

## ANALYSIS OF THE DISTRIBUTION PATTERN AND ACCESSIBILITY OF STUDENTS TO SECONDARY EDUCATIONAL FACILITIES IN LOKOJA, KOGI STATE, NIGERIA

**Musilimu Adeyinka ADETUNJI\***

Geography Department, Faculty of Arts & Social Sciences, Federal University Lokoja, Kogi State, Nigeria,  
e-mail: [maadetunji@yahoo.com](mailto:maadetunji@yahoo.com), [musilimuadetunji@yahoo.com](mailto:musilimuadetunji@yahoo.com)

**Oluwole ALOBA**

Geography Department, Faculty of Social Sciences, Obafemi Awolowo University, Ile –Ife, Nigeria,  
e-mail: [oloba48@gmail.com](mailto:oloba48@gmail.com)

**Abstract:** This study assesses the pattern of distribution and accessibility of students to secondary education in Lokoja metropolis. Both primary and secondary data were utilized for the research. The coordinates of locations of public and private schools were obtained using a hand held Geographical Position System (GPS). The average distance of the nearest public school to each identified important places in Lokoja was measured using the ‘Ruler’ menu of ArcGIS 10.3.1 software. Two sets of questionnaire were structured to elicit information from sampled population. The first was directed at parents with students in secondary schools, while the second focuses on students’ journey to schools. A total of three hundred questionnaires were administered to sampled secondary schools in the study area. Descriptive and inferential statistics were used to analyse the research. The findings reveal that 66.7% and 8% of public secondary schools are located along the major roads in the high and low density areas of Lokoja respectively. The pattern of distribution of secondary schools is cluster rather than random. Approximately 47.2% of students in public secondary schools travel more than 4kms to schools in Lokoja. 51.8% of parents qualify education rather than distance was the determinant factor in placing their wards in secondary schools in Lokoja. The study concludes that public secondary school should be provided in some localities that do not have so as to reduce long distance trip to educational facilities. Also Quality delivery of secondary education must be properly monitored by the government at affordable price.

**Key words:** Schools, Transport, Location, Secondary and Planning

\* \* \* \* \*

### INTRODUCTION

Education has been described as the bed rock of national development (Ukaoha, 2010). Thus, education at the secondary school has offer been given prime place in national budgets (Central Bank of Nigeria statistical Bulletin and information, 2013, p. 82; Hinchliffe, 2002, p. 8). It is at the secondary school that the basic foundation of the various disciplines which the students

---

\* Corresponding Author

will acquire later in tertiary institutions. Secondary schools are therefore important trip generators in any economy in the world (Owoeye and Yara, 2011, p. 173; Goeverden and Boer, 2013, p.73; Ipingbemi and Aiworo, 2013, p. 77; Easton and Ferrari, 2015, p. 15). It is particularly interesting to note that in the last three decades or so, the average commuting distance of secondary school pupils has increased tremendously. According to the Department for Transport (2013 as cited in Easton and Ferrari, 2015, p. 9), the average distance travelled by students of between 11 and 16 years in the United Kingdom in the mid-1980s was 2 miles. This figure rose to 3.7 miles in 2013. Studies on journey to school in both US and Sweden have shown that distance from home to school is a major factor affecting modal choice of students (McDonald, 2008, p. 28; Johanson et al., 2012, p. 212).

Studies have equally shown that long distance commuting to school arose from the fact that locations of schools were not based on population distribution but rather on community participation (Omoyemi, 1978 as cited in Owoeye and Yara, 2011, p.170). The work of Orebiyi (1981) in Oyi Local government area of Kwara State (Okun speaking areas of present Kogi State) affirmed that unplanned locations of secondary schools have limited the establishment of secondary schools to few areas. Tanimowo (1995; see Owoeye and Yara, 2011, p.171) have argued that pupils living near the few schools together with their parents enjoyed minimum travelling distance to education institutions while some other members of the population travel lower considerable distances to reach their schools. In another study done in Europe for example, factors like high rate of urbanization and decentralization have led to more dispersed children population in urban centres (Hoare, 1975 as cited in Easton and Ferrari, 2015, p. 9). But according to Goeverden and Boer (2013, pp. 73-74) and Parsons, Chalkley and Jones (2000, p. 33) it was the opportunity given to parents to choose secondary schools for their wards that increased the travel distance to schools. The resultant effect of long distance commuting to schools is high dependency on automobile (cars, school buses, taxi, motorcycles and tricycles) with serious environmental challenges such as high traffic congestion, fatigue and traffic crashes on urban routes as well as transport related diseases such as asthma and difficult breathing (Ipingbemi and Aiworo, 2013, p. 77; Easton and Ferrari, 2015, p. 9). On the other hand short distance commuting to school will encourage walking and increased physical activity that can promote good health among school children (Dieleman et al., 2002; Kallio et al., 2016, p. 1; Newman and Kenworthy, 2006, p. 36; Kim, 2014, p. 2).

Few studies on secondary school trips in Nigeria focus on distance travelled and mode choice to school (Ogunyemi et al., 2014, p. 5; Ipingbemi and Aiworo, 2013, p. 80). Even then most of these studies are not adequate for any meaningful sustainable transportation planning for secondary education in Nigeria. In addition parental contribution to the placement of their wards to secondary schools were lacking in earlier studies. For instance, a number of employed parents will place their wards in strategically located schools with a view to accompany them to school in the morning (Parsons et al., 2000, p. 33). Thus, parents who drive to work are likely to choose a school located on their way to work (Cross, 1998; DSG, 2001 as cited from Scottish Executive Central Research Unit, 2012, p.4). Some other studies identified the role of gender and safety in journey to school by pupils. In England, the Department of transport (2014; p. 7) has observed that more women than men take their children to school in order to avoid road accidents and other social ills. This study therefore aims to examine pattern of distribution of Secondary Schools and determine the principal factors considered by parents in their choice of secondary schools for their wards in Lokoja, north central, Nigeria.

