCAL GOVERNMENT AREA OF KWARA STATE, NIGERIA

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ABSTRACT
Education is one of the most significant investments a nation can make in its citizens that can address poverty and inequality in the nearest future. This study sought to assess the spatial pattern of public primary schools in Moro Local Government Area (LGA) of Kwara State, Nigeria. The purpose of the study was to look at the geographic distribution and the level of inequality of the public primary schools in the study area. The number, names and addresses of public primary schools were obtained from the unit of the planning, research and statistics department of Moro Local Government Education Authority (MGLEA) while the data on the geographic location of the public primary schools were gotten via GPS device (Mreno 120, Garmin). Descriptive statistics such as frequency, percentages and Lorenz curve were used to assess the distribution of public primary schools in the study area. These data were also analyzed using Nearest Neighbour Analysis (NNA) to derive the spatial pattern of public primary schools in the area. Findings revealed that there are one hundred and fifty six (156) public primary schools in Moro LGA. Findings further revealed that Malete had the highest percentage of public primary schools with 10.3%, followed by Megida with 9.6% while Ajanaku and Pakunma had the least public primary schools, with 1.9% and 2.6%, respectively. The NNA result of the spatial pattern of public primary schools produced a clustered pattern at 0.01% significance level with the Nearest Neighbour Ratio (NNR) of 0.86 and a Z-Score of -3.39. The paper consequently recommends that Moro LGC should liaise with the Kwara state government and other relevant stakeholders in order to ensure that the allocation of primary schools is distributed equitably throughout the LGA for easy accessibility.

Keywords: Lorenz Curve, Malete, Nearest Neighbour Analysis, Primary Schools, Spatial Pattern

INTRODUCTION

Development and growth of the human race are fundamentally dependent on education. It is one of the most significant investments a nation can make in its citizens and will likely be the key to eradicating poverty and inequality in the future (Grant, 2017; Olayode et al., 2022; Omoniyi, 2013; Sharma & Dev, 2017; Unyime et al., 2020). Primary education has long been considered to be both the most significant and the most patronized form of education worldwide (Mulinya & Orodho, 2015). This may be due to the fact that primary education raises children's knowledge, creates opportunity, and reduces intergenerational poverty. These, in turn, have a significant impact on the development and growth of any nation's economy (Adeleke & Alabede, 2022; Adeyemi & Edeki, 2018; Gao et al., 2016; Hassan et al., 2022). The significance of primary education can, thus, be seen in the sense that all individuals who benefit from subsequent levels of education, such as secondary and university education, must inevitably pass through this level (Labo-Popoola et al., 2009). As a result, primary education has been deemed a fundamental right for all residents in Nigeria and the majority of emerging nations (Etor et al., 2013; Quy, 2018; UNESCO et al., 2021).

Primary education is often the first stage of compulsory education, falling between early childhood education, sometimes known as nursery education, and secondary education (Grant, 2017). Over the past 40 years, a substantial body of research has been produced on the beneficial economic impacts of a primary education, particularly for people working in agriculture (Grant, 2017; Haruna & Banki, 2012; Omoniyi, 2013). Relationships between the physical characteristics or location of a school and the type of building, usage, capacity, teachers (numbers, qualifications, and age), pupils' enrolment in school, individual data on age, and sex ratio has been viewed as a key component of the education sector (Abraha, 2019; Anjorin et al., 2022). Others include the means of transportation, the length of the travel to school, parental background, and the rural versus urban dichotomy to a primary school location, all of which have recently attracted a lot of attention (Anjorin et al., 2022; Dalhat et al., 2020; Ding & Feng, 2022; Nasrudin & Nor, 2013).

The access and quality of primary education in developing nations is depressing (Akkari, 2022; Aule et al., 2022; Evans & Acosta, 2021; World Bank, 2018). To guarantee that pupils in urban and rural area grow equally as human resources for nation building, an understanding of the equitable geographical distribution of primary schools is absolutely essential. Numerous studies have employed geospatial methods to comprehend the geographic distribution, service area coverage, and accessibility of schools in developing nations in an effort to increase educational access and quality (Abraha, 2019; Doyani et al., 2020; Ewendu & Olubor, 2020; Sumari et al., 2019; Umar et al., 2016). For instance, using Nearest Neighbour Analysis (NNA), Abbas et al. (2017) investigated the spatial distribution of public primary schools in Kirfi Local Government Area (LGA) of Bauchi State, Nigeria and find out that a clustered distribution pattern due to their proximity to populated area. Other studies reported a mixed result of either random or dispersed distributional pattern of primary schools (Dalhat et al., 2020; Fabiyi & Ogunyemi, 2015; Mustapha et al., 2016).

