International Journal of Economics, Commerce and Management
United Kingdom Vol. II, Issue 11, Nov 2014
http://ijecm.co.uk/ ISSN 2348 0386

'TRANSPORT MODE CHOICE IN YOLA METROPOLIS' EFFECTS OF INCOME INEQUALITY BY WAGE GROUP

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Abstract

The main objective of this study is to assess the degree of inequality in terms of the ability or inability of meeting-up the expenditure needs of the household, and especially movements around the metropolis, whether for emergencies or based on the known household budget at a point in time (monthly). Conclusions were based on analysis that a decline in EXPEN (expenses) is significantly important either due to an increase income source (may be the family has invested in some agricultural venture), it enables the family to increase SAVINS (savings and insurance) for unexpected expenditure. SAVINS (savings and insurance expenditure) affect the family's ability to save for the rainy day. FREQEX and ACCESS are not significant even though they may affect the household budget. We recommend increased public investment in mass transit, which has been abandoned or not efficient due to fiscal problems/corruption, should be rehabilitated for efficient service delivery, to include all categories of vehicular transport, and an upward adjustments in transport subsidy that favours low income groups.

Keywords: accessibility, transport mode, cost, household expenditure, income group

INTRODUCTION

The demand for transport services is derived from individual's desire to access various socioeconomic activities, and this decision is influenced by several factors, necessity, experience and current information about available type of transport modes. Access to affordable and reliable transportation allows people with constraint access to significant opportunities in education, employment, healthcare, housing, income generating ventures and participation in community life. Because our nation's investments in transportation infrastructure have disproportionately favoured cars and highways, those who cannot afford cars or do not operate vehicles often lack viable transportation options (AAPD, 2012). People with low wages and particularly in rural areas need accessible, affordable transportation options that create employment, health care, education, and community life within reach.

Over the years, and in keeping with Nigeria's transport policy of 2010, the promotion of equal access to transportation for people of the low-income group, including promoting improved accessibility in public transportation and substantial investment in accessible transit options and transit-oriented development. This has been short-lived due to several reasons, including maintenance cost and fiscal problems mostly experienced at sub-national governments. This has also resulted to limited public transportation investments.

One of the goals for increased accessibility in Nigeria is enshrined in the MDGs. Recently; most of the development agendas in Nigeria is tied to the MDGs. This global development strategy is evolved to raise the standard of living, empowering the most vulnerable and creating the basis for a takeoff, or the so-called late comers in development, depending on the stock and quality of infrastructure in the development process. Some of these developmental problems results, along policy making and periodical changes in the economy, for example, adjustments in petroleum prices which have impacts on transport prices and prices of goods and service. Apart from increases triggered by petroleum price change, access, road connectivity to health centers (facilities), educational institutions and markets affect the attainment of the millennium Development Goals (MDGs).

Accessibility is associated to types of modes because mode choice dictates cost of transport. The concept of transport modes is derived from the demand to access an economic activity. These are main reasons why transport economists are interested in the economic problems of moving goods and people (Button, L., 2010). This also includes the cost; that is why most national transport policy (including Nigeria's transport, 2010).

The objective of this study is to examine various income groups' ability to access affordable transportation in Yola metropolis.

Background of Yola Metropolis

Yola is the capital of Adamawa state and located in the Northeast geopolitical zone of Nigeria. There are eleven wards in Jimeta - the metropolitan capital of the state. These wards are Jambutu, Doubeli, Nassarawo, Luggere, Karewa, Yelwa, Limawa, Alkalawa, Gwadabawa, Rumde and Malamre ward. Labour force participation is drawn from these wards. Modes of transport in this location includes buses (about 50%), taxi services have been low over the years (about 5%) available only in Jimeta and Yola towns. During the state of emergency (2009), significant adjustments in transportation around the metropolis has been a motorcycle (kekenapep – about 35%), and private transportation, about 25%. Over the years, significant changes occurred in residential mobility that changed the transport structure of the metropolis. Spoken languages in the metropolis are Fulbe, Hausa, English and more than a hundred other languages.

An important feature of Yola is its geological features. It is traversed by river Benue, Gongola and Yerdseram. The valleys of Cameroon, Mandara and Adamawa mountains form part of its beautiful landscape. Adamawa state is tagged as the “land of beauty”.

Rest of this paper is structured as follows: section 2 is a literature review, section 3 data and method and section 4, conclusion and recommendations.

Hopefully, this paper will achieve the following: the harmful effects of income inequality and sustainability of transport policy for sub-national government to reveal various constraints peculiar to the wards in the metropolis, and the survey of the household budgets, with different classification of income groups.

LITERATURE REVIEW

Transport modes

Transport modes are concerned with different means of transportation. In this study, only modes of land transport are considered. Even though, modes related to water transport are used in some wards. These are limited to small agricultural activities (fishing and farming). The primary transport mode is land based. Below are land related modes in the metropolis (Figure 1.1)

Road Transport is one of the most-important modes of transportation in Yola. Land related transports are the Vehicular Transport (Cars, Trucks, Buses, Lorries, motorcycles (achaba), and Hand Carts etc.) and Non-vehicular Transport (Animals: cows, donkeys, horses, Mules etc.). In some parts of the Yola, pathways are essential for many low-income groups and those located in remote villages that transport agricultural products to market in the metropolis and other individuals who cannot afford bus fare. A dominant tribe around the metropolis are

