# Gombe Journal of Geography and Environmental Studies (GOJGES)

**Vol. 1 N0.3 Dec. 2020**

**e-ISSN: 2714-321X**

**p-ISSN: 2714-3201**

http://www.gojgesjournal.com

Gombe Journal of Geography and Environmental Studies (GOJGES) Vol. 1 N0.3 Dec. 2020, e-ISSN: 2714-321X; p-ISSN: 2714-3201

# ASSESSMENT OF THE FACTORS THAT INFLUENCE THE CHOICE OF THE MODE OF TRANSPORT OF CRIPPLES IN YOLA NORTH LOCAL GOVERNMENT AREA, ADAMAWA STATE, NIGERIA.

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## Abstract

The study examined factors that influence the choice of the mode of transport of Cripples in Yola North Local Government Area, Nigeria. 263 structured questionnaires were administered to the respondents through purposive sampling technique. Simple arithmetic, frequency, percentage and regression analysis were used for data analysis. The study found that the mode choice of the cripples were as follows; wheelchair 69.96%; motor-cycle 14.46%; tricycle 6.03% while trekking, car and bus account for 6.50%. In addition, the study found that sex, age, occupation, income and type of transports have positive ($P \leq 0.041$) and significant influence on the choice of the mode of transport of transport of the Cripples. The variables of sex, age, occupation, income and mode of transport explained about 76% of the mode choice in the study area. The study recommended that transport policies should aim at providing affordable modes of transport and improvement of transport infrastructure that would ensure the independent mobility of cripples.

**Keywords: Cripple, Disability, Mode Choice, Transport, Trips**

## 1. Introduction

Making decision on mode of transport in urban area is a very expedient part of passenger life, especially in an area with crowded mode of transport. The choice of a particular mode of transport in urban area is neither a static nor a random process, but born out of the available options (Adekunle and Ganiyu, 2014). According to Hanson (1980) as cited in Adekunle and Ganiyu (2014) the decision to choose a particular mode of transport by a passenger is influenced by singly or the combination of the following factors: speed, travel time, comfort convenience, cost, availability, accessibility and socio-economic status. For instance, gender was discovered to influence mode choice of passengers in Libya (Abuhamoud, Rahmat and Ismail, 2007). In Manila, income of passengers was discovered to be one of the factors that influenced mode choice of commuters (Diaz, 2011). However, in Irish, age of household was discovered to be a significant factor that influence mode choice (Nolan, 2001).

The mobility of cripples has received an unfair and limited attention both in literature and in practice especially in developing countries of Africa. For instance, in Nigeria there are few transport infrastructures as well

as literatures that carter for the mobility needs of cripples in urban areas. In Nigerian cities, inadequate and unreliable infrastructures particularly transport service characterized the trips of cripples (Odufuwa, 2007). In Yola North Local Government Area (L.G.A), there is no transport infrastructure that aid the mobility of cripples. According to Sand (2006), the general quality of life for the disabled (Cripples, Blind, Deaf, Dumb) is substantially lower than the normal person, hitherto, the inabilities of cripples to meet their basic needs of life showcase their level of transport bias. The most vital issue is to find out factors that influence mode choice of cripples, since all transport activities are pegged on the crowded mode of transport available.

Mode choice, is an inbuilt part of transport system, and therefore is a vital step in achieving a hitch free trip (Thamizh, Arasan and Vedagiri, 2011). According to Odufuwa (2007) the poor nature of public transport service in Nigerian cities necessitate the need for disabled persons to make provision for extra economic expenditure in hiring a professional attendant during trip in urban areas. Cripples in urban areas of developing countries experience a more complex commuting system characterized by high transport fare, prolong waiting time. According to Mckibben (2011) destination, accessibility, density, land use, diversity and distance to transit station are the variables that influence mode choice in Sydney.

According to Odufuwa (2007) every attempt at solving urban transport problem in Nigerian cities were made without taking into consideration the disabled, the assumption has always been that the solutions are applicable to both normal and disabled persons. In most cases, pure traditional values are considered and some of these values ignore economic potentials of the disable persons. Cripples are seen along major arterial roads that is characterize with high vehicular and pedestrian movement there by exposing them to the rigorous competition of choosing mode of transport. It is against this background that this study analyzed the factors that influence transport mode choice of cripples in Yola North Local Government Area.

## 2. Study Area and Methods

### 2.1 Study Area

Yola North Local Government Area is located between latitude 09º16' N and 9º 20' N and longitude 12º 26' E and 12º 30' E. It has a total land area of 109sq. km (Malgwi, 2019). Yola North L.G.A is clearly stratified in term of population density as low, medium and high density (Ilesami, 1999). The low-density areas are well planned units where Government officials reside while the medium and high-density areas are made up of common people with little or unplanned buildings (Zemba, Dasin andHassan, 2013). Yola north L.G.A has a total population of 199,674 out of which 144,244 and 121,507 were males and females respectively (National Population Commission, 2006). As at 2006, the total number of disabled persons stood at 7674 out of this population of disabled persons, 767 representing 9-99% of the population are cripples (National Population Commission, 2006).