However, the majority of these studies took place elsewhere than the study area. The researches' mixed results on the spatial distribution of schools were found to be either random or clustered, leaving a knowledge vacuum in the literature. Despite the fact that primary education is the most necessary sort of education, particularly in this remote area, nothing has been done to understand the distribution pattern of primary schools in Moro LGA

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of Kwara State, Nigeria. There is not a lot of information available regarding the public primary schools' characteristics and pattern of distribution. In light of these facts, this study was conducted to look at the geographic distribution of public primary schools in the Nigerian state of Kwara's Moro LGA. The study objectives were to examine the spatial distribution and pattern of public primary schools in the study area.

The Study Area

The study area is Moro LGA in Kwara State, Nigeria with its headquarters at Bode Saadu. The study area is located between Latitudes 8º31'43"N and 9º9'4"N of the Equator and Longitudes 4º10'30"E to 4º51'1"E of the Greenwich Meridian with a total landmass area of 3,272km^2. Asa, Ilorin West, and Ilorin East LGAs in Kwara State border the study area on the south, as do Kaiama LGA in Kwara State and Mokwa LGA in Niger State on the north, Olorunsogo LGA in Kwara State on the west and Ifelodun LGA in Kwara State on the east (see Figure 1). The study area has a tropical wet and dry climate with double rainfall maxima and is located in a tropical climate (Olalubi et al., 2020). It has a rainy season that lasts from April to October and a dry season that lasts from November to March (Adio et al., 2022). The average annual rainfall is 1200 mm. The total population of the study area as of the 2006 population census was 108,792 (National Bureau of Statistics, 2011). As of 2022, the population of the study area increased to 172,419 people as projected. The population of the study area is mainly made up of farmers known for crop production (potato, maize, beans, groundnut, yam, cassava). Yoruba people make up the majority of the population in the research region, along with smaller populations of Hausa/Fulani, Nupe, Egbira, etcetera. The Aaron Festival (Shao) and the Alagbe Acrobatic Dancers are the two main festivities.

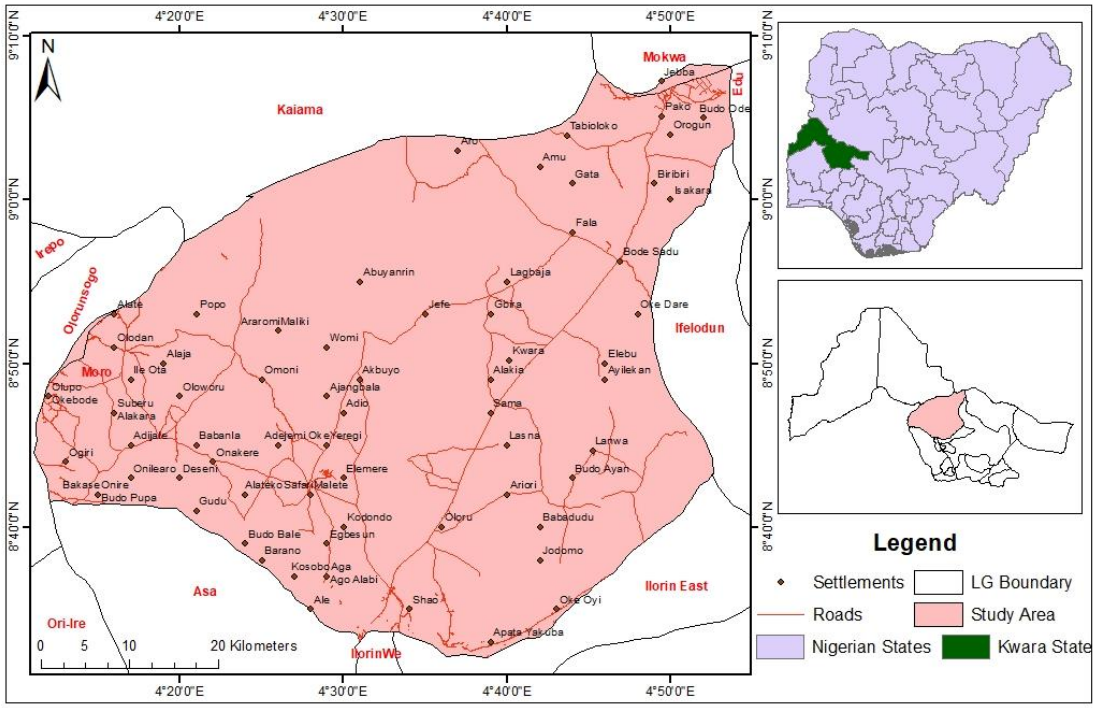

Figure 1: The Study Area
Source: GIS Laboratory, Nigerian Army College of Education, Ilorin, Nigeria

