PERCEPTION OF RURAL DWELLERS ON ACCESSIBILITY TO INFRASTRUCTURE IN NIGER STATE, NIGERIA

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ABSTRACT

This study assesses rural dwellers' satisfaction with accessibility to some selected infrastructure, namely health, education and water, in rural settlements of Niger state of Nigeria. To achieve this aim, a multi-stage sampling technique was employed to systematically select 22 rural settlements in 22 local government areas. In all, a total of 1,729 rural dwellers were selected. The parameters used to assess the accessibility of rural dwellers to the selected infrastructure namely health, education and water in this study were distance travelled to enjoy the services, the mode of transportation used to reach the facilities and respondents' satisfaction rating on the locations of the facilities. The study revealed that 1,437 (80.2%) respondents travelled less than $\frac{1}{2}$ km to enjoy water facilities, while 1,115 (62.2%) travelled the same distance to access educational facilities. Only 937 (52.3%) respondents admitted travelling a distance of less than 1/2 km to get to the locations of health facilities. The inference that can be drawn from the above observation is that, comparatively, more respondents were satisfied with the distance travelled to enjoy water facilities compared to health and educational facilities, respectively. The study concludes that accessibility to facilities varies among the selected rural settlements, but water supply is relatively more accessible to respondents in their neighbourhood than health and education facilities. The study recommends that the local government council should be sufficiently made autonomous in execution of assigned functions including provision and maintenance of infrastructure in the rural settlements of the state.

Keywords: Accessibility, Availability, Rural Dwellers, Rural Infrastructure, Rural Settlements.

Introduction

There is no doubt that availability of rural infrastructure constitutes the substance of rural welfare. Idachaba (1985) emphasises that efforts to raise rural welfare must necessarily go beyond the traditional and limited approach of raising per capita income through agricultural development projects, to the provision of rural basic needs such as health and medical facilities, electricity, pipeborne water and schools. Thus, rural Nigerian must be appreciated beyond their roles as mere producers of food and fiber for the need of urban economy, to their roles as consumers and citizens who are equally entitled, like their urban counterparts, to the good things of life (Idachaba, 1985).

In terms of the role that rural settlements play in the economy of a nation, infrastructure is meant to enhance the productive capacity and the quality of life of the rural areas and inhabitants. It is in this way that the nation can actually achieve what might be regarded as the essence of rural development in the spatial economy with its characteristic rural-urban dichotomy (Areola, 1987). Infrastructure is often regarded as the underlying foundation or basic framework of a system (Abumere, et. al. 2002). Therefore, programmes for poverty reduction in rural areas or indeed for overall rural development cannot succeed unless supported by infrastructure. Hence, access to

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infrastructure is usually used as sensitive measure of poverty and rural performance. Madu (2007), supporting the above assertion, reports that availability of rural infrastructure can be effectively used as a proxy indicator of the level of rural development in Nigeria. The aim of this study is to assess the level of rural dwellers' accessibility to available infrastructure in some selected rural settlements in Niger state, Nigeria.

Conceptual Clarification

Accessibility could be conceptualized in terms of the ability to get to a place quickly and cheaply and the availability and affordability of utility (Ikporupkpo, 2002). Accessibility refers to the ability to reach desired goods, services activities and destinations (Litman, 2003). According to Moseley (1979) accessibility is the ease with which people in an area can obtain necessary services. This concept of accessibility has physical, financial, social and time dimensions. Accessibility pertains to the ease with which the function of distance can be overcome to reach necessary services, while the financial dimension concerns the issue of affordability of such services, or the ease with which they can be paid for by the people. The social dimension of accessibility concerns the ease with which the clientele of particular services can relate to those providing them, while the time dimension concern the level of satisfaction with the amount of time spent to obtain such essential services (Moseley, 1979, Ariyo and Datong, 1996).