Yola North L.G.A is traverse by trunk A, B, and C roads network. It has six roundabouts with one of the roundabouts (Police roundabout) having five roads radiating from it. Majority of the trunk A and B roads are dualized with traffic lights at some major intersections of the roads. However, only one traffic light is fully functional (Total Junction). Some of the roads were characterized by pot holes and stagnant water during rainy season while others are under-construction. The common public mode of transport in the area is the tricycles commonly known as Keke Napep which usually carries three passengers. Other modes of transport include; buses, taxi. The study area has many unauthorized park and bus stops.

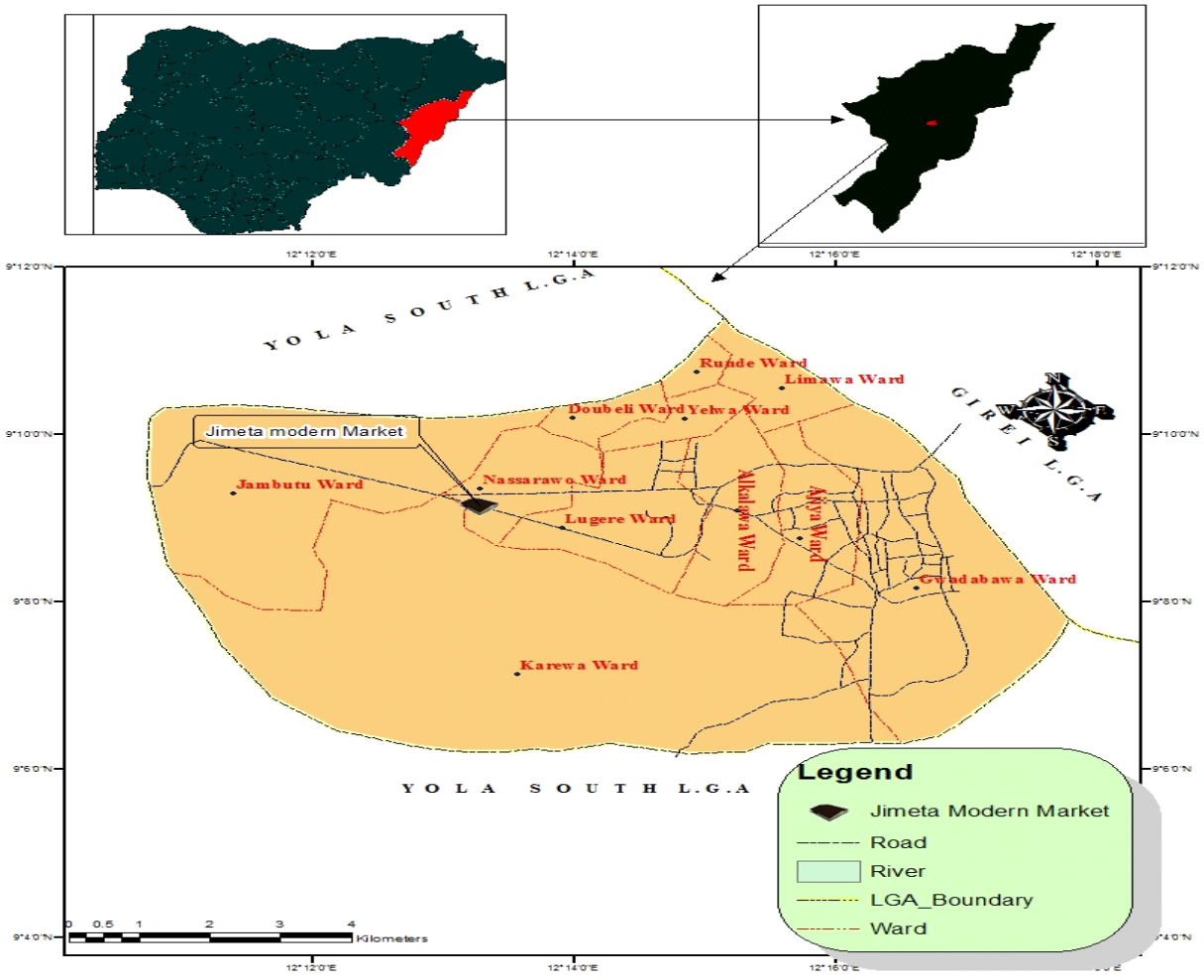


Figure: Study area
Source: Adamawa State Ministry of Land and Survey Yola (2019)

## 2.2 Methodology

This study uses both primary and secondary data. The primary data were information on age, sex, occupation, educational level, income, mode of transports used for one week and reasons for mode choice of the respondents. These data were sought via the administration of a well structure questionnaire. The questionnaires were administered with the help of a research assistant (the Secretary National Association of Cripples Yola North Chapter). The secondary data used were population of Cripples which was obtained from National Population Commission and the map of the study area which was sources from the Archive of the Adamawa State Ministry of Land and Survey.