### **THEORETICAL BACKGROUND AND LITERATURE REVIEW**

There are no theories that explain the spatial distribution of Secondary Schools and patterns of journey to them in the literature. However one of the theories that explain some of the principal factors affecting patterns of trips in urban environment is Residential Location Model (RLM). Naess (2000, pp. 2-3) used Residential Location Model to explain land-use, transportation and socio economic characteristics of urban commuters. The model states that inner-city residents are expected to make shorter trips than persons living in the sub urban areas (low density areas). Naess

(2000, p. 3) was of the opinion that a high proportion of destinations are easily reached by walking / cycling by inner city dwellers. Thus, residents located close to the city centre are expected to move over short distances to central facilities such as cultural institutions, restaurants, entertainment, specialized stores and Schools.

The Residential Location Model can be used to explain that population or Students who live at the inner parts of cities where schools are located are expected to travel short distances rely more on walking or cycling for journey to Schools. On the other hand, those students living at the outskirts or low density areas of the city are expected to commute long distances to School. Studies at the global level have shown that students who live in the low density parts of cities travel long distances and rely on motorised transport than students living in inner cities who walked to schools (McDonald, 2008, p. 30; Ipingbemi and Aiworo, 2013, p. 80). Modal split model (MSM) also provides another useful explanation of travel behaviour with regard to choice of travel mode. According to this model, different modes of urban transport are available and open to trip makers. These include cars, buses, taxis, trains, tricycles and walking. The choice of any of these modes by an urban commuter is influenced by such factors as trip length, trip purpose, socio-economic characteristics of the trip maker (income, age, automobile ownership, and residential density), route length, modal availability and modal affordability (Ipingbemi and Aiworo, 2013, p. 80; Olawole and Olapoju, 2016, p. 150; Okonko, 2001, p. 236). Of all the modes, walking is the most environmental friendly while other are not particularly when commuting over short distances. A parent's decision of whether or not to allow their ward to walk to school unaccompanied by senior members of the families is a perception of the child's reliability and distance travelled to School. Alparone et al., (2003, p. 437) developed a Traffic Danger Perception Scale (TDPS) and Social Danger perception (SDPS) to measure parent concerns about these risks. According to these models, the less a parent perceives the neighbourhood to be safe and environmental friendly, the less likely the child is to be allowed to move about independently. The risk perception of parents to allow their wards to walk in heavy traffic where there is poor design of urban road networks, characterised by poor design of pedestrian walkways, absence of pedestrian crossing and traffic warden as observed in in many cities of the world (Adetunji, 2014, p. 24; Christie et al., 2007, p. 394; Sangowawa et al., 2012, p.3 2) may discourage children from walking to and from school and rely more on automobiles. Other environmental factors perceived by parents that might affect mode choice of their wards to schools are weather and crime rate in cities (Kim, 2014, p. 41).

### **THE STUDY AREA**

Lokoja metropolis is the study area. The city is located on latitude 7°45'27.56" - 7°51' 04.34" N and longitude 6°41' 55.64" - 6°45' 36.58" E of the equator on the confluence of Rivers Niger and Benue (see figure 1). The city comprises of seven major localities namely, Adankolo, Lokongoma, Felele, Zango Daji, Army Barrack and Ganaja (NPC, 2006). These localities are parts of three local government areas of Kogi State, Lokoja, Ajaokuta and Adavi local governments areas.

Shortly after Lokoja became the state capital of Kogi State in 1991, the city witnessed influx of people from all over the country. This led to the growth and rapid development of the city. Smaller settlements like Ganaja, Army Barrack and Zango Daji have now former parts now referred to as Greater Lokoja thus become a major city in North Central Nigeria (Olawepo, 2009, p. 78).

The strategic location of Lokoja as a gate way between the northern and southern parts of the Nigeria has acted as a catalyst to it's globally status. Historically Lokoja was the first administrative and commercial capital of Nigeria. The first primary school in Northern Nigeria was established there in 1865 (Usman, 2013). The city also houses the Saint Clement Seminary which was the first secondary school established by Roman Catholic Missionary (RCM) in 1963 at Adankolo area in Lokoja metropolis. Similarly, the Crowther Memorial College was established in 1964 in Lokoja by Anglican Missionary Society (CMS). Government Science Secondary School was established in 1976 at Zone 8 area (Kogi State Ministry of Education, 2017). In 1979, three more additional Secondary Schools were established in Lokoja metropolis namely Bishop Delisle

College, Moslem Community Secondary School and Institute of Arabic and Islamic Studies. These schools are located at Lokoja core area of Lokongoma and Lokoja core area respectively. Pupils living in areas without secondary schools had to travel to parts of the city with schools named above. However, the spatial structure of the educational facilities changed soon after Lokoja became a state capital in 1991. The population of Lokoja increased from 47, 447 in 1991 to 139,061 by 2006. In 2011, Lokoja population is estimated at 222,842 (National Population Commission, 2016). The new political status saw the establishment of 19 new private Secondary Schools have been in Lokoja (Kogi State Ministry of Education, 2017). Today virtually all communities in the city have atleast one Secondary School. Yet it has been observed that many students still can cross the city landscape travelling long distances in order to access educational facilities located outside their wards. It is on this background that this study was designed to examine the pattern of distribution of Secondary Schools and the reasons why some parents prefer to send their wards to Secondary Schools outside their immediate neighbourhoods in Lokoja metropolis.