MATERIALS AND METHODS

To have a thorough understanding of the study area, a reconnaissance survey was conducted. In order to determine the availability of data for this study, stakeholders in the Local Government Council (LGC) were contacted during the reconnaissance survey. The name, number and addresses of primary schools were obtained from the unit of the planning research and statistics department of Moro Local Government Education Authority (MGLEA). Using the primary schools' addresses, a GPS device (Mreno 120, Garmin) was used to obtain their geographic coordinates. For geo-statistical analysis, these data were coded and integrated into the GIS platform. To display the spatial distribution and pattern in the study area, these point data were saved in Microsoft Excel as CSV (comma delimited) files. For geospatial analysis, these files were then imported into the ArcGIS 10.5 software and overlaid on the geo-referenced map of the study area.

In the study area, 17 political wards were used to investigate the spatial distribution and pattern of public primary schools. They include: Lanwa, Okemi, Bode Saaadu, Jebba, Ejidongari, Babadudu, Okutala, Malete, Jeunkunbu, Ajanaku, Olooru, Pakunma, Womi- Ayaki, Shao, Abati/ Alara, Arobadi, and Megida (see Table 1). In order to display the data according to the political wards of the study area, descriptive statistics like frequency, percentages, and Lorenz curve were utilised to assess the data. NNA was also employed to analyse the spatial pattern of public primary schools. This method was used to determine if the distribution of the public primary schools was clustered or dispersed. The NNA employs a statistical technique in which it determines the average distance between each feature in the dataset, in this example each primary school, and its single nearest

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feature neighbour, and then calculates the average distance of all measurements (Ali, 2019; Bajjali, 2019). This method was also used to assess the level of confidence in a dataset with a confidence level of less than 0.001%. In addition, a z-score was computed, which was critical in determining whether to accept or reject the null hypothesis, which is that public primary schools in the research area are randomly distributed rather than clustered or dispersed. Many studies have utilized this method to examine the spatial pattern of secondary schools in Nigeria (Adelokun et al., 2021; Agbabiaka et al., 2020; Kingsley et al., 2021).

RESULTS AND DISCUSSION

The Spatial Distribution of Primary Schools in Moro Local Government Area

Table 1 illustrates the distribution of public primary schools by political ward, whereas Figure 2 depicts the existing distribution of public primary schools in the study area. The findings, according to Table 1, revealed that there are one hundred and fifty six (156) public primary schools in the study area at the time of the study. Findings in this Table further revealed that Malete had the highest percentage of public primary schools with 10.3% which had the highest population, high concentrations of influential people and politicians, presence of non-indigenous people, businesses, and offices of both public and private institutions, followed by Megida with 9.6%. It was also found out that Ajanaku and Pakunma had the least public primary schools, with 1.9% and 2.6%, respectively. This disparity in public primary school distribution could be attributed to differences in the socioeconomic characteristics, population density and physical structure of the various administrative wards. In general, highly populated areas with increased economic development, such as Malete and Megida towns, were among the wards with a higher number of residents as well of the presence of higher institutions like the Kwara State University (KWASU). These towns appear to be dominated by high influential people and politicians, non-indigenous people, business activities, and offices of both government and private establishments than neighbouring towns.

Table 1: Distribution of Public Primary Schools in Moro Local Government Area

S/N	Ward	Frequency	Percentage
1.	Abati Alara	10	6.4
2.	Ajanaku	3	1.9
3.	Arobadi	6	3.8
4.	Babadudu	12	7.7
5.	Bode Saadu	11	7.1
6.	Ejidongari	7	4.5
7.	Jebba	12	7.7
8.	Jeunkunnu	5	3.2
9.	Lanwa	12	7.7
10.	Malete	16	10.3
11.	Megida	15	9.6
12.	Okemi	9	5.8
13.	Okutala	11	7.1
14.	Olooru	7	4.5
15.	Pakunma	4	2.6
16.	Shao	5	3.2
17.	Womi Ayaki	11	7.1
Total		**156**	**100**