Various measures of accessibility have been developed. An accessibility measure should ideally take all components and elements within this component into account. In practice, applied accessibility measures focus on one or more components of accessibility, depending on the perspective taken. Four basic perspectives on measuring accessibility can be identified (Omirin, 2016) as follows:

- a) Infrastructure-based measure: This analyses the (observed or simulated) performance or service level of transport infrastructure, such as level of congestion on average travel speed on the road network. This measure type is typically used in transport planning.
- b) Location -based measure: This analyses accessibility at location, typically on a macrolevel. The measure describes the level of accessibility to spatially distributed activities, such as the number of jobs within 30 minutes travel time from origin locations. More complex location-based measures explicitly incorporating capacity restrictions of supplied activity characteristics to include competition effect. Location-based measures are typically used in urban planning and geographical studies.
- c) Person-based measures: It analyses accessibility at individual level, such as the activities in which an individual can participate at a given time. This type of measure is founded in the space-time geography of Heagerstrand (1970) that measures limitations on an individual's freedom of actions in the environment, that is the location and duration of mandatory activities, the time budget for flexible activities and travel speed allowed by the transport system.
- d) Utility-based measure: This analyses the (economic) benefits that people derive from access to the spatially distributed activities. This type of measure has its origin in economic studies.

However, the simplest measure of accessibility is based on simple distance. Locations close to another are mutually more accessible than those far apart (Ikporukpo, 1987). Other measures of accessibility include graph theoretical indices, opportunity index, eigen functions and socio-

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economic indices (Ikporukpo, 2002). Although these various measures exist, the one used in any given setting depends not only on the type of problem but also on available data. Therefore, even in the face of sophisticated measures, simpler ones are sometimes used (Ikporukpo, 1987).

Moseley (1979) notes that rural residents usually face problems of accessibility because of spatial separation and that rural residents' problem is physical accessibility which requires that individual must be able to command the transport facilities needed to reach the requisite supply points at appropriate time. The measure of accessibility used in this study is that based on physical distance. Consequently, the parameters used to assess the accessibility of rural dwellers to selected infrastructure namely health, education and water in this study were distance travelled to enjoy the service, the mode of transportation used to reach the facilities, respondents' satisfaction rating on the locations of the facilities.

Study Area

Niger State is located between latitudes 8 20' N and 11 30' N and longitude 3 30'E and 7 20'E. The state is situated in the north central geo-political zone and shares its border with Republic of Benin (West), Zamfara state (North), Kebbi (North-West), Kogi, (South), kwara(South-West), Kaduna (North-East) and the Federal Capital Territory FCT (South-East) (Niger state Government, 2004) Figure 1 shows the location of Niger State in Nigeria. The state covers a total land area of about 76,000sq.km, or about 9 percent of Nigeria's total land area. This makes the state the largest in the country (Baba, 1993, online Nigeria, 2003.) At inception in 1967, the state had only eight local Government Areas (LGAs), however, with the series of state and local government creation exercises and boundary adjustments between 1979 and 1996. The number of LGAs in the state has increased to twenty-five.

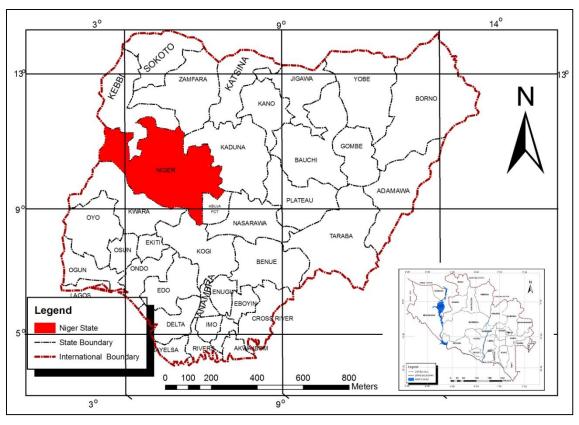


Figure 1: Location of Niger State in Nigeria. **Source**: Federal Ministry of Lands, Housing and Urban Development, Abuja.

In terms of human settlements, the majority of the people of the state reside in rural areas. According to Baba (1993) for example, 90 percent of the state population were rural residents. Similarly, using 1991 population census Morenikeji, et al (2000) report that there were 2,371 rural settlements with a total population of 1,868,939.It was further reported that there were eight urban settlements with a combined population of 552,642 in the state making the state essentially rural. According to Baba (1993), the characteristic rural settlements in the Nupe cultural area are of the nucleated type in which each settlement consists of many compounds built in close quarters and each compound houses a family which is an independent production/consumption unit. On the other hand, outside Nupe territory, dispersed rural settlements predominate in northern local government areas of Mariga, Magama, Borgu and Shiroro in which the residents commonly form one unit of production/consumption. Some of the major urban settlements in the state include Minna the State Capital, Bida, Suleja and Kotangora.