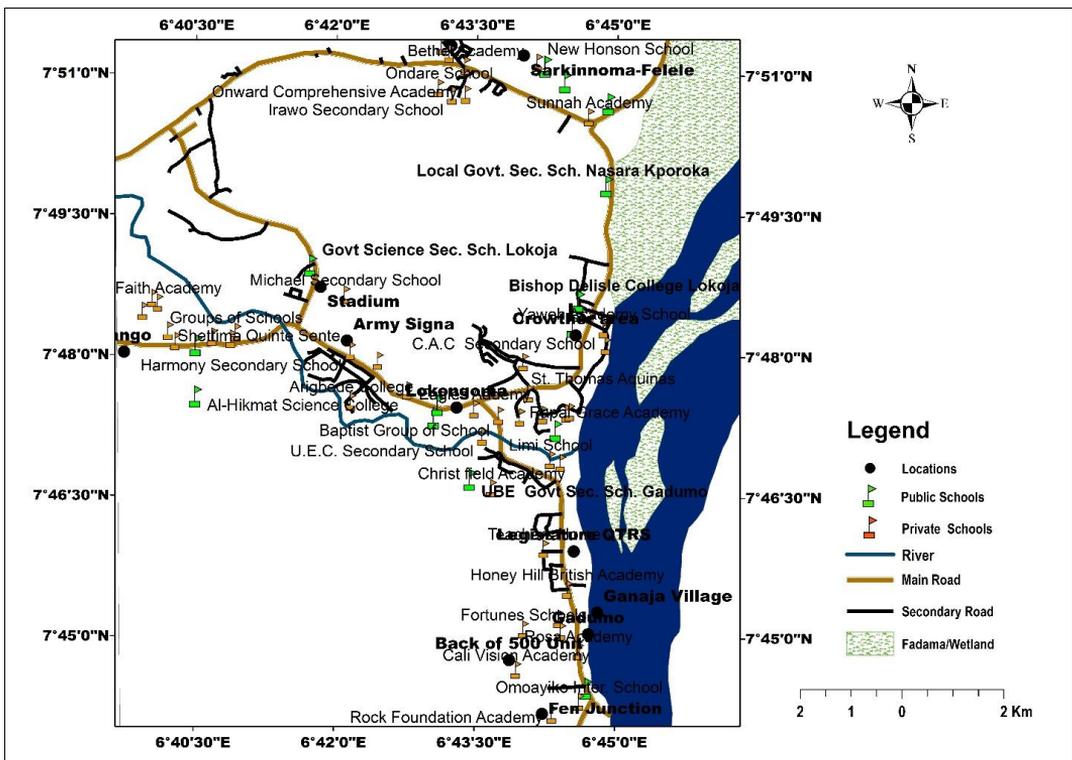


Figure 1. Map of Lokoja

**MATERIALS AND METHODS**

Three sets of data were required for this type of research. The first category of data concerned the location and distribution pattern of both public and private and Secondary Schools in Lokoja. The second category of data focused on where the students live, location of the schools attended, and the distance travelled to such schools. The third category of data gathers information on the socio-economic characteristic of parents with children in Secondary Schools in the study area. Data were also obtained on factors influencing the decision of parents to send their wards to particular schools.

The data used for the study included an administrative map of Lokoja made available by Kogi State Ministry of Education, Lokoja. Other data were the coordinates of (i) important

locations in Lokoja (ii) Public Schools and Private Schools in the city, using a hand held Geographical Position System (GPS). These coordinates were subsequently plotted to produce point maps using the UTM, Zone 31, Minna datum coordinate system. The point maps produced were overlaid on the scanned administrative map which was used to produce (i) Map showing the locations of Public Schools in Lokoja (ii) Map showing the locations of Private Schools in Lokoja. Furthermore, the average distance of the nearest Public School to each of the important places in Lokoja was measured using the ‘Ruler’ menu of ArcGIS 10.3.1. Furthermore average nearest neighbourhood analysis was performed for the point data using the Spatial Statistics toolbox of ArcGis 10.3.1 software.

A structured questionnaire divided into two sections was administered on the field. The first section was on the opinions of parents with students in Secondary Schools, while the second section focused on travel behaviour of Students captured by the survey. The total number of existing registered Secondary Schools in Lokoja metropolis were 62. Ten percent (10%) of these registered schools were selected for questionnaire administration. In all, a total of 6 Secondary Schools with the largest number of student were purposefully selected. They include three Public and three Private Secondary schools. In each of the School sampled, averages of 50 students were randomly selected across junior and Senior Secondary schools (JSS 1- 3 and SSS 1-3). The questionnaire was administered to the students with the assistance of the Principal of each Secondary School. Based on the study by Krejcie and Morgan (1970, p. 608), an average of three hundred questionnaires were administered to Secondary Schools in the study area.

## RESULTS AND DISCUSSION

The findings revealed that there are 12 Public Senior Secondary Schools and 6 Junior Public Secondary Schools in Lokoja metropolis. Table 1 indicates that an approximately 66.7% of these Public Secondary Schools are located along the major roads in the high density parts of Kabawa, Kporoka, Seriki Noma, and karaworo. Further analysis revealed that 25% of public Secondary Schools are located at the medium density areas of Lokoja. Some of these Public Secondary Schools are the Muslim Community Secondary School at Phase II and Army Day Secondary School along Muritala Muhammed road. Table 1 shows that only one Public Secondary School; Government Science Secondary School is located in the low density part of Lokoja along Zone 8 road (see figure 2). The high concentration of Public Secondary Schools in the inner parts of Lokoja has led to long distance travel to schools by students and parents who live in low density parts of the city. The high rate of urbanization of Lokoja metropolis since 1990s has led to high rate of student enrolment in all Public Secondary Schools in the city. The Kogi State government has registered and gave licenses to more than twenty (20) Private Secondary Schools in Lokoja to cater for the educational needs of the growing population of Secondary School pupils in the city. Again the distribution of these Private Secondary School is skewed towards the medium density areas of Lokoja where land is available. Table 1 indicates that more than 45% of the Private Secondary Schools in Lokoja are located in the medium density areas of Ganaja-Ajaokuta road, Muritala Muhammed road, and Lokongoma Phase 1 and 11 roads (see figure 3).