The population of the study are the Cripples that are domiciled in Yola North. In determining the sample size for the study, Yamanes (1967) formula as expressed in Ba, Galtima, Tukur and Zemba (2014) was used as thus;

$n=N/1+N\ (e)^2$

Where n= sample size

N= total population

e=level of significance (5%) i.e. 0.05

$n=767/1+767(0.05)^2$

=263

Therefore, the sample size for the study is 263 Cripples from Yola North Local Government Area. The data collected were coded and recorded for ease of analysis. The data were analyzed using Statistical Package for Social Science (SPSS) version 20.0. Socio-economic data were analyzed using descriptive statistics such as percentages and frequencies. Regression analysis was used to identify the contribution of independent (socio-economic) variables on the dependent variables (mode choice).

## 3. Results and Discussions

### 3.1 Socio-economic Characteristics of the Respondents

The socio-economic characteristics of the respondents is shown on Table 1.0. The main variables discussed are sex, age, income and occupation of the respondents. These variables play an important role in choosing a particular mode of transport.

**Table 1 Socio-economic Characteristics of the Respondents**

| Variables | Frequency | Percentage (%) |
|---|---|---|
| **Gender** | | |
| Male | 221 | 84.03 |
| Female | 42 | 15.97 |
| **Age** | | |
| <20 year | 11 | 4.18 |
| 20-30 Years | 67 | 25.48 |
| 31-40 Years | 113 | 42.96 |
| 41-50 Years | 31 | 11.79 |
| Above 50 Years | 41 | 15.59 |
| **Educational Level** | | |
| Informal education | 67 | 25.48 |
| Primary education | 36 | 13.69 |
| Secondary Education | 77 | 29.28 |
| NCE/ Diploma | 72 | 27.37 |
| Degree | 11 | 4.18 |
| **Occupations** | | |
| Applicants | 6 | 2.28 |
| Students | 46 | 17.49 |
| Beggars | 41 | 15.59 |
| Business Men/women | 57 | 21.67 |
| Civil Servants | 113 | 42.79 |
| **Income Level** | | |
| < 10,000 | 46 | 17.49 |
| 10,000-30,000 | 103 | 39.16 |
| 31,000-50,000 | 51 | 19.39 |
| 51,000-70,000 | 46 | 17.49 |
| Above 70,000 | 17 | 6.47 |

**Source: Field Survey, 2019**

The sex distribution of the respondents is shown in Table 1. . The result revealed that 84.03% of the respondents were males and 16.97% were females. Males being the head of households are normally involved in out of home activities to meet up with the demands of the family. The result of the age of the respondents reveals that 68.44% of the Cripples were between the ages of 20-40 years (youthful stage) this make transport very expedient in accessing goods, utilities and facilities within the urban setting. The educational levels of the respondents revealed that 25.48% had informal education while 13.69% of the respondents had attended primary school. The result further reveals that 29.28% of the respondents had secondary education. The remaining 31.55%

of the respondents had attended tertiary institution. The occupation of the respondents reveals that 2.28% of the respondents were applicants while 17.49% were students, 15.59% of the respondents are into begging. The result further shows that The income of the respondents as shown in Table 1 indicates that 17.49% of the respondents earns less than 10,000 Naira monthly. Those that earn 10,000-30,000 Naira monthly constitutes 39.16%. The result further reveals that 19.39% earns between 31,000-50,000 naira monthly while those that earn above 50,000 Naira monthly accounts for 23.96%. Base on the result on income, 21.67% of the respondents were civil servants. The results of occupation show that all the respondents are into occupation that requires daily trips such as government work, business, schooling among others.

majority of the respondents are above poverty line according to the definition of poverty based on Purchasing Power Parity Index (PPPI) of a Dollar per day. The high income earned by the respondents could be because of cultural or religious belief of the urban dwellers in which the give alms to the disabled persons along major roads, shopping malls, markets, banks and places of worship.

### 3.2 Mode Choice of the Respondents

The mode of transport plays a very important role in the analysis of trips, because it is the medium through which all the trips are undertaken.