Research Methods

The selection of settlements was done by ranking all the settlements in each local government in descending order and selecting the first settlement with population of less than 20,000.A multistage sampling technique was employed to systematically select 22 rural settlements in 22 local government areas .One settlement was selected from each of the 22 local government areas. In all, a total of 1,729 rural dwellers were selected. The number of households sampled in each settlement is shown in Table 1.

Settlements	2010 population (Projection)	Estimated households	Sample size		
Kutiriko	3,973	795			
Gulu Anguwa	4,411	882	44		
Enagi	7,557	1,511	75		
Doko	14,774	2,955	148		
Gbajibo	7,083	1,147	67		
Lemu	3,743	749	38		
Badeggi	6,700	1,340	67		
Maikunkele	6,680	1,336	67		
Kuta	15,956	3,191	160		
Sarkin Pawa	7,984	1,597	79		
Sabo wuse	7,614	1,523	76		
Paiko	18,436	3,687	185		
Gawu Babangida	10,859	2,172	109		
Tegina	5,981	1,996	60		
Agwara	3,743	683	34		
Wawa	7,942	1,588	80		
T.Magajiya	12,171	2,434	122		
Bangi	7,177	1,433	72		
Nasko	3,015	603	30		
Rafin Gora	8,787	1,757	88		
Mashegu	1,675	335	17		
Wushishi	13,243	2,649	134		
	179,500	37,370	1,792		

Table 1: Number of Households Sampled.

Source: Author's field survey, 2011

Descriptive statistical method was employed for analysis of data, namely simple percentage and table. The inventory of the available infrastructure in the selected rural settlements is shown in Appendix 1. The parameters used to assess the accessibility of rural dwellers to the selected infrastructure namely health, education and water in this study were distance travelled to enjoy the services, the mode of transportation used to reach the facilities and respondents' satisfaction rating on the locations of the facilities..

Results and Discussion

Respondents' Accessibility to Health facilities

The categories of health facilities considered for the study are lower order facilities such as rural hospitals, comprehensive health centres, clinics and dispensaries. These components of health facilities are predominant in all rural settlements that were selected for the study. The accessibility indicators used are distance travelled by respondents to enjoy the services or facilities, the mode of transportation used to get to the locations of the facilities and satisfaction rating by the respondents on the locations of the facilities in relation to their places of residences. The responses are shown in Figures 2, 3 and 4. The nature and the situation of health facilities are shown in Plates 1, 2 and 3



Plate 1: Medical healthcare centre in Gulu



Plate 2: Health care centre in Tunga Magagiya



Plate 3: A new structure Rural hospital in Sarkin Pawa

The study revealed that 938 (52.3%) of the respondents travelled a distance of less than 500m to enjoy the services of health facilities in the study area. Those respondents that covered a distance of between 501 and 1000m were 553 or 30.9%. The study further revealed that 238 (13.3%) of the respondents travelled a distance of 1001 and 1500m to enjoy the services of health facilities. The inference that can be drawn from the result is that more than half of the respondents in the selected settlements travelled less than a kilometre to enjoy the services of health facilities. The responses on the distance travelled to enjoy the services of health facilities at the respondents are shown in figure 2.