**Table 1.** Distribution Patterns of Secondary Schools in Lokoja

Source: Author’s Field Survey, 2017

Density Areas	Public Secondary schools No %		Private Secondary Schools		Total Number of Secondary Schools	
High Density	8	66.7	13	27.1	21	35.0
Medium Density	3	25.0	25	52.1	28	46.7
Low Density	1	8.3	10	20.8	11	18.3
Total	12	100.0	48	100.0	60	100.0

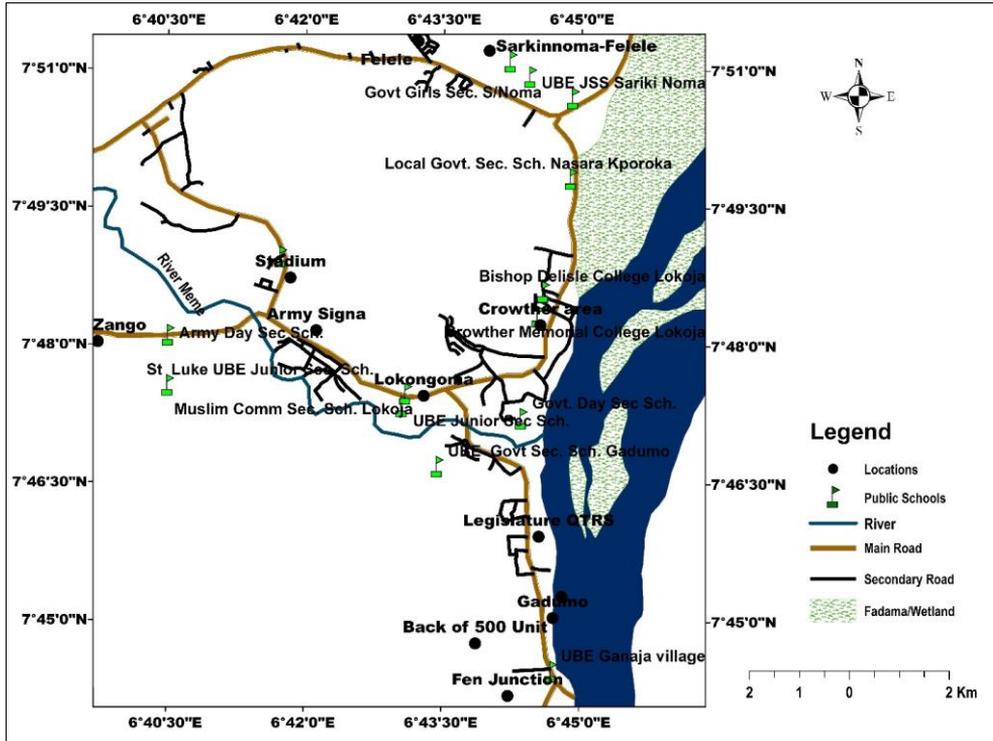


Figure 2. Public Secondary Schools in Lokoja

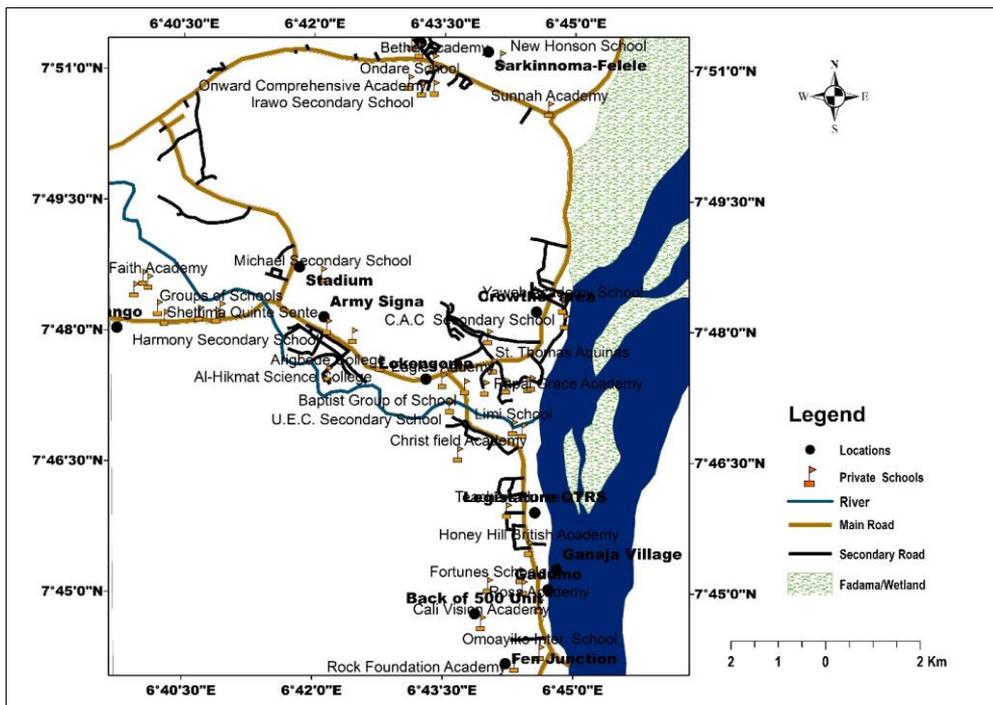


Figure 3. Private Secondary Schools in Lokoja

When disaggregated, the number of Secondary Schools located in each locality varies tremendously in Lokoja metropolis. Table 2 reveals that before the creation of Kogi State in 1991 there were only Six Public Secondary Schools and two Private Secondary Schools in Lokoja metropolis. Two of the Public Secondary Schools are located in kabawa and Seriki Noma areas which constitute part of the core of Lokoja. It is note-worthy that neither public nor private secondary schools are found in Felele and Zango Daji which are two major communities in the metropolis. This implies that residents where those facilities are lacking will therefore travel considerable distances for Secondary education in the city.

Table 2 further indicates that one public and one private Secondary School were established between 1992 and 1996 in the study area. Shortly after Lokoja became the capital of Kogi State in 1991, the built up area of Lokoja was estimated to have increased from 2,800.72 hectares in 1986 to 38,393.10 hectares in 2001, which represents about 92.7% increase. But by 2006, the built up area has increased astronomically to about 47,909.04 hectares, which represents 48.4% increase within a period of 10 years (Adeoye 2012, p. 46). This rapid expansion of the built up area of Lokoja which has been attributed to mass movement of people from the neighbouring communities and other states of the Federation also saw a corresponding population between 1991 and 2006 (Adeoye, 2012, p. 46). For instance, the population jumped from 47,447 to 139,061 on 2006. The population of the city however doubled between 2006 and 2016 to an estimated population of about 392,242 (NPC, 2016). The resultant effects of these changes in population is the constrains on the utilization of some basic facilities such as hospitals and educational facilities. This has subsequently necessitated the establishment of more Schools in the city. Thus twelve (12) public Secondary Schools were established in quick succession after Lokoja became the capital of Kogi State in 1991 to meet the demands for secondary education in the city. The emergency of more private secondary schools in the city was to compliment the state efforts at making education more accessible to the growing population. For instance, according to table 2 only 2 Private Secondary Schools were established before 1991. However, between 1992 and 2011, additional 19 Private Secondary Schools were established in the city while 26 Private Secondary Schools were established between 2012 and 2016.

