

**ANALYSIS ON RURAL-URBAN TRANSPORTATION PATTERN AND MODES OF  
TRANSPORTATION IN  
DELTA STATE NIGERIA: A CASE STUDY OF UBEJI AND  
WARRI**

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**Abstract**

The major objective of the study was to determine the various system/modes of commuting to Warri from Ubeji and how rural-urban transportation pattern and modes have variation in traveling time and also variation in the volume of traffic flow in Warri. and Ubeji. The statistical technique employed is the Pearson's product moment correlation coefficient. A correlation coefficient of 0.96 was obtained which shows that there is a high significant relationship between the modes of transport of the urban and the rural areas of 0.01 level of confidence. Also, a correlation coefficient of 0.99 was also obtained which shows that there is a high significant difference in travel lime between the rural area (Ubeji) and the urban area (Warri) at 0.01 level of confidence. Recommendations were also proffered for efficient and effective rural-urban transportation.

**Introduction**

Mobility is a strong aspiration and expression of individual freedom. This has been a challenge facing both rural and urban centers. According to Oni (2002), the city (urban) serves as a magnet for employment opportunities (to people from nearby rural areas), shops, services, leisure activities etc. Consequently, the city has-become the epicenter of economic and social life.

In reality, the concept of "Rural" cannot be narrowly defined. In fact, many definitions of rural exist, the way people think of rural areas largely depends on where they are from and where they live. Rural area can be considered to be a non-metropolitan area outside the limits of any in corporate or unincorporated city, town or village (FHWA HOME, 2003) and can be grouped into three genera] forms, which are Basic rural, Developed rural and Urban boundary rural.

Hoyle (1973), in outlining the importance of road transportation to the people in rural areas argued that "even in the most remote and least developed of inhabited regions, transport in some form is a fundamental part of the daily rhythm of life". The aim of transport is to set men free in respect of place relation to make relations more plastic to social need.

Thus, to Mabogunje (1968), inadequate transport provision constitutes one of the greatest rural challenges. Today, areas with undeveloped transport infrastructure are more disadvantaged than areas with an improved transport system as in urban centers.

According to Onokerhoraye and Okafor (1994), transport services change the process of economic growth in the rural areas by making products and market function more efficiently, they also increase the social welfare of the rural population and will enables them to commute regularly to places where other essential social services such as health, education and employment establishments are located.

Onokomaiya (1981), is of the view that Nigerian city transport is grossly under equipped to cope with the volume of urban mass traffic. Consequently, the impact created by gross under equipment of Nigerian city transport has a profound effect on the corresponding relationship of traffic flow between urban and rural areas both in terms of transport cost, travel time and route (road) maintenance. It has been observed that linkages between the rural and urban areas in Warn area of Delta State is not properly maintained and as a result rural feeder roads have prevented most of the farmers in the interior villages around Warn like Ubeji and a host of others, from evacuating their agncultural products to the market or to urban areas for sales. Thereby causing waste of agricultural products and frustrating the efforts of the farmers from increasing production in the area.

Ogundana and Olatunbosun (1972), identified the inadequacy of rural transportation facilities as a very serious constraint on rural socio-economic development and also hinted on the problems faced by commuters. He argued that mobility constraints of any journey can be measured in terms of travel cost which involves money expenditure, time, inconveniences and exposure to risk.

Weber (1929), explains that rural transportation problem do not relate to traffic congestion as in urban areas but rather to inadequate transport facilities, short distance and poor condition of roads.

Onokerhoraye (1984) also, examined the importance of rural-urban transportation network in improving the accessibility of people living in various parts of Nigeria to essential public facilities/services like education, health services etc. He argued that since a large proportion of the population of Nigeria are in rural areas thereby making it impossible for the attainment of the threshold required to support certain public facilities.

Okafor (1979), on the other hand, examined the relationship between distance, cost and rural development. This analysis indicated that rural development has recently assumed a new dimension because of the realization of economic component and also social welfare component. He however, noted that access to resources and opportunities of all types outside the rural areas has been difficult. As a result of these difficulties he called for the location of indicators of development in rural areas in central places. According to him, "one way of ensuring the accessibility of facilities to rural inhabitants is by locating rural facilities in central places" that are linked by good pattern and mode of transportation.