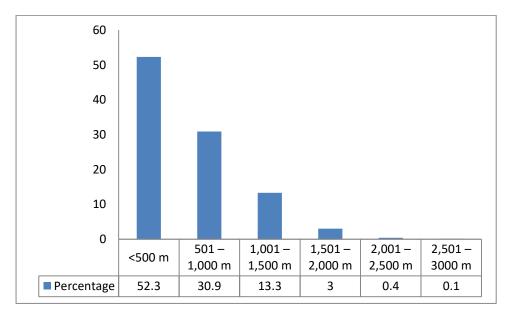
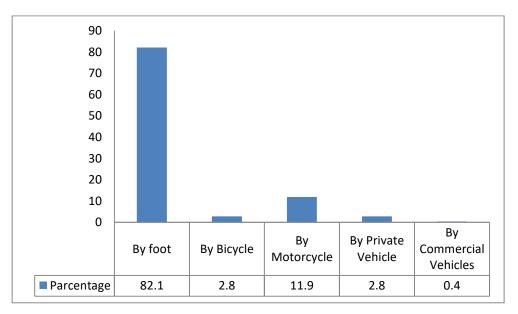


Figure 2: Distance travelled to enjoy the services of health facilities **Source**: Author's field work, 2011

The responses on the mode of transportation of households to health facilities are shown in figure 3. The study revealed that 1,471 (82.1%) of the respondents visited health facilities by foot, while 213 (11.9%) used motorcycles. Those respondents that used the bicycles and commercial vehicles were 50 (2.8%) respectively. Only 8 (0.4%) of respondents used commercial vehicles. It can be inferred that the use of foot by majority of respondents means that the distances travelled to health facilities were short and therefore accessible to them.



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Figure 3: Mode of transportation of households to health facilities. **Source**: Author's field work, 2011.

The respondents were asked to rank their satisfaction level on the location of the health facilities in relation to their neighbourhood as a measure of accessibility. The responses of the respondents are presented in Figure 4. The study revealed that 1051 (58.6%) of the respondents rated the satisfaction of the services of the health facilities in terms of location as satisfactory, while only 452 (23.7%) of them rated the locations as fairly satisfactory. The number of respondents that rated the locations as highly satisfactory was 174 (9.7%). The combined number of responses by those who described the locations of the health facilities as unsatisfactory was 322 (7.9%). It can therefore be inferred from the responses that health facilities were averagely accessible to the respondents in terms of location.

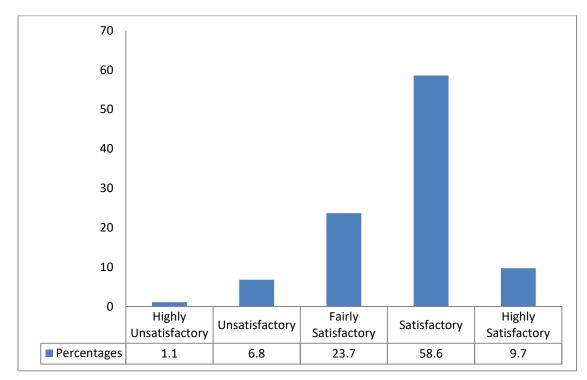


Figure 4: Satisfaction of services rating on the locations of health facilities. **Source**: Author's field work, 2011.

Respondents' Accessibility to Educational Facilities

The education facilities considered for this study are secondary and primary schools. These components of educational facilities are predominant in all selected rural settlements . The accessibility indicators used are distance travelled by respondent's children and wards to enjoy the services of educational facilities, the mode of transportation used to get to the location of the facilities and satisfaction rating by the respondents on the locations of the facilities in relation to the place of residences. The responses are shown in Figures 5, 6 and 7. The nature and the situation of educational facilities are shown in Plates 4, 5 and 6



Plate 4: A dilapidated primary school in Tugan Magagiya



Plate 5: A dilapidated ceiling of one top primary school in Rafin Gora



Plate 6: A new primary school structure in Sarkin Pawa

The responses of the respondents on the distances covered by the children and wards to educational facilities are showed in Figure 5. The study revealed that 1,114 (62.2%) of respondents claimed that their children and wards covered a distance of less than 500m to get to the location of educational facilities, while 436 (24.3%) of them covered a distance within 501 and 1000m to enjoy the same services. Those respondents whose children and ward travelled distances of between 1,001 and 1,500m and between 1,501 and 2000m were 160 (8.9%) and 78 (4.4%), respectively. Only 3 (0.2%) and 1 (0.1%) of the respondents' children and wards covered distances of between 2,001 and 2,500m and between 2,501 and 3,000m respectively. The inference that can be drawn from these findings is that majority of the respondent's children and wards travelled short distances to enjoy the services of educational facilities and therefore educational facilities are assessable to their children and wards.