**Table 2.** Pattern of Distribution of Secondary Schools in Lokoja Metropolis from 1991 to 2016

Source: Author's Field Survey, 2017

Locality	Before 1991			1992-1996			1997-2001			2002-2006			2007-2011			2012-2016		
	Public	Private	Total	Public	Private	Total	Public	Private	Total	Public	Private	Total	Public	Private	Total	Public	Private	Total
Lokoja (Kabawa Seraki Noma Karaworo)	2	2	4	1	0	1	0	0	0	1	0	1	0	5	5	3	7	10
Adankolo	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Lokongoma	1	0	1	0	1	1	0	1	1	1	3	4	0	3	3	0	3	3
Felele	0	0	0	0	0	0	0	1	1	0	1	1	0	1	1	1	2	3
Zango Daji	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
Army Barrack	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6
Ganaja	0	0	0	0	0	0	0	1	1	0	1	1	0	1	1	0	5	5
Total	6	2	8	1	2	3	0	3	3	2	5	7	0	11	11	4	26	30

The accessibility of students to secondary education within workable distance is a crucial factor in order to achieve a just fair and equitable spread of socio-economic amenities in any geographical area (Orebiyi, 1981 as cited in Owoeye and Yara, 2011, p. 170; Kim, 2014, p. 31; Ogunyemi et al., 2014, p. 5). The mean distance travel to Public secondary schools by residents in 12 different locations in Lokoja metropolis is 1.18 km. This ranged from 0.18 km in Crowther area

to 2.50 kms in Legislature Quarters which are located in the low density areas of Lokoja metropolis. Table 3 reveals that residents who live at Crowther, Seriki Noma and Lokogoma areas are expected to travel less than 0.5 km. Students in these neighbourhoods have Public Secondary Schools close their residence.

**Table 3.** Average distance travel by Residents from Twelve Different Locations to the Nearest Public Secondary School  
Source: Author's Field Survey, 2017

Name of the Locations	Distance to Nearest Public Sch. (Km)	Nearest Public Sec School
Stadium	0.46	Govt. Sci Sec. Sch. Lokoja
Fen Junction	1.10	UBE, Ganaja village
Crowther area	0.18	Crowder Memorial College Lokoja
Sarkinnoma-Felele	0.47	St Peter UBE Felele Along Express Rd
Felele	1.9	St Peter UBE Felele Along Express Rd
Lokongoma	0.36	Muslim Community Sec. Sch. Lokoja
Legislature QTRS	2.50	UBE Government t Sec Gadumo
Back of 500 Unit	1.60	UBE, Ganaja village
Ganaja Village	1.5	UBE, Ganaja village
Army Signal	1.70	Govt. Sci Sec. Sch. Lokoja
Zango	1.42	Army Day Sec. School
Gbadumo	1.07	UBE Ganaja Village
Total	14.26	
Average Distance Travel	1.18	

Despite the provision of a minimum of either one public or one private secondary school in each locality in Lokoja metropolis, it is interesting to note that distance travel to Secondary Schools by students in Lokoja varies from one locality to another. An examination of the distance travelled by students to different types of Secondary Schools in the study area indicates that 29.2% of private secondary school students travelled for less than 2 kms. Another 44.9% of Private Secondary School students travelled between 2 km and 4 kms. An approximately 25.9% of these students travelled more than 4 kms to Schools, whereas 47.2 % of the Public Secondary School students travelled for more than 4 kms (table 4).

