

## ANALYSIS OF HOUSEHOLD TRIP PATTERN IN RURAL KANO, NIGERIA

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### ABSTRACT

*This paper examined the travel behaviour of households within the rural Kano by looking at their types, frequencies and means of transport used during such trips. The study was conducted in three rural areas of Kano namely Rege, Kasai and Gale to represent areas of good, moderate and remote access respectively. A total of 12.5% of the households in each of the villages were selected from a sampling frame using a simple random technique which gave a total of 134 households. The data was obtained from a firsthand source using a structured interview schedule with the household heads. The data was analysed using tables and percentages. A total of thirteen different trips were identified which were categorized in to three broad types based on their purpose which are economic, social and community related. Trips to farm, collection of farm inputs, grinding mill and religious have the highest incidence with low incidence of trip to urban centre, cooperatives and recreation. Economic trips have the highest incidences in terms of monthly frequencies with community related trips accounting for the least in terms of frequencies. Findings also show that the means of transport used depend on the trip types as for example, bus is the dominant means of transport for trip to urban centres, motor cycle for health trip, donkey for trip to collection of inputs and harvest and walking / head loading as dominant for farm trip. The study recommends among others the need to improve the surface over which transport take place, loans to enable them purchase intermediate means of transport and development of community transport service.*

**Keywords:** Rural, trips, economic, intermediate means of transport, community transport.

### INTRODUCTION

Various attempts to define 'Rural' have led to widely differing perspectives and research foci (Unwin, 1997). In fact no single definition of the term has the merit of universal applicability in time and space. However, Unwin (1997) remarked that user perception is central to any definition of the concept. Majority of definitions in the literature agree that the terms refers to a delimited geographical area, less densely populated with extensive land uses. (Microsoft Encarta, 2006, Calvo, 1998, Unwin 1997, Falade, 1990, Idachaba et al 1981, Gilg 1978, Clout, 1972). In fact the multiplicity of definitions has led the term to lose its real meaning and most peoples attitude towards them are negative and disparaging (Sumaila, 1989). Whatever perception one has about rural areas, today, they have transformed from their traditional concepts due to the impact of colonialism, modernism and globalization. By early 2000 estimates show that there are over 2.3 billion people living in rural areas of developing countries (Muhammad, 2004). The Nigerian economy is rural in nature with vast number of its population living and working in the rural areas (Falola, 2007).

If energy forms are the earth's heart, transport networks are its arteries (Nagle, 2000). The transport of energy and goods are crucial to the modern world since raw materials, manufacturing industries and places of consumption are found in different locations. Transport is vital to modern economies. It is however, easy to overlook. It is only when there is some disruptions that its value becomes clear. When in times of war or economic restraints we see movement restricted and the necessities as well as the luxuries of life expensive and in short supply, we realize the truth of this statement.

The empires of the past depended for their existence upon transport

Rural Transport encompasses all the transport activities which take place at local government and community levels. It is composed of two elements, the rural transport services for passengers and freight by non-motorized and motorized means of transport, and rural transport infrastructure, mainly rural roads, tracks, trails, paths and footbridges, and in some cases rural waterways. Hine (2002) found that there is a positive relationship between transport investments in one hand with greater social mobility, better access to schools and hospitals, a wider selection of industrial products to purchase, a better chance of jobs in urban centers or plantation in Bolivia, El Salvador, Iran, Guatemala, Iran, Madagascar, Philippines, Sierra Leone and Uganda. As instance 80% increase in Coffee production was recorded in the formerly inaccessible Rungwe district of Tanzania (ibid). Calvo (1998) and Barwell (1995) stated that the African rural dweller largely inhabits a walking world. Access to rural transport services are poor and only rarely do rural people visit the world outside their immediate locality. Transport efficiency is very low with the time and effort invested achieving little more than meeting the household's needs for survival. Transport is also a drain to labor which is the principal factor of production of most rural households. The rural poor suffer from high transport costs and poor service availability with the subsequent impact on all features of economic and social well being (Hine and Ellis, 1999). This isolation led to increase in marketing and production costs, slow down diffusion of new ideas and limit access to education and health facilities

For the purpose of this work, a trip is considered as an event, and a travel is a process. Trip is about linking an origin with a destination while travel is done for its own sake described in terms of cost, time, distance, routes, events and stimulus encountered along the way (Abler et al 1972). Where a journey started from point A and terminated at point B, the movement is described as one way trip, but where a movement involved a cyclic movement from A to B the trip is described as a round trip. This study is aimed at identifying the type of trips made by rural households and the means of transport use for satisfying such trips. Also recommendations are made on how to improve rural mobility.