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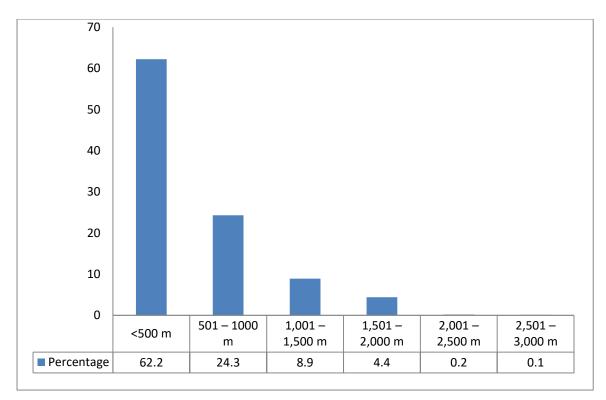


Figure 5: Distance travelled to enjoy the services of educational facilities **Source**: Author's Field Work 2011

The responses on the mode of transportation used by respondent's children and wards to get to the locations of educational facilities are shown in Fig 6. The study revealed that 1,542(86.8%) of the respondents claimed that their children and wards get to locations of educational facilities by foot, while 151 (8.45) claimed they used motorcycles to convey their children and wards to schools. The other modes of transportation were bicycle used by 54 (3.0%), private vehicle used by 44 (2.5%) and commercial vehicle by 1 (0.1%). It can be inferred from these observations that majority of respondents' children and wards used foot to get to the locations of educational facilities. This is expected because of the age group of those that go to primary and secondary schools which are mainly children who need to cover short distance to get school

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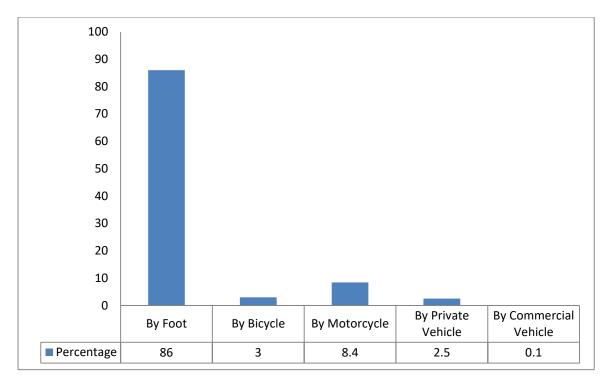


Figure 6: Mode of transportation of households to educational facilities **Source**: Author's field work, 2011

The respondents were also asked about their satisfaction rating in terms of the locations of educational facilities in relation to their neighbourhood. The responses are shown in Fig 7. The study revealed that 1,045 (58.3%) of the respondents rated the satisfaction with accessibility to educational facilities in terms of location are satisfactory, while 442 (23.7%) of the respondents rated it as fairly satisfactory. It is interesting to note that 267(14.9%) of the respondents rated the locations as highly satisfactory. The number of those respondents that rated the locations unsatisfactory and highly unsatisfactory were 51(2.8%) and 5 (0.3%) respectively. It can be inferred from these observations that majority of the respondents were satisfied with the locations of the educational facilities, implying that educational facilities are fairly accessible to both primary and secondary school age groups

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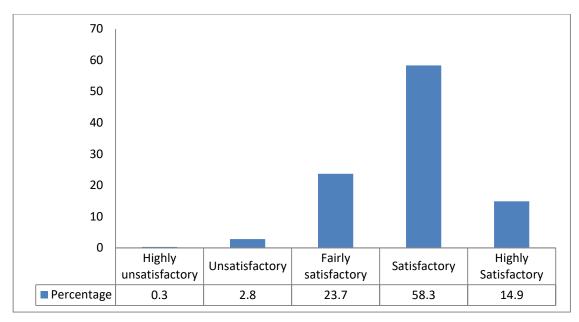


Figure 7: Satisfaction rating on the location of educational facilities. **Source**: Author's fieldwork, 2011