**Table 2. Mode Choice of the Respondents**

| Mode of Transports | Frequency | Percentage (%) |
|---|---|---|
| Trekking | 13 | 4.94 |
| Wheel Chair | 184 | 69.96 |
| Bicycles | - | - |
| Motor cycle | 38 | 14.46 |
| Tricycle | 16 | 6.08 |
| Car | 4 | 1.52 |
| Bus | 8 | 3.04 |

**Source: Field Survey, 2019**

Table 2 shows the various modes of transport in Yola North L.G.A. The modes of transports are bus, car, tricycle, motor cycle, bicycles, wheelchair and trekking. The result reveals that 4.94% of the respondents undertake trips by trekking, 69.96% uses wheelchair. Next to the wheelchair is the motor cycle, which accounts for 14.45% of the respondents' mode choice. The results reveal that tricycle which is the common mode of transport in the area accounts for only 6.08%, car and bus accounts for 1.52% and 3.04% respectively.

**Table 3 Reasons for Choice of the Mode of Transportation by Respondents**

| Reasons | Frequency | Percentage (%) |
|---|---|---|
| Availability | 139 | 52.86 |
| Accessibility | 81 | 30.80 |
| Affordability | 4 | 1.52 |
| Reliability | 13 | 4.94 |
| Comfortability | 14 | 5.32 |
| Convenience | 12 | 4.56 |

**Source: Field Survey, 2019**

Table 3 reveals that 52.86% of cripples choose mode of transport because of its availability. The result further shows that 30.80% of cripples choose mode of transport because of its accessibility only 1.52% of cripples choose mode of transport because of its affordability. Furthermore, 4.94% of cripples choose mode of transport because of its convenience. It pertinent to note that, available of transport mode is not enough if it is not affordable in which the financial cost of trips put individual can travel to where they want (Carruther, Malise and Saurka, 2005).

### 3.3 Modelling Mode Choice of the Respondents

In order to identify the factors that influence the mode choice of Cripples in Yola North Local Government Area, multiple linear regression analysis was used. It can be conceptualized that there are set of variables

Y= f (x1, x2, x3, x4, x5, x6, x7)

These can be expressed by regression equation as thus

Y= a+b1x1+b2x2+b3x3----------b7x7 + e

Where Y = dependent variable (mode choice)

X1= Sex

X2=Age

X3=Educational Level

X1, X2, X3----------Xn

To explain mode choice of Cripples in Yola North Local Government Area. This can be expressed as

X4=Occupation

X5=Income

X6=mode of transport

X7=Reason for Mode choice

a=Regression constant

b=bi, b2----------b7 regression co-efficient

e= the error term

The regression analysis was run using SPSS version 20.0 and the result is shown below:

**Table 4.0 Regression Result of Mode Choice of the Respondents**

| Dependent variable | Independent variables | Regression co-efficient | Level of significance | T-value |
|---|---|---|---|---|
| Mode choice | Constant | 6.328 | 0.001 | -2.005 |
| | Sex x1 | 0.277 | 0.005 | 1.671 |
| | Age (x2) | -0.465 | 0.474 | -3-168 |
| | Education (x3) | 0.119 | 0.010 | 0.721 |
| | Occupation (x4) | 0.240 | 0.020 | 1.687 |
| | Income (x5) | 0.497 | 0.643 | 2.524 |
| | Mode Transport (x6) | 0.078 | 0.003 | 0.471 |
| | Reason mode (x7) | 0.219 | 0.010 | 1.729 |

$R = 0.890$, $R^2 = 0.756$, Adjusted R = 0.556, Standard Error= 3.14374, F = 1.057, Sign F = 0.041
Source: Analysis, 2019.

The summary of the regression analysis shows that sex, age, occupation, income and reason for mode choice have statistical relationship with mode choice. These findings concurred with the earlier studies of Adekunle and Ganiyu (2014) in Ilorin Metropolis. The regression result shows that any change on these variables will result in shift in mode choice of the respondents. For instance, income only explain about 49% of the total variation in the dependent variables

.

Y=6.328+0.277x1+-0.465x2+0.119x3+0.240x4+0.497x5+0.078x6+0.219x7

The regression equation shows that these seven variables jointly account for about 76% variation on mode choice of Cripples in Yola North Local Government Area. Therefore, mode choice of Cripples in Yola North Government Area is found to be explained by variables of sex, age, educational level, income, occupation and types of mode of transport.

## 4. **Conclusion**

From the study, the following conclusion can be drawn. Cripples in the study area choose mode of transport without recourse to either comfort or affordability. The mode choice of Cripples in the study area is influenced by the variables of sex, age, occupation, educational level, income and types of transport. The study also found that Cripples choose from the following mode of transports bus, car, tricycles bicycles, wheelchairs and trekking. In order to address the problems of mode choice among Cripples.

## 5. Recommendations

The following recommendations were made:

i. There is urgent need for the government to enact transport policies that would emphasis on providing affordable mode of transports.

ii. Government should provide transport infrastructures with space in vehicles for wheelchairs

iii. Provision of aids at street crossings and reduction of high of bus stops to aid independent mobility of Cripples

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