## **METHODS AND PROCEDURES**

### **(a) Choice of the Study Villages.**

The choice of the survey villages was based on the following considerations:

- Rural areas have diverse characteristics, thus the need to select areas to reflect the wide range of diversities;
- Since accessibility influences the level of mobility the selection of the survey villages was done at three spatial scales: areas of good, moderate and poor (remote) access. The most important factor in the accessibility analysis is the selection of a measurement yard stick that may be used in the demarcation of accessible and inaccessible areas. Jefferson cited by 2005 has arbitrarily taken 16km as the critical distance of an easy access to lines of communication. The Nagfur report in India as cited by Singh (2005) recommended that: areas lying 4km from transport point as 'fairly accessible', beyond 8km as 'inaccessible' and beyond 16km as 'very inaccessible'. For the basis of this study an area was considered as having a good access if it is located along a Trunk A road or a major road network; an area of moderate access is one connected with an all weather road not up to 10 km from Trunk A or major road; a remote place is an area having poor access, located more than 10km from the main road and lack all weather access.
- For this work rural settlement is considered to be an area with a population of less than 20,000 people and is not an administrative headquarter of a local government area.

### **Study Villages**

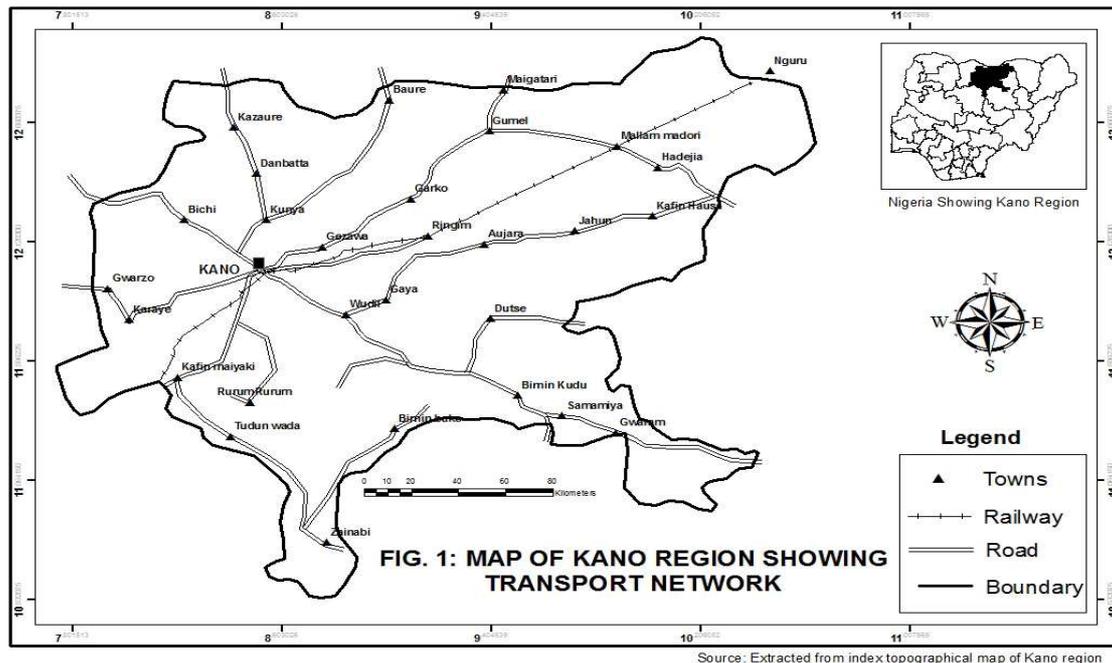
Three villages Rege, Kasai and Gale all in Kano Region (Fig. 1) were selected on the basis of their accessibility characteristics. Rege is located in Wudil local government area while Kasai and Gale are located in Gaya local government area. Rege located along Kano- Kafin Hausa Road represent an area of good access, Kasai located along Amarawa- Faragai- Gwagwarandan secondary road represent an area of moderate access while Gale located about 18km from the main road with no road represent an area of remote access. They are all typical rural settlements with houses made up of corn stalks, thatch roofs and few mud houses. The climate is tropical continental with wet and dry season and savanna type of vegetation. Agriculture is the dominant occupation of the people with appreciable number of them engaged in non farm occupations such as pottery for Rege, mat making for Kasai and weaving for people of Gale. Rege has the best access being located on Trunk A road (the Kano to Jahun road), followed by Kasai located about 7km to a main road and has all weather access road (Paved). Gale has the worst access as it is located more than 18km to the main road with only foot paths and tracks leading to the village with the neighbouring areas. Therefore mobility within and outside the village is seriously constrained especially during the rainy season. Fig 1.0 shows the map of Kano state showing the local government areas where the study villages are located..