Respondents' Accessibility to Water Facilities

The water facilities that were considered for the study were public water taps, publicly used boreholes and hand dug wells. These are the common sources of water apart from streams and rivers in the rural settlements. These water facilities are usually provided by the government, private organizations and individuals. The responses on distance covered by the respondents to enjoy water supply facilities, the mode of transportation used to get to the locations of the facilities and the satisfactory rating by the respondents in terms of location of the facilities are shown in Figures 8, 9 and 10 respectively. The nature and the situation of water supply are shown in Plates 7, 8 and 9



Plate 7: Primary school pupils fetching water from borehole in Bangi



Plate 8: Women fetching water from motorized borehole in Paiko





Plate 9: Water source from the ground in Nasko

The responses on distance travelled to water facilities are shown in Figure 8. The study revealed that 1,438 (80.2%) of the respondents covered a distance of less than 500 meters to get to the locations of water facilities, While only 93 (10.8%) of the respondents covered a distance of between 500 and 1,000 meters to get to the same locations. Those respondents that covered distances of between 1,001 and 1,500 meters; and 1,5001 and 2,000 meters were 82 (4.6%) and 60 (3.3%) respectively. The number of respondents that covered a distance of between 2,001 and 2,500 meters was 18 (1.0%). The inference that can be drawn from the result is that majority of the respondents covered short distances to get to the locations of water facilities suggesting that the facilities were accessible to them.

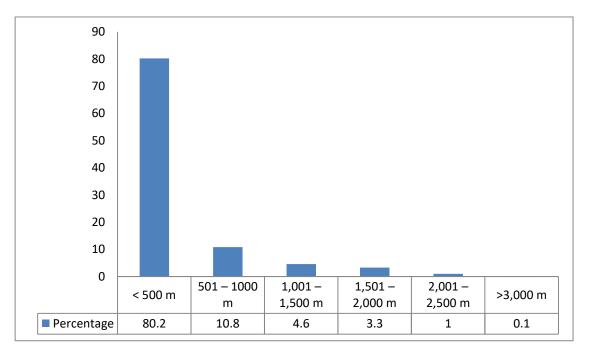


Figure 8: Distance travelled to enjoy water facilities. **Source**: Author's fieldwork, 2011

The responses of the respondents on the mode of transpiration used to get the locations of water facilities are shown in Figure 9. The study revealed that majority 1,679 (93.7%) of the respondents got to the locations of water facilities by foot, while those respondents that used bicycle, motorcycle, private and commercial vehicles were 19 (1.1%), 54 (30%), 39(2.2%) and 1 (0.1%),

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respectively. The inference that can be drawn from the above is that the majority of respondents have access to water supply facilities.

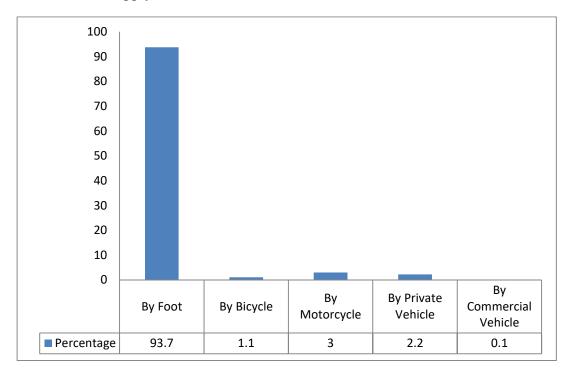


Figure 9: Mode of transportation of households to water facilities **Source**: Author's fieldwork, 2011

The responses on satisfaction rating on the locations of water facilities by the respondents are shown in Figure 10. The study revealed that 804 (44.9%) of the respondents rated the locations of water facilities as satisfactory, while 418 (23.3%) of them rated the locations as fairly satisfactory. Only 182 (10.2%) of the respondents rated the locations as highly satisfactory. The respondents that rated the locations as unsatisfactory and highly unsatisfactory were 256 (14.3%) and 132 (7.4%) respectively. The inference that can be drawn from this finding is that about 78.4% of the respondents were satisfied with the locations. This is expected because the nature of water is such that every household will want water facilities located very close to or in their houses or compounds.