Transportation is an integral facet of everyday life. This is because it plays a dominant role in determining the scale, nature and form of our towns and cities. Its efficiency contributes largely to the level of productivity, economic growth and thus, the standard of living.

This research work therefore, sees the need to look into the pattern of flow between Warri (urban area) and Ubeji (rural area) both of Delta State, the modes of transport involved and the reason(s) for differences in travel time (if any) between the identified locations, and examine the above problems with a view to suggesting corrective measures.

However, the purpose of this research is to identify rural-urban transportation pattern and modes of transportation in the Warri area of Delta State.

### Study Area

The study areas focuses on Warri and Ubeji, both settlements are located in Delta State as shown in fig. 1. Warri which is an urban city in Delta State is situated in the lowland region of the Niger-Delta area of Nigeria. It lies on latitude 5030' North of the equator and longitude 5045' East of the Greenwich meridian. The area expansion of Warri within the past two decades has been remarkable from a small river settlement, Warri has grown to engulf the surrounding villages of Effurun, Ekpan, enerhen, Edjeba, Ogonu, Ovwian-Aladja, Udu road, etc (see fig. 2).

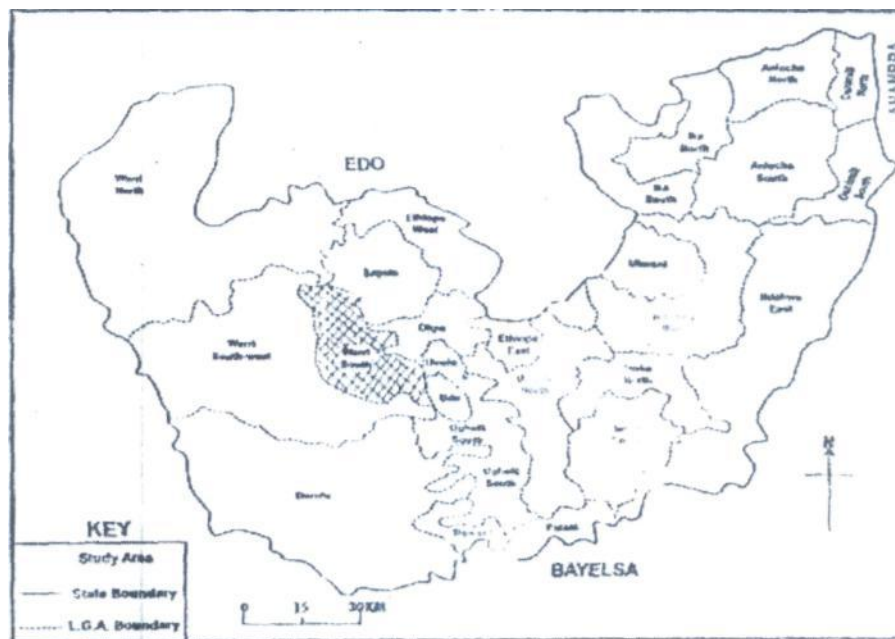
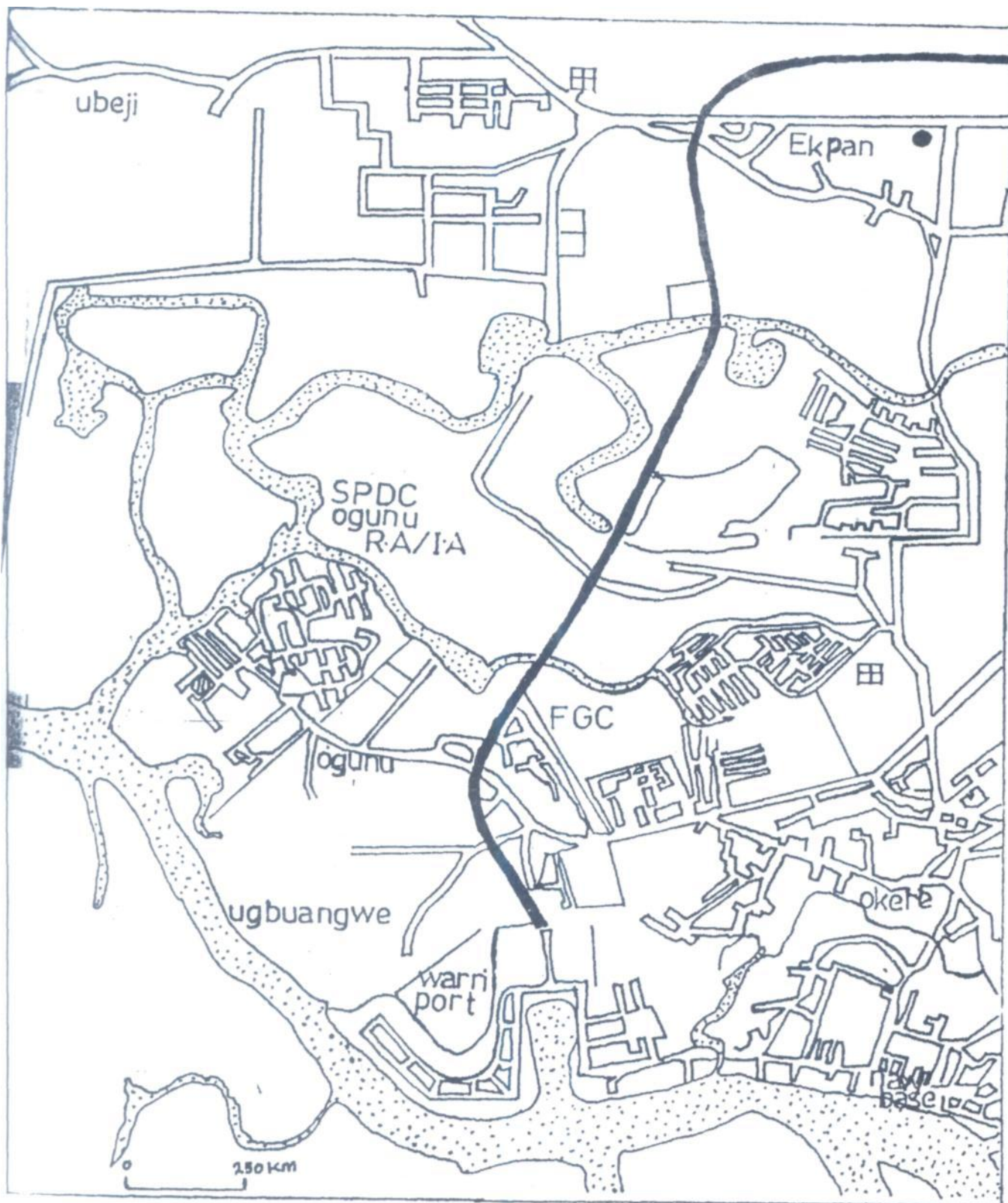


Fig 1: Map of Delta State Showing Study Area

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**Source:** *Lands and Survey, Asaba, 2002*

## Methodology

The population of Warn is about 300,720, while the population of Ubeji as a rural area is about 4,500 (National population commission, 1991). The sources of data collection and information for carrying out this research study is based on both primary and secondary sources. For the purpose of achieving the objectives of the study, one hundred (100) questionnaires were administered both in the rural area (Ubeji) and in the Urban area (Warn). The study area was divided into two, while fifty (50) questionnaires were administered in Ubeji, which is the rural area and the other fifty (50) in Warri which is the Urban area. The questionnaires that were administered in each sampled area were administered irrespective of their populations. The random sampling technique was used to interview the respondent from both the rural area and urban area. Responses from the questionnaires were mainly used for data analysis. The computation relied on the Pearson's products moment correlation coefficient (r), the student 't' test, Averaging model and percentages.