**Table 4.** Distance travel to different types of Secondary Schools in Lokoja metropolis  
Source: Author's Field Survey, 2017

		Type of school attended by your children				Total		
		Private secondary school		Public secondary school				
Distance from your house to school	Less than 2 km	No	%	No	%	No	%	
		2-4 km	43	29.2	25	23.6	68	26.9
		More than 4 km	66	44.9	31	29.2	97	38.3
Total		38	25.9	50	47.2	88	34.8	
		147	100.0	106	100.0	253	100.0	

Several reasons have been attributed for the long distance commuting in order to have access to Secondary Education by students in the study area. For instance, table 5 reveals that 51.8% of the sampled parents claimed that they enrolled their wards in Secondary Schools which according to their own assessment provide good education in spite of the location of such schools in Lokoja metropolis. The affordability of School fees (19.6%) was ranked second and as one of the major determinant factors for choice of schools by parents. In this study, those parents who ranked place of residence high in their choice of schools for their wards accounts for only 13% in the study area. Only 4.98% considered religion before placing their pupils in schools of their choice in Lokoja.

**Table 5.** Reasons given by parent on schools attended by their wards

Source: Author's Field Survey, 2017

Different Reasons given by the Parents	Frequency	Percentage
Nearest to School	39	12.96
Good Standard Education	156	51.83
Religion affinity	15	4.98
The school fees are affordable	59	19.60
The school is owned by the State Government	32	10.63
Total	301	100.0

The decision of parents to accompany their wards to school depend on a number of variables (Age of Student,  $F=7.395$ ,  $p<.0.01$ ; Class of Student,  $F= 1. 40$ ,  $p<. 24$ ). Those variable vary across the residential areas of Lokoja (table 6). Although, safety appears a crucial factor in overall for choice of schools by parents for their wards in order to achieve sustainable transport to schools. Many Secondary Schools in Lokoja are located on major but dangerous roads in Lokoja. For instance, many of these roads have neither pedestrian walk-ways nor traffic wardens to escort the children across the roads. Studies have shown that children less than 13 years can hardly predict the speed of on-coming vehicles before crossing the highway which invariably puts them at risk of being hit by vehicles (Goeverden and Boer, 2013, p. 73). The Department of Transport in Great Britain had observed that 2,412 children were killed or seriously injured in a road accident before their 16<sup>th</sup> birthday – that's an average of 7 children every day (DTGB, 2011).

**Table 6.** Parent Decision on escorting their wards to Secondary Schools in Lokoja

Source: Author's Field Computation

		Sum of Squares	Df	Mean Square	F	Sig.
Average age of student	Between Groups	25.236	1	25.236	7.395	.007
	Within Groups	788.249	231	3.412		
	Total	813.485	232			
Class of the student	Between Groups	.869	1	.869	1.396	.238
	Within Groups	151.834	244	.622		
	Total	152.703	245			

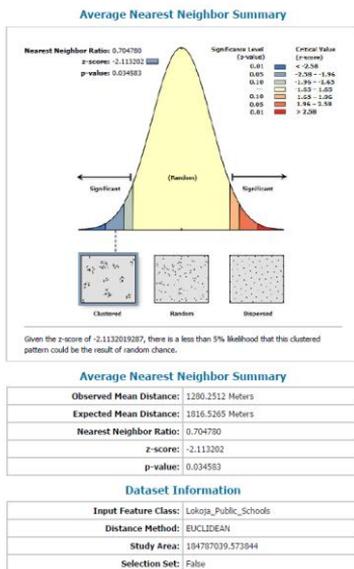
Mode choice to school is another important factor that affects the accessibility of students to Secondary Schools in any geographical area. Table 7 reveals that 29.9% of Secondary School students walk to school in Lokoja every day. Kim (2014, p. 35) has reported very similar findings with respect to Secondary School pupils in some developed countries where 12-17% of the students are engaged in active commuting to school. These categories of students are healthier than those who go to school in automobiles (Goeverden and Boer, 2013, p. 73; Centres for Disease Control and Prevention, 2012 as cited in Kim, 2014, p. 2; Kallio et al., 2016, p. 1; Newman and Kenworthy, 2006, p. 36). Further analysis reveals that 12.8% of the Secondary School students rely on School buses for their journey to school. Another 16.6% and 17.1% of the students rely on tricycle and motorcycles respectively. A significant proportion (23.7%) of Secondary School students rely on car trips to school (table 7). The choice of automobile by a large population indicates that many students live far away from their schools in Lokoja.

In order to determine the Pattern of distribution of Secondary Schools in Lokoja metropolis, Nearest neighbour analysis was employed to determine the distance between one Secondary School and another in Lokoja metropolis and compare the expected value from a random sample of points (Complete Spatial Randomness). In an attempt to determine the Null hypothesis of complete spatial randomness pattern of Secondary Schools, the Z –statistic was employed. A negative Z score indicates clustering; a positive score indicates evenness (Diggle, 1990). Figure 4

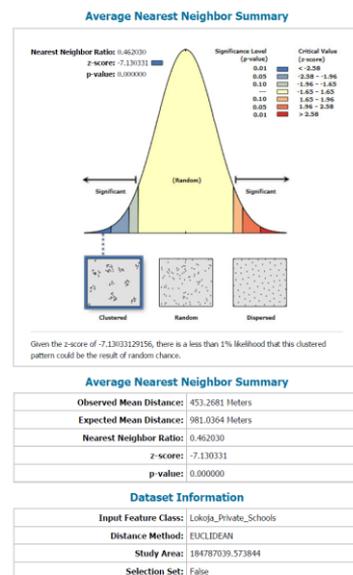
reveals that the mean nearest distance of public Secondary Schools is computed at 1280 metres, while the expected mean distance is 1816.5 metres. The computed Z- value is  $Z = -2.113202$ , with P- value of (0.03). This implies that a cluster rather than randomness pattern of distribution of Public Secondary Schools exist in Lokoja metropolis. Similar pattern occurred for Private Secondary Schools in Lokoja (figure 5).