### **Types of Data Collected**

Questions pertaining to the types of trips made, their frequency, time taken for one way trip, cost, who make the trip in the households and the means of transport used for such trips were asked. A total of 12.5% of the households in each of the villages were selected from the sampling frame (2006 NPC Household Listing and Numbering Register) using a simple random sampling technique. This gives a total of 134 households (Table 1). The data was obtained from the first hand sources using a structured interview scheduled with the household heads.

The main field work was preceded with a reconnaissance survey aimed at identifying and confirming the actual ground location and accessibility characteristics of proposed survey villages for the main field work. These villages were all visited to compare their map location and actual ground locations and confirm their accessibility characteristics.

The data was analysed using tables and percentages because of the descriptive nature of the data.



**Table 1: Household Size in the Study Villages**

Village	Total Household Size	12.5%
Rege	288	36
Gale	390	49
Kasai	392	49
<b>Total</b>	<b>1070</b>	<b>134</b>

Source: NPC, 2006.

## RESULTS AND DISCUSSION

### Type of Trips by Households in Rural Kano State

The result of the survey indicates three broad categories of trips made by the rural households within the study villages (Table 2). A total of thirteen different trips which are broadly divided in to three namely economic, social and community related are made by the households. Trips relating to farm, collection of inputs, grinding mill and religious have the highest incidence as 1 in 10 of all the households are engaged in such trips, this is followed by visits to friends and relatives, wedding and naming ceremonies and collection of harvest (Table 2). There is also a very low incidence of educational trip which is not unconnected with the level of literacy and absence of educational facilities in the study areas. Among the three villages only Rege has a primary school while in the remaining villages the closest primary school from them is about 4 to 5km. Similarly there is low incidence of trip to urban centre (3.84%), recreational trip (.81%) and cooperatives (2.90%). The low incidence of the urban trip is because most of the household activities are rural- based with few people engaged in activities such as

trading which will take them outside the rural environment. The incidence of the urban trip is higher in the more accessible Rege than the remaining rural areas. There is also the dominance of the economic related trips as they account for more than 60% of all trips made by the rural households. This is followed by trips relating to social activities (30.74%) and community related trips accounting for 2.90% of all trips (Table 2).

### Monthly Trip Frequencies by Rural Households in Kano State

Further analysis involved the computation of the total number of monthly round trips by each household for different trip types. Based on the frequency of the monthly round trips by the households trip to economic activities are the dominant consisting of more than 80% with social and community trips accounting for the remaining percentage (Table 3). Analysis shows that trip to farm is the dominant trip type (3 in 10) followed by trip to grinding mill accounting for 2 in 10 of all trips. The households within the study villages claimed to make an average of 2056 and 1484 monthly round trip to farm and grinding mill respectively.