Source: MLGEA/Authors' Analysis (2022)

Figure 2 shows that in study area, public primary schools are more prevalent in the south than in the north. Malete, Gbugudu, Megida, Arobadi, Bode-Saadu, and other significant towns, for example, are all characterized by expanding economic activity and a high population. In addition, the state university, which attracts a larger population and generates greater economic activity, is located in this region. Except for Jebba in the northeastern area of the study area, most of the villages in the northern part are smaller and farther apart than those in the southern part. Furthermore, the predominance of existing public primary schools in the southern part may be due to densely the settlement patterns are than the northern part, as well as the influence of Ilorin West and East LGAs, which are the most urbanized LGAs in Kwara state that border the southern part of the study area. As a result, the few public schools in the northern half of the study region may be operating at or near capacity, given the low population density.

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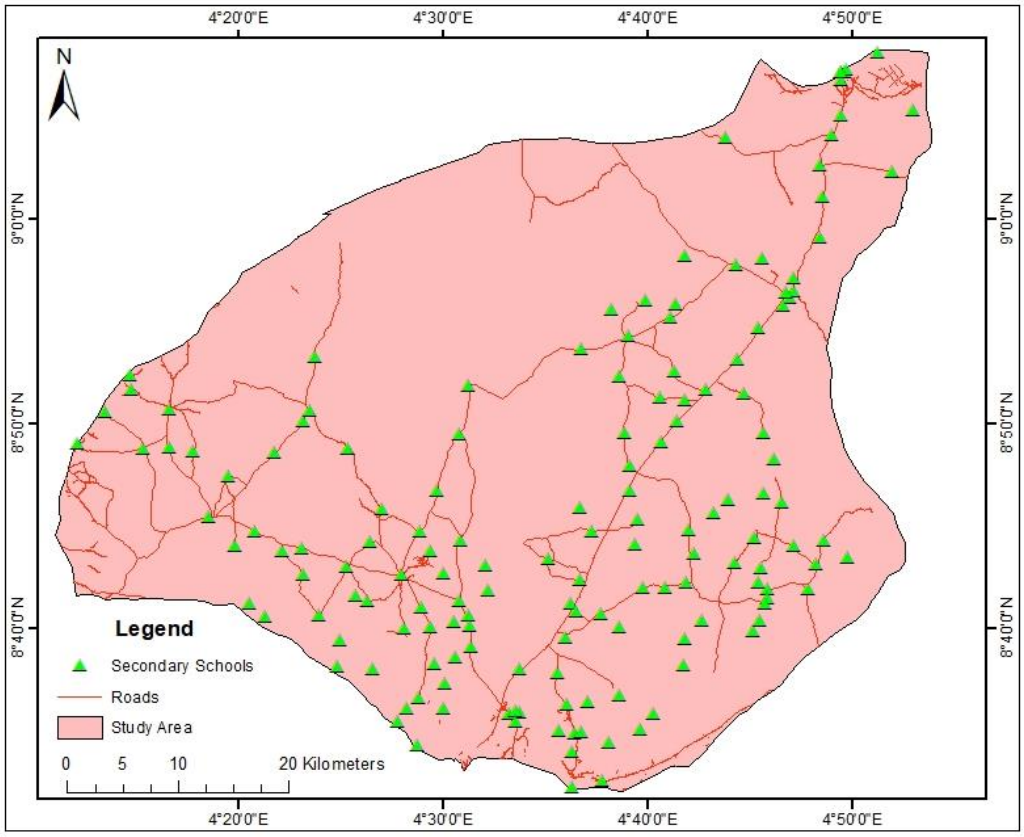

Figure 2: Spatial Distribution of Public Primary School in Moro Local Government Area
Source: Authors' Analysis (2022)

The distributional inequality of the public primary schools observed at the level of political wards in Table 1 in the study area was further investigated using the Lorenz Curve framework, which is frequently used to research income inequality. This method was included because it offers a framework for extrapolating both the degree of social mobility and the degree of social opportunity seen in the study area. The Lorenz curve was specifically plotted as the cumulative percent of the total number of public primary schools throughout all seventeen (17) electoral wards. The X-axis stays as the "cumulative share of number of public primary schools from lowest to highest", but the Y axis becomes the "cumulative share of political wards."