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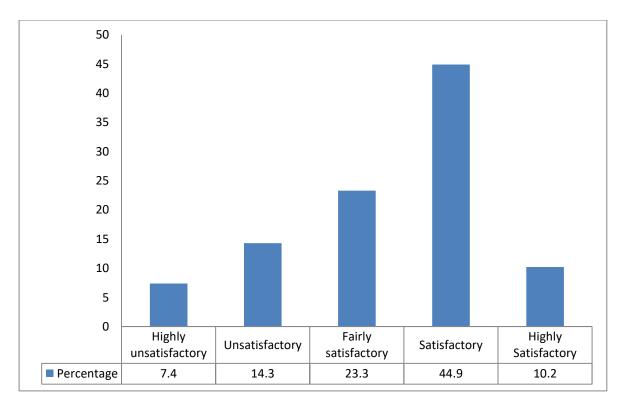


Figure 10: Satisfaction rating on the locations of water facilities. **Source:** Author's fieldwork, 2011

Assessment of Distance Travelled to the selected Facilities

The responses on distance travelled to enjoy services of health, educational and water facilities are shown in Figure 11. The study revealed that 1,437 (80.2%) of respondents travelled a distance of less than $\frac{1}{2}$ km to enjoy water facilities, while 1,115 (62.2%) travelled the same distance to access educational facilities. Only 937 (52.3%) of the respondents admitted travelling a distance of less than $\frac{1}{2}$ km to get to the locations of health facilities. The study further revealed that for a distance of between $\frac{1}{2}$ km and 1 km, 194 (10.8%) of the respondents admitted travelling that distance to get to locations of water facilities, while for educational facilities only 435 (24.3%) of the respondents travelled that distance, only 554 (30.9%) of respondents travelled the distance to the locations of health facilities. This pattern of responses is repeated by the respondents for the distance between 1 km and $\frac{1}{2}$ km. For distance between 1 $\frac{1}{2}$ km and 2km, 59 (3.3%) – 79 (4.4%) of the respondents travelled the distance to access water, educational and health facilities. The inference that can be drawn of the above is that in terms of distance travelled to facilities, a large proportion of respondents access water facilities compared to either educational or health facilities.

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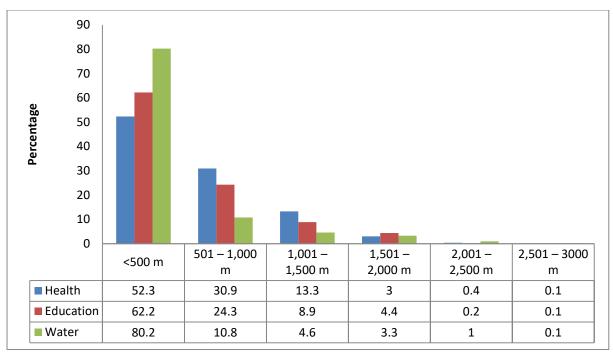


Figure 11: Distance travelled to enjoy the services of the facilities **Source**: Author's fieldwork, 2011

Assessment of Mode of Transportation to Selected Facilities

The responses on the mode of transportation used to get to health, educational and water facilities are show in Figure 12. The study revealed that 1,679 (93.7%) of respondents travelled by foot to get to the location of water facilities, 1,541 (86.1%) go to the location of educational facility, while 1,471 (82.1%) go to the location of health facility by foot. Those respondents who used Bicycle to facilities were 20 (1.1%) to water facilities, 54 (3%) to educational facilities and 50 (2.8%) to health facilities. The study also revealed that 213 (11.9%), 151 (8.4%) and 54 (3.0%) of the respondents used motorcycle to reach health, educational and water facilities respectively. The respondents that used private vehicles were 50 (2.8%) to health facilities, 45 (2.5%) to educational facilities and 39 (2.2%) to water facilities. A very significant proportion of respondents used commercial vehicles to get to the facilities especially health facilities. The inference that can be drawn from investigation is that among the facilities compared to educational or health facilities. It can also be inferred that because of the importance of health facilities, respondents could afford to use motorcycle to the facilities.