**Table 2: Percent Incidence of Trip Types by Rural Households**

Trip Type	Gale n= 405	Kasai n= 461	Rege n=367	% Average
<b>Economic Trip</b>				
Urban Centre	3.46	3.69	4.36	3.84
Formal employment	-	-	-	-
Collection of Input	10.62	9.76	9.81	10.06
Farm	11.85	10.20	9.81	10.62
Market	10.62	9.54	9.54	9.90
Harvest	10.37	9.76	9.81	9.98
Post Office	-	-	-	-
Health	7.65	8.68	9.26	8.53
Grinding Mill	11.60	9.98	8.99	10.19
Education	3.46	4.34	1.91	3.24
<b>Sub- Total</b>	<b>69.63</b>	<b>65.95</b>	<b>63.49</b>	<b>66.36</b>
<b>Social Trip</b>				
Religious	11.11	10.20	9.81	10.37
Visits to friends and Relatives	9.13	10.41	9.81	9.78
Ceremonies	9.13	10.41	9.81	9.78
Recreation	0.25	-	2.18	0.81
<b>Sub- Total</b>	<b>29.62</b>	<b>31.02</b>	<b>31.61</b>	<b>30.75</b>
<b>Community Trip</b>				
Farmers group	-	-	-	-
Religious	-	-	-	-
Cooperatives	0.74	3.03	4.90	2.90
<b>Sub- Total</b>	<b>0.74</b>	<b>3.03</b>	<b>4.90</b>	<b>2.90</b>
<b>Grand Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Field Work, 2007.

Other trips which a high incidence in both villages are for collection of farm inputs, collection of harvested products and visits to friends and relatives (Table 3). Trips to urban centre, recreation and cooperative have a very low incidence. There is also no incidence of trips to formal employment, post office and religious meeting. Kasai with moderate access have higher

level of mobility with household making a total of 8,958 round trips while Rege with it good access have less number of round trips monthly, this variation may be explained by the lower number of households interviewed between them, a different result might emerge if the average trip per household per village is considered.

**Table 3: Percent of Monthly Round Trips by Rural Households by Trip Type**

Trip Type	Gale n= 6925	Kasai n= 8958	Rege n=5759	% Average
<b>Economic Trip</b>				
Urban Centre	0.46	0.51	2.08	1.01
Formal employment	-	-	-	-
Collection of Input	12.58	8.78	16.51	12.62
Farm	24.74	34.85	23.15	27.58
Market	5.10	4.14	3.19	4.14
Harvest	7.50	6.25	12.15	8.63
Post Office	-	-	-	-
Health	1.81	2.31	3.58	2.57
Grinding Mill	24.00	19.00	18.91	20.64
Education	9.78	5.74	3.37	6.30
<b>Sub- Total</b>	<b>85.97</b>	<b>81.58</b>	<b>82.94</b>	<b>83.49</b>
<b>Social Trip</b>				
Religious	2.60	2.38	2.57	2.52
Visits to friends and Relatives	7.25	7.74	7.95	7.65
Ceremonies	4.11	6.89	5.24	5.41
Recreation	2.0	-	-	0.01
<b>Sub- Total</b>	<b>15.96</b>	<b>17.01</b>	<b>15.76</b>	<b>15.59</b>
<b>Community Trip</b>				
Farmers group	-	-	-	-
Religious	-	-	-	-
Cooperatives	0.04	1.41	1.30	0.92
<b>Sub- Total</b>	<b>0.04</b>	<b>1.41</b>	<b>1.30</b>	<b>0.92</b>
<b>Grand Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Field Work, 2007.

**Means of Transport used for each Trip Purpose**

Different means of transport are used by the households in satisfying the varied transport demand they have depending upon the trip type, availability of means of transport, and household income (Table 4). Walking/ head loading is the dominant means of transport for journey to farm as it account for 7 in 10 of all households trips to

farm. This is followed by use of bicycle, donkey and motor cycle. The collection of farm inputs specifically manure is dominated by the use of donkey, wheelbarrow, head loading, handcart and animal cart. There is a very slight incidence on the use of pick up or tractors for such purpose (0.77%) which is due to nature of household income and type of farming system practice.

**Table 4: Percent Means of Transport for each Trip Type by Rural Households**

Trip Purpose	Means of Transport									Total
	Head/ Walking	Bicycle	Donkey	Motor cycle	Animal cart	Hand cart	Wheel barrow	Bus	Pick up/ Truck	
Urban								100		100
Inputs	13.45	5.06	36.53	1.48	10.07	13.36	14.63	4.65	0.77	100
Farm	71.06	10.01	8.87	7.02	1.4	0.71		0.93		100
Market	11.61			4.2	0.76			83.43		100
Harvest	13.45	5.06	36.53	1.48	10.07	13.36	14.63	4.65	0.77	100
Health	10.75	5.38		42.36				41.51		100
Grinding Mill	96.38	3.62								100
Education	78.1	14.52		7.38						100
Religious	57.1	5		8.12				29.78		100
Visits	40.03	5.92		14.28				39.77		100
Ceremonies	59.51	5.69		8.49				26.31		100
Recreation	12.5							87.5		100
Cooperative	69.31	11.11		13.5				6.08		100

Source: Field Work, 2007.