The findings in Figure 3 show that a political ward with more equality has a Lorenz curve that is nearer to the line of equality, while a political ward with less equality has a Lorenz curve that is farther from the line of equality. The distribution of public primary schools in the study area is unequal, as indicated by the Lorenz curve's distance from the line of equality. The Lorenz Curve is made up of 10 distinct line segments, one for each quintile, and each succeeding line segment has a steeper slope than the one preceding it. This is because the percentage of public primary schools in each succeeding quintile is higher than the percentage in the quintile before it. These findings are in agreement with those of Haruna & Banki (2012), who found that the distribution of secondary schools in Bida town shows some degree of inequality.

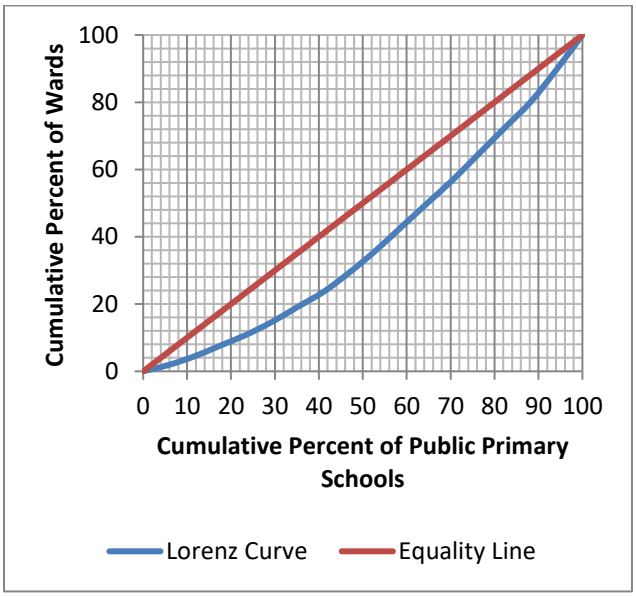

Figure 3: Lorenz Curve Showing the Pattern of Distribution of the Public Primary School
Source: Authors' Analysis (2022) Spatial Pattern of Primary School in Moro Local Government Area

In order to determine if the public primary schools within the study area were randomly distributed, clustered, or dispersed, the school

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distribution pattern analysis was conducted utilising the point data of the study region. Figure 3 and Table 2 display a summary of the nearest neighbour analysis. Table 2's findings showed that, as opposed to the expected mean distance of 2799.33 meters, the observed mean distance between public primary schools is 2402.58 meters. The outcome also showed that the spatial pattern of the public primary schools in the research region is clustered with z-scores of -3.39, as shown in Figure 3 and Table 2. Given that the generated nearest neighbour index (I) is less than 1 and the calculated Z-Score -3.39 in the Moro LGA is less than -2.58 (Table 2), there is less than 1% possibility that the public primary schools in this study area could be the result of random chance. As a result, the public primary schools in the research area exhibit a clustering pattern. We accept that public primary schools' distribution is clustered and reject the null hypothesis. The location of the majority of the primary schools in the southern portion of the research region, which is marked by a high population due to the presence of higher educational institutions like KWASU and the School of Nursing, could be the cause of this pattern. The results of this study concur with those of a study conducted in Awka, Anambra State, by Kingsley et al. (2021), which found that public primary schools are clustered in neighbourhoods.