## Discussion Of Results/Findings

The degree to which urban center serves its surrounding rural areas can only be reasonably measured by the various goods and services offered by the urban center.

However, research hypotheses were formulated and tested. The hypotheses are:

- 1 "There is no significant relationship in the mode of transport between the rural area (ubeji) and the urban area (Warri)".
- 2 "There is no significant difference in travel time between the rural area and the urban area".

Below are various tables representing the different information collected as regards rural urban transportation pattern and modes of transportation.

**Table 1: Time it takes to get to Warri**

<b>ALTERNATIVES</b>	<b>NUMBER OF RESPONSES</b>	<b>%</b>
10-20 MINS	<b>0</b>	<b>0</b>
20-30 MINS	<b>10</b>	<b>10</b>
30-40 MINS	<b>65</b>	<b>65</b>
40 & 50 MINS	<b>22</b>	<b>22</b>
50 AND Above	<b>3</b>	<b>3</b>
<b>TOTAL</b>	<b>100</b>	<b>100%</b>

*Source: Fieldwork, 2003.*

From table 1 above, it is clearly shown that 3% of the respondents spend 50 minutes and above which is the highest in the distribution with the least or lowest respondent and 65% as the highest number of respondents with its time as 30 to 40 minutes. Others are 22% with time of 40-50 minutes and 10% which is between 20 and 30 minutes.

**Table 2: Means of Transportation**

<b>MEANS</b>	<b>RESPONSES</b>	<b>%</b>
Private car	<b>10</b>	<b>10</b>
Motor-cycle	<b>17</b>	<b>17</b>
Taxi-cab	<b>58</b>	<b>58</b>
Bus	<b>12</b>	<b>12</b>
Trekking	<b>0</b>	<b>0</b>
Bicycle	<b>3</b>	<b>3</b>
Others	<b>0</b>	<b>0</b>
<b>Total</b>	<b>100</b>	<b>100%</b>

*Source: Fieldwork, 2003.*

From table 2 above, taxi-cab plays an important role in the transportation system of the study area (Ubeji). As taxi-cab measured up to about 58%, which is more than 50% of the sampled population. This is because taxi-cabs are more regular and a little bit faster and more comfortable. Next is motorcycle which occupies about 17% of the total respondents of transportation means, Buses

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also play an important role in urban transportation as 12% of the respondents uses bus as means of commuting, those with private cars are about 10%. The use of bicycle is not too important as more people uses other means of transportation.

**Table 3: Modes of Transportation Between Rural Area and Urban Area**

ALTERNATIVES	WARRI	UBEJI
Private car	6	4
Motor-cycle	7	10
Taxi-cab	27	31
Bus	9	3
Trekking	0	0
Bicycle	1	2
Others	0	0
<b>Total</b>	<b>50</b>	<b>50</b>

*Source: Fieldwork, 2003.*

From table 3 above, (see Appendix A for necessary computation). The calculated value of the Pearson's product moment correlation coefficient is 0.96. It could be deduced that there is a significant relationship in the mode of transportation between the rural and urban area in Warri. From the table above, 92% of the relationship of transport mode exist between the rural and the urban area while 8% could not be accounted for.

**Table 4: Showing the travel time-between the rural and the Urban Area**

ALTERNATIVES	WARRI (X)	LBEJI (Y)
10-20 MINS	0	0
20-30 MINS	5	5
30-40 MINS	32	32
40-50 MINS	11	11
50 AND ABOVE	2	1
<b>Total</b>	<b>50</b>	<b>50</b>

*Source: Fieldwork, 2003*

From the table above (see Appendix B for necessary calculation). The calculated value of the data using the Pearson's production movement correlation coefficient is approximately 0.99 and this implies that there is a high positive difference in travel time between the rural and the urban area.

**Policy Implication**

It can be said that rural-urban transportation is very important to the socio-economic life of the people of Warri and Ubeji. The roads connecting the rural settlements with Warn should be well taken care of by the government in terms of resurfacing of the damaged roads, sand filling the pot holes and depression along the road.