Transport of harvest from farm which is crucial part of rural household travel in rural areas is dominated by the use of wheelbarrow, animal cart, donkey and head loading as they account for more than 70% of all trips for such purpose. Donkey has the highest use (36.53%), while other means such as bicycle, motor cycle and tractors are of little use (Table 4). The term *Kasuwa a kai miki dole* signifies the importance rural people attached to attendance to rural periodic markets. A variety of means of transport are used by rural households to reach the market. Generally, bus seems to have the highest incidence as it account for 8 in 10 of all households trips. This is followed by walking as it account for 11.61% of such trips. However, there is a tendency for variation to exist from one village to another based on their access characteristics but it is also known that in some areas of remote access they get vehicular transport once in week which is mostly on market days, thus the dominance of bus motorized transport is not surprising. Also trip to urban centre is wholly dependent on the bus but it involves a number of trips on different modes to the road side.

Analysis of the modes by which households reach health centres reveals dominance of motorcycles and bus for such trips as claimed by 4 in 10 of the households. This is followed by walking and bicycle (Table 4).

Social trip to visit friends and relatives for the purpose of consolidating friendship or mutual co existence has long been enshrined in the life styles of religious and traditional African rural communities. Different means of transport are used by rural households for such trips. The trip

is dominated by walking and bus as they accounted for over 60% of such trips, this then followed by use of motorcycle (14.28%) and bicycle (5.92%),(Table 4).The means of transport used by rural households to attend Fridays prayers depend to a large extent on the location of the village, spiritual perception and availability of Friday mosque in village. Findings shows that the trip is dominated by walking as it account for 57% of all trips, followed by bus (29.78%), motor cycle (8.12%) and Bicycle (5%).

Trip to grinding mill is another form of trip which is vital to rural households. Besides the trip to farm, it is by far the highest generator of trip among rural households. This type of trip is dominated by head loading (96.38%) and bicycle (3.62%).The dominance of head loading is because of the presence of grinding mills in all the study villages and there fore does not entail longer distances which may need other means of transportation (Table 4).Trip to educational institutions is also dominated by walking as it account for 8 in 10 of all journeys to schools, 14.52% of such trips by bicycle and motor cycle(7.38%).Thus, unlike most school related journeys in urban centres which involved motorized transport, in the rural areas it is dominated by walking as most parents can not afford to purchase private vehicles to convey their children to school coupled with the absence of public transport service and low ownership of personal means of transport. Trip to cooperative meeting is also dominated by walking (69.31%) because the meetings are mostly held in the village or the nearby settlements.

Other means of transport use for such purpose include motorcycle (13.50%), bicycle (11.11%) and bus (6.08%). Those reported using bus are those that travel outside the rural areas for such meetings (Table 4).

Trips to ceremonies relating to wedding and naming are part and parcel of traditional societies and rural people attach great importance to them. Indeed, attendance to such occasion is part of one's responsibility within the community. Table 4 shows the means of transport used by the people in attending ceremonies with dominance of walking accounting for almost 6 in 10 of all households' trips. Analysis shows that motor cycle has higher significance than bicycle during such trip due to its greater speed and availability for commercial services. However, trip to recreation is dominated by use of bus (87.5%) and walking (12.5%).

#### CONCLUSION AND RECOMMENDATIONS

The study examined the travel behaviour of households in rural Kano by identifying the types of trips made, the incidence of trip type and the means of transport used for each trip. Findings revealed the dominance of economic trip with

high monthly frequencies of trip to farm, grinding mill, collection of harvest and inputs and visits to friends and relatives among the households in the state. Also the means of transport used depend on the trip types and the household income as for example bus is the dominant means of transport for trip to urban centres, motor cycle for health trip, donkey for trip to collection of inputs and harvest and walking / head loading as dominant for farm trip. Based on the findings the following recommendations are made:

- The need to improve the surface over which transport take place.
- loans to enable the rural people acquire personal intermediate means of transport
- development of community transport service to take care of specific trips such as to hospitals, markets, urban and education and;
- Provide basic facilities within the villages that will reduce frequent travel outside the village.

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