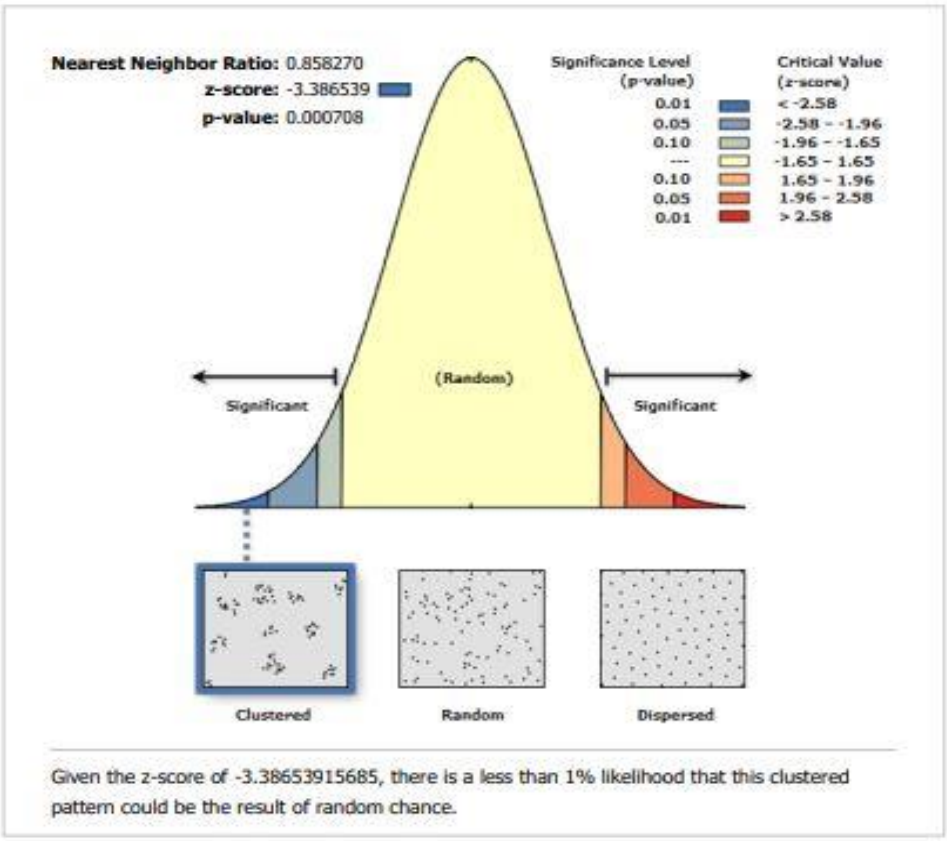

Figure 3: Spatial Pattern of Public Primary Schools
Source: Authors' Analysis (2022)

Table 2: Average Nearest Neighbour Summary

Summary of Nearest Neighbour Result of the Spatial Pattern of Primary Schools	
Observed Mean Distance:	2402.5811 Meters
Expected Mean Distance:	2799.3314 Meters
Nearest Neighbour Ratio:	0.858270
Z-score:	-3.386539
P-value:	0.000708

Source: Authors' Analysis (2022)

Conclusion and Recommendations

In Moro LGA, public primary schools were located and distributed over seventeen (17) political wards, according to this study. The number of public primary schools in the area was found to be 156, according to the findings. Malete's political wards had the highest

proportion of public schools, followed by Megida. The least number of public elementary schools were found in Ajanaku and Pakunma, respectively. The findings also indicate that there is inequality in the distribution of public primary schools in the area. The spatial pattern of public primary schools was clustered around the southern part of the study area. In order to better locate future primary schools, it is recommended that educational planners and managers employ GIS technology as a planning tool to enhance where educational infrastructure is positioned for equitable and adequate distribution. Additionally, it was discovered that there is an uneven distribution of primary schools in the region. As a result, it is crucial that the Moro LGC liaise with the Kwara state government and other relevant stakeholders to ensure that the distribution of primary schools is even throughout the Local Government for easy accessibility.

REFERENCES

Abbas, A. M., Jajere, A. A., & Abdullahi, Y. (2017). Analysis of Spatial Distribution of Public Primary Schools in Kirfi Local Government Area, Bauchi State, Nigeria Adam. *CARD InternationalInternational Journal of Social Sciences and Conflict Management*, *2*(3), 148–173.

Abraha, T. A. (2019). Analyzing spatial and non-spatial factors that influence educational quality of primary schools in emerging regions of Ethiopia: Evidence from geospatial analysis and administrative time series data. *Journal of Geography and Regional Planning*, *12*(1), 10–19. https://doi.org/10.5897/jgrp2018.0705

Adeleke, R., & Alabede, O. (2022). Geographical determinants and hotspots of out-of-school children in Nigeria. *Open Education Studies*, *4*(1), 345–355. https://doi.org/10.1515/edu-2022-0176

Adelokun, A. S., Akinola, O. B., & Gambo, O. (2021). Mapping Schools for Inclusivity in Ife Central Local Government Area of Osun State, Nigeria. *European Journal of Education Studies*, *8*(2), 504–520. https://doi.org/10.46827/ejes.v8i2.3616

Adeyemi, G. A., & Edeki, S. O. (2018). Dataset on spatial distribution and location of universities in Nigeria. *Data in Brief*, *18*, 1602–1608. https://doi.org/10.1016/j.dib.2018.04.093

Adio, A. A., Saliu, A. O., Akanbi-Gada, M. A., & Najeemdeen, B. A. (2022). Effects of Charcoal Production on Soil Physicochemical Properties in Moro Local Government Area of Kwara State, Nigeria. *Journal of Environmental Protection*, *13*(02), 220–232. https://doi.org/10.4236/jep.2022.132014