**Table 7.** Mode of choice to school in Lokoja  
Source: Author’s Field Survey, 2017

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Walk	63	23.1	29.9	29.9
	School bus	27	9.9	12.8	42.7
	Tricycle	35	12.8	16.6	59.2
	Motor cycle	36	13.2	17.1	76.3
	Car	50	18.3	23.7	100.0
	Total	211	77.3	100.0	
Missing	System	62	22.7		
Total		273	100.0		



**Figure 4.** Nearest Neighbour of the Distribution Pattern of Public Secondary Schools in Lokoja



**Figure 5.** Nearest Neighbour of the Distribution Pattern of Private Secondary Schools in Lokoja

**CONCLUSION AND PLANNING IMPLICATIONS OF THE STUDY**

This study has assessed the pattern of distribution and accessibility of children to Secondary Education in Lokoja metropolis in Kogi State, Nigeria. The study utilized both primary and secondary data. Using both descriptive and inferential statistics, the findings reveal that Secondary Schools are not evenly distributed in the study area. More Public Secondary Schools are found in few places especially in high densities areas or core Lokoja, Lokongoma and Army signal areas. The study further reveals that between 1992 and 2011, more than 19 Private Secondary Schools

were established in the city while 26 Private Secondary Schools were also established between 2012 and 2016. Some of these Schools were clustered along the major roads in the city where pedestrian walk-ways and traffic wardens to assist the children to cross the roads are not provided thus putting the pupils at risk of road accident. Approximately 47.2 % of public secondary school students travelled for more than 4 kms to school. 51.8% of the parents claimed that they enrolled their wards in Secondary Schools that provide good education in spite their locations in Lokoja metropolis. Affordability of School fees was ranked second for choice of Schools for their children. The decision of the parents to accompany their wards to schools depend on (Age of Student,  $F=7.395$ ,  $p<.0.01$ ; Class of Student,  $F= 1.40$ ,  $p<.24$ ) and this varies across the residential areas of Lokoja. The study concludes that more Public Secondary Schools should be provided where there are none particularly at Zango Daaji and Ganaja areas. The standard of Secondary Education should be monitored and solely controlled by the government. The study also recommends that pedestrian walk-ways should be provided along the urban routes so as to encourage students to walk to schools. All these may likely reduce long distance trips to Secondary Schools.

## REFERENCES

- Adeoye N. O. (2012), *Spatio-Temporal Analysis of Land Use/Cover Change of Lokoja: A A Confluence Town*, Journal of Geography and Geology, 4(4): 40 -51.
- Adetunji M.A. (2014), *Maintenance of Urban Roads Infrastructure in a Medium Sized City in North Central Nigeria*. Romanian Review of Social Sciences (RRSS), 7: 23-3, The Publication of the Faculty of Social and Administrative Sciences, Nicolae Titulescu University, Bucharest, Romania.
- Alparone F. R., Prezza M., Tucci F., De Ruosi A. M. (2003), *Crescere in citta. Come i genitori percepiscono il rischio e l'insicurezza urbana per i bambini*. Sentirsi in/sicuri in citta, 129-160.
- Central Bank of Nigeria statistical Bulletin and information (2013), <http://www.nigeria.gov.ng>, accessed at 08.10.2017.
- Centres for Disease Control and Prevention (2012), *Physical activity and the health of young people*. Available from Internet: <http://www.cdc.gov/obesity/data/childhood.html>
- Christie N., Ward H., Kimberlee R., Towner E., Sloney J. (2007), *Understanding high traffic injury risks for children in low socioeconomic areas: a qualitative study of parents' views*, Injury Prevention, 13(6), 394-397.
- Cross T., Thornthwaite S. (1998), *Travel patterns of young people*. Final report for DTLR.
- Department for Transport (2013), *National Travel Survey: England 2013*, Statistical Release Department for Transport, London.
- Department of Transport Great Britain (DTGB, 2011), *Child deaths from road traffic accidents*. <http://www.makingthelink.net/child-deaths-road-traffic-accidents>, accessed at 10.10.2017.
- Department of Transportation England (2014), *National Travel Survey 2014: Travel to School*, [https://www.gov.uk/government/uploads/system/uploads/attachmentata/attachment\\_data/file/291444/national-travel-survey-2014-travel-to-school.pdf](https://www.gov.uk/government/uploads/system/uploads/attachmentata/attachment_data/file/291444/national-travel-survey-2014-travel-to-school.pdf), accessed at 02.04.2017.
- Dieleman F. M., Dijst M., Burghouwt G. (2002), *Urban form and travel Behaviour: Micro-level household attributes and residential context*. Urban studies, 39(1): 507-527.
- Diggle Peter J. (1990), *A Point Process Modelling Approach to Raised Incidence of a Rare Phenomenon in the Vicinity of a Prespecified Point*. Journal of the Royal Statistical Society A, 153(3): 349-362.
- Easton S., Ferrari E. (2015), *Children's travel to school-the interaction of individual, neighbourhood and school factors*, Transport Policy, 44: 9-18.
- Goeverden C. D. V., Boer E. D. (2013), *School travel behaviour in the Netherlands and Flanders*, Transport Policy, 26: 73-84.
- Hinchliffe H. (2002), *Public Expenditures on Education in Nigeria: Issues, Estimates and some Implications*, WorldBank, Group, Africa Region Human Development Working Paper Series, 1-44, [http://www.siteresources.worldbank.org/AFRICAEXT/Resources/no\\_29.pdf](http://www.siteresources.worldbank.org/AFRICAEXT/Resources/no_29.pdf), accessed at 12.10.2017.
- Hoare R. A. (1975), *The location efficiency of secondary schools*. Institute of British Geographers, Transport Group.
- Ipingbemi O., Aiwoor A. B. (2013), *Journey to school, safety and security of school children in Benin City*. Transportation Research Part F, 19: 77-84.
- Johanson K., Laflamme L., Hasselberg M. (2012), *Active commuting to and from school among Swedish children-a nation and region study*. European Journal of Public Health, 22: 209-214.
- Kallio J., Turpeinen S., Hakonen H., Tammelin T. (2016), *Active commuting to school in Finland, the potential for physical activity increase in different seasons*, International journal of circumpolar health, 75(1).
- Kim C. (2014), *The Journey to School: A case study at Mission Hill School, Spain*, A thesis submitted in partial fulfilment of the requirements for the degree of Master of Arts in Urban Environmental Policy and Planning, Tufts University.
- Kogi State Ministry of Education (2017), *Unpublished Data of the List of Registered Secondary Schools in Lokoja metropolis*.
- Krejcie V. R., Morgan D. W. (1970), *Determining Sample Size for Research Activities*, Educational and Psychological Measurement, 30: 607-610.