The state and local governments should provide adequate funds for repairing and maintenance of the roads. Also the government should participate in the provision of transport services in the rural areas by purchasing more public vehicles like buses to the ones available.

Government efforts should go beyond the mere declaration of objectives on rural transport in development plans. Rural-urban transportation should take a priority place in transportation planning in Nigeria.

Conclusively, if these policies are looked into, there will be improved transport system which will yield a better utility of complementary services between Ubeji and Warri and lastly, improve transportation system will stimulate all round development in both rural and urban centers.

**Conclusion**

It is imperative that construction and adequate maintenance of the existing transport facilities be annually carried out in order to effectively promote the citizens social and economic growth.

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**APPENDIX A**

<b>Showin g The Modes Of Transport In The Urban Anc   Rural Area</b>					
<b>Modes</b>	<b>X Frequency</b>	<b>Y Frequency</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
Private car	6	4	36	16	24
Motor-cycle	7	10	49	100	70
Taxi-cab	27	30	729	961	837
Bus	9	3	81	9	27
Trekking	0	0	0	0	0
Bicycle	1	2	1	4	2
Others	0	0	0	0	0
<b>Total</b>	<b>ƒf = 50</b>	<b>l&gt; = 50</b>	<b>Y X' =896</b>	<b>Y^Y<sup>2</sup> =1090</b>	<b>J^XY = 960</b>

$$r = \frac{n \sum XY - (EX)(EY)}{\sqrt{n \sum X^2 - (\sum X)^2} \times \sqrt{n \sum Y^2 - (\sum Y)^2}}$$



$$r = \frac{7 \times 960 - (50)(50)}{\sqrt{7 \times 896 - (50)^2} \times \sqrt{7 \times 1090 - (50)^2}}$$

$$= \frac{6720 - 2500}{\sqrt{6272 - 2500} \times \sqrt{7630 - 2500}}$$

$$= \frac{4220}{\sqrt{3772} \times \sqrt{5130}}$$

$$= \frac{4220}{61.4 \times 71.62}$$

$$= \frac{4220}{4397.4}$$

$$r = 0.96$$

$$r^2 = (0.96)^2$$

$$= 0.92 \times 100$$

$$= 92\%$$

$$t = r \frac{\sqrt{n-2}}{\sqrt{1-r^2}}$$

$$= \frac{0.96\sqrt{7-2}}{\sqrt{1-0.92}}$$

$$= \frac{0.96\sqrt{5}}{\sqrt{0.08}}$$

$$= \frac{2.112}{0.28}$$

$$t = 7.54$$

$$n-2 = 7-2$$

$$= 5$$

Table value = 4.03 at 0.01 level of confidence.

### Appendix B

Showing The Travel Time Between The Rural And The Urban Area

Travel Time	Frequency (x)	Frequency (y)	X <sup>2</sup>	Y <sup>2</sup>	Xy
10-20 mins	0	0	0	0	0
20-30 mins	5	5	25	25	25
30-40 mins	32	33	1024	1089	1056
40-50 mins	11	11	121	121	121
50 & above	2	1	4	1	2

$$r = \frac{5 \times 1204 - (50)(50)}{\sqrt{5 \times 117 - (50)^2} \times \sqrt{5 \times 1236 - (50)^2}}$$

$$= \frac{6020 - 2500}{\sqrt{5870 - 2500} \times \sqrt{6180 - 2500}}$$

$$= \frac{3520}{58.1 \times 60.66}$$

$$= \frac{3520}{3524}$$
$$r = \underline{0.99}$$

$$r^2 = 0.99^2$$
$$= 0.98 \times 100$$
$$= 98\%$$

$$t = \frac{0.99\sqrt{5-2}}{\sqrt{1-0.98}}$$

$$= \frac{0.99\sqrt{3}}{\sqrt{0.02}}$$

$$= \frac{0.99 \times 1.7}{0.14}$$

$$= \frac{1.683}{0.14}$$

$$= 12.02$$

$$n-2 = 5-2$$
$$= 3$$

Table value = 5.84 at 0.01 level of confidence.