Agbabiaka, H. I., Aguda, A. S., & Nzere, R. B. (2020). Spatial distribution and proximal model of secondary educational facilities in a traditional Nigerian city. *Journal of the Operational Research Society*, *71*(11), 1780–1798. https://doi.org/10.1080/01605682.2019.1632751

Akkari, A. (2022). Early childhood education in Africa: Between overambitious global objectives, the need to reflect local interests, and educational choices. *Prospects*, *52*(1–2), 7–19. https://doi.org/10.1007/s11125-022-09608-7

Ali, T. A. T. (2019). Spatial Statistics Nearest Neighbor Distribution Analysis For Tourism& Archaeology In Khartoum, Sudan. *Journal of The Faculty of Science and Technology (JFST),1858-6007.*, *6*, 5–18.

Anjorin, O. J., Galtima, M., & Ray, H. H. (2022). Analysis of the Spatial Pattern of Public Education Resources in Adamawa State, Nigeria. *Ethiopian Journal of Environmental Studies & Management*, *15*(2), 140–154.

Aule, D. S., Jibril, M. S., & Adewuyi, T. O. (2022). Geospatial Assessment of the Contributions of the Major Stakeholders to Secondary Schools in Some Parts of Benue State, Nigeria. *International Journal of Geosciences*, *13*(03), 244–258. https://doi.org/10.4236/ijg.2022.133012

Bajjali, W. (2019). Geospatial Statistical Approach to Evaluate Groundwater Salinity - Jordan. *Esri User Conference on July 8–12, 2019 in San Diego, California*.

Dalhat, U., Zubairu, S. M., Ibrahim, Y. Z., & Erhabor, F. O. (2020). Geospatial Analysis of Primary Schools Distribution in Katsina Metropolis, Nigeria. *Sokoto Journal of Geography and the Environment*, *2*, 1–15.

Ding, P., & Feng, S. (2022). How School Travel Affects Children's Psychological Well-Being and Academic Achievement in China. *International Journal of Environmental Research and Public Health*, *19*(21), 13881. https://doi.org/10.3390/ijerph192113881

Doyani, B. I., Inusa, M., Ayuba, B., Bulus, S. J., & Danjuma, E. S. (2020). Analysis of Geo-Spatial Database and Distribution of Government Secondary Schools' Using GIS in Chikun Local Government Area, Kaduna State. *FUDMA Journal of Sciences*, *4*(3), 107–113.

Etor, C. R., Mbon, U. F., & Ekanem, E. E. (2013). Primary Education as a Foundation for Qualitative Higher Education in Nigeria. *Journal of Education and Learning*, *2*(2). https://doi.org/10.5539/jel.v2n2p155

Evans, D. K., & Acosta, A. M. (2021). Education in Africa: What Are We Learning? *Journal of African Economies*, *30*(1), 13–54. https://doi.org/10.1093/jae/ejaa009

Ewendu, S. A., & Olubor, R. O. (2020). Spatial Distribution of Public Secondary Schools in Ikeduru Local Government Area , Imo State , Nigeria. *Benin Journal of Educational Studies*, *26*(1&2), 65–81.

Fabiyi, O., & Ogunyemi, S. (2015). Spatial Distribution and Accessibility to Post Primary Educational Institution in Ogun State, Southwestern Nigeria: Case Study of Yewa South Local Government Area, Nigeria. *Journal of Scientific Research and Reports*, *5*(7), 542–552. https://doi.org/10.9734/jsrr/2015/12328

Gao, Y., He, Q., Liu, Y., Zhang, L., Wang, H., & Cai, E. (2016). Imbalance in spatial accessibility to primary and secondary schools in China: Guidance for education sustainability. *Sustainability (Switzerland)*, *8*(12). https://doi.org/10.3390/su8121236

Grant, C. (2017). *The Contribution of Education To Economic Growth: Evidence From Nepal*. https://doi.org/10.20472/iac.2016.023.032

Haruna, M. D., & Banki, M. B. (2012). An Analysis of Spatial Distribution of Primary and Secondary Schools in Bida Town , Nigeria Musa ,. *Abuja Journal of Geography and Development*, *3*(2), 30–40.