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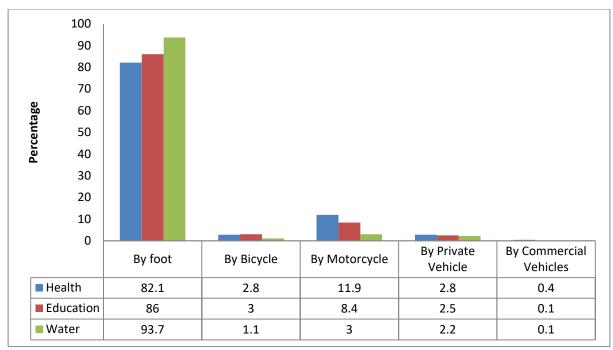


Figure 12: Mode of transportation used to get to the facilities **Source**: Author's fieldwork, 2011

Assessment of Satisfaction with location of Selected Facilities

The responses on satisfaction rating on the locations of health, educational and water facilities are shown in Figure 13. The study revealed that 805 (44.9%) of the respondents were satisfied with the location of water facilities, 1,045 (58.3%) with educational facilities and 1,050 (58.6%) with health facilities. The study further revealed that 418 (23.3%) of the respondents were fairly satisfied with the locations of water facilities, 425 (23.7%) with health facilities. The inference that can be drawn from this observation is that, comparatively, more respondents were satisfied with the location of health and educational facilities compared to water facilities.

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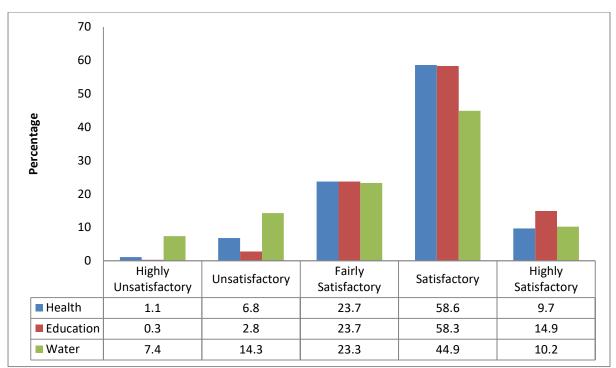


Figure13: satisfaction rating on the locations of the facilities **Source**: Author's fieldwork, 2011

Conclusion and Recommendations

The study revealed that 1,437 (80.2%) of the respondents travelled the same distance of less than $\frac{1}{2}$ km to enjoy water facilities, while 1,115 (62.2%) travelled the same distance to access educational facilities. Only 937 (52.3%) of the respondents admitted travelling a distance of less than $\frac{1}{2}$ km to get to the locations of health facilities. The inference that can be drawn from the above observation is that, comparatively, more respondents were satisfied with the distance travelled to enjoy water facilities compared to health and educational facilities respectively. Consequently, accessibility to facilities varied among the selected rural settlements, but water supply was relatively more accessible to respondents in their neighbourhood than health and education facilities. It is therefore recommended that the local government council should be sufficiently made autonomous in execution of assigned functions including provision and maintenance of infrastructure in the rural settlements of the state.

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Settlements	Infrastructure										
	General/Rural Hospital	Comprehensive Health Centre	Clinic	Dispensary	Tertiary Institution	Secondary School	Primary School	Public Taps	Public Boreholes		
Agwara		1		1		1	4		5		
Badeggi	1	1	1			1	3	1	6		
Bangi	1	1		1		1	3		2		
Doko		1	1			2	6	1	10		
Enagi		1				1	4	1	6		
Gawu	1		1			2	3	2	6		
Gbajibo		1				1	2		1		
Gulu			1			2	4		2		
Kuta	1	1	2			4	8	1	22		
Kutiriko	1		1			1	2	1	5		
Lemu	1		1			2	4	1	5		
Maikunkele	1		1			2	3		8		
Mashegu		1	1			1	2		2		
Nasko	1					1	2		4		
Paiko		1	2			3	6	1	10		
Rafin Gora			1	1		1	1		1		
Sabon Wuse	1	1				2	4	1	9		
Sarkin Pawa	1		2			1	4		6		
Tegina			1			1	4	1	4		
Tungan Magajiya Wawa	1		2	1	1	3 2	5 4		2 2		
Wushishi	1		1			1	6	2	4		

APPENDIX 1 Inventory of Rural Infrastructure in the selected Settlements