- McDonald N. C. (2008), *Children's mode choice for secondary school trip: The role of distance and school location in walking to school*. *Transportation*, 35: 23-35.
- Naess P. (2000), *Residential location and transport in a Small Danish Town-a contribution to the discussion on the influence of land use on travel behaviour*. Paper for the seminar: Transport and tourism in sociology and geography in Roskilde, November 2, 2000. Aalborg University, Fibigerstraede 11, Dk-9220 Aalborg, Denmark, pp. 1-19.
- National Population Commission (2006), *National Population Census of the Federal Republic of Nigeria*, <http://www.google.com/search?client=firefox->, accessed 10.04.2017.
- National Population Commission (2016), *Estimated population of Lokoja from 1991-2016. Data obtained from NPC Head Office, Lokoja*.
- Newman P. K. J. (2006), *Urban design to reduce automobile dependence*. *Opolis*, Int. J. suburban Metropolitan Studies, 2: 35-52.
- Ogunyemi K. H., Muibi K. H., Eguaroje O. E., Fabiyi O. O., Halilu A. S. (2014), *A geospatial approach to evaluation of accessibility to secondary education institution in Ogun State, Nigeria*, 7<sup>th</sup> IGRSM, International Remote Sensing & GIS Conference and Exhibition. IOP Conference Series: Earth and Environmental Science, 20:1-13.
- Okonko E. (2001), *Quantitative Techniques in Urban Analysis*. Ibadan Kraft Book Limited, Nigeria.
- Olawepo R. A. (2009), *Evaluating Housing Problems through Participatory Rural Appraisal in Lokoja, Nigeria*, *African Research Review*, 3(1): 77-96.
- Olawole M.O., Olapoju, O.M (2016), *Mode choice of undergraduates: A case study of lecture trips in Nigeria*, *Indonesian Journal of Geography* 48 (2):145-156
- Omoyemi Y. O. (1978), *School map for the rationalisation of secondary education in Ondo State*, Unpublished Dissertation, University of Ibadan, Nigeria.
- Orebiyi A. K. (1981), *The locational cost implication of secondary education in Oyi Local Government Area of Kwara State of Nigeria*, Unpublished Doctoral Dissertation, University of Ibadan, Nigeria.
- Owoeye J. S., Yara P. O. (2011), *School location and academic achievement of secondary school in Ekiti State, Nigeria*, *Asian Social Science*, 7 (5): 170-175.
- Parsons E., Chalkley B., Jones A. (2000), *Schools catchments and pupils movements: a case study in parental choice*, *Education Studies*, 26: 33-48.
- Sangowawa A. O., Adebiyi A. O., Faseru B., Popoola O. J. (2012), *An observational study of road safety around selected primary schools in Ibadan Municipality, Oyo State, Southwestern Nigeria*, *Annals of African Medicine*, 11(1):32-35.
- Scottish Executive Central Research Unit (2002), *Review of research on school travel*. Final Report, DHC.
- SDG (2001), *Factors leading to increase school journey length*. Steer Dvis Gleave Final report and literature review for DTLR, <http://www.ceadserv1.nku.edu/longa/geomed/ppa/doc/NNA/NNA.htm>
- Tanimowo N. B. (1995), *An analysis of school location, school facilities and school efficiency Unpublished M.Ed. Dissertation*, University of Ibadan, Nigeria.
- Ukaoha A. (2010), *Sound Education, bedrock of national development*, <http://www.vanguardngr.com/>, /2010/11/sound-education-bedrock-of-national-development-says-prof-ukaoha, accessed at 01.09.2017.
- Usman A. B. (2013), *Nigeria: North's First Primary School Suffers Neglect*. *Daily Trust*, 5<sup>th</sup> January, <http://www.allafrica.com/stories/201301060075.html>, accessed at 11. 01.2017.

Submitted:  
November 15, 2017

Revised:  
May 20, 2018

Accepted and published online  
June 14, 2018