Hassan, E., Groot, W., & Volante, L. (2022). Education funding and learning outcomes in Sub-Saharan Africa: A review of reviews. *International Journal of Educational Research Open*, *3*(May), 100181. https://doi.org/10.1016/j.ijedro.2022.100181

Kanayochukwu, E. C. (2021). Analysis of the Relationship between Public Schools Distribution and Population in Kaduna State,

Nigeria. *Momona Ethiopian Journal of Science*, *13*(2), 240–255. https://doi.org/10.4314/mejs.v13i2.4

Kingsley, I. E., John, M., & Uchechukwu, D. U. (2021). Spatial Database of Post Primary Schools in Awka Urban of Anambra State, Nigeria Using Geographic Information System (GIS) Technique. *International Research Journal of Modernization in Engineering Technology and Science*, *3*(10), 788–794.

Labo-Popoola, S. O., Bello, A. A., & Atanda, F. A. (2009). Universal basic education in Nigeria: Challenges and way forward. *Social Sciences*, *4*(6), 614–621.

Mulinya, L. C., & Orodho, J. A. (2015). Free Primary Education Policy: Coping Strategies in Public Primary Schools. *Journal of Education and Practice*, *6*(12), 162–172.

Mustapha, O.-O., Akintunde, O., Alaga, A., Badru, R., Ogbole, J., Samuel, P., & Samuel, S. (2016). Spatial Distribution of Primary Schools in Ilorin West Local Government Area, Kwara State, Nigeria. *Journal of Scientific Research and Reports*, *9*(6), 1–10. https://doi.org/10.9734/jsrr/2016/22128

Nasrudin, N., & Nor, A. R. M. (2013). Travelling to School: Transportation Selection by Parents and Awareness towards Sustainable Transportation. *Procedia Environmental Sciences*, *17*, 392–400. https://doi.org/10.1016/j.proenv.2013.02.052

National Bureau of Statistics. (2011). *National Bereau of Statistics: Annual Abstract of Statistics, 2011. Federal Republic of Nigeria*.

Olalubi, O. A., Salako, G., Adetunde, O. T., Sawyerr, H. O., Ajao, M., & Tambo, E. (2020). Geospatial Modeled Analysis and Laboratory Based Technology for Determination of Malaria Risk and Burden in a Rural Community. *International Journal of TROPICAL DISEASE & Health*, *41*(8), 59–71. https://doi.org/10.9734/ijtdh/2020/v41i830312

Olayode, O., Ogundahunsi, D. S., Gasu, M. B., Olayode, C. A., Ojo, A. O., & Adeyinka, S. A. (2022). Accessibility and Geospatial Assessment of Public Secondary School Education in Osun West Senatorial District, Nigeria. *UNIOSUN Journal of Engineering and Environmental Sciences*, *4*(1). https://doi.org/10.36108/ujees/2202.40.0142

Omoniyi, M. B. I. (2013). The Role of Education in Poverty Alleviation and Economic Development: A Theoretical Perspective and Counselling Implications. *British Journal of Arts and Social Science*, *15*(II), 176–185. https://doi.org/10.5901/mjss.2014.v5n23p868

Quy, T. T. T. (2018). Educational Inequality through a Number of Studies. *IJRDO-Journal of Education Research*, *3*(5), 1–26.

Sharma, M. & Dev, K. (2017). Role of Education in Achieving Millennium Development Goals. *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)*, *22*(11), PP 18-23. https://doi.org/10.9790/0837-2211011823

Sumari, N. S., Tanveer, H., Shao, Z., & Kira, E. S. (2019). Geospatial Distribution and Accessibility of Primary and Secondary Schools: A case of Abbottabad City, Pakistan. *Proceedings of the ICA*, *2*(July), 1–11. https://doi.org/10.5194/ica-proc-2-125-2019

Umar, H. A., Jaro, I. M., & Wankata, W. (2016). Spatial Analysis of Distribution of Secondary Schools in Giwa Zone of Kaduna State, Nigeria. *International Journal of Science for Global Sustainability*, *2*(4), 102–112.

UNESCO, UNICEF, & World Bank. (2021). The State of Global Education: a path to recovery. In *The State of Global Education*. https://www.unicef.org/media/111621/file/ The State of the Global Education Crisis.pdf .pdf

Unyime, U. I., Peter, A. L., & Onyeje, O. R. (2020). Attainment of the Millennium Development Goals and Sustainability Development Goals: The Achievement So Far in Nigeria Educational System. *International Journal of Education, Learning and Development*, *8*(7), 86–94.

World Bank (2018). World Development Report 2018: Learning to Realize Educations Promise. In *Revue internationale d'éducation de Sèvres* (Issue 77, pp. 27–29). The World Bank Group. Washington, DC. https://doi.org/10.4000/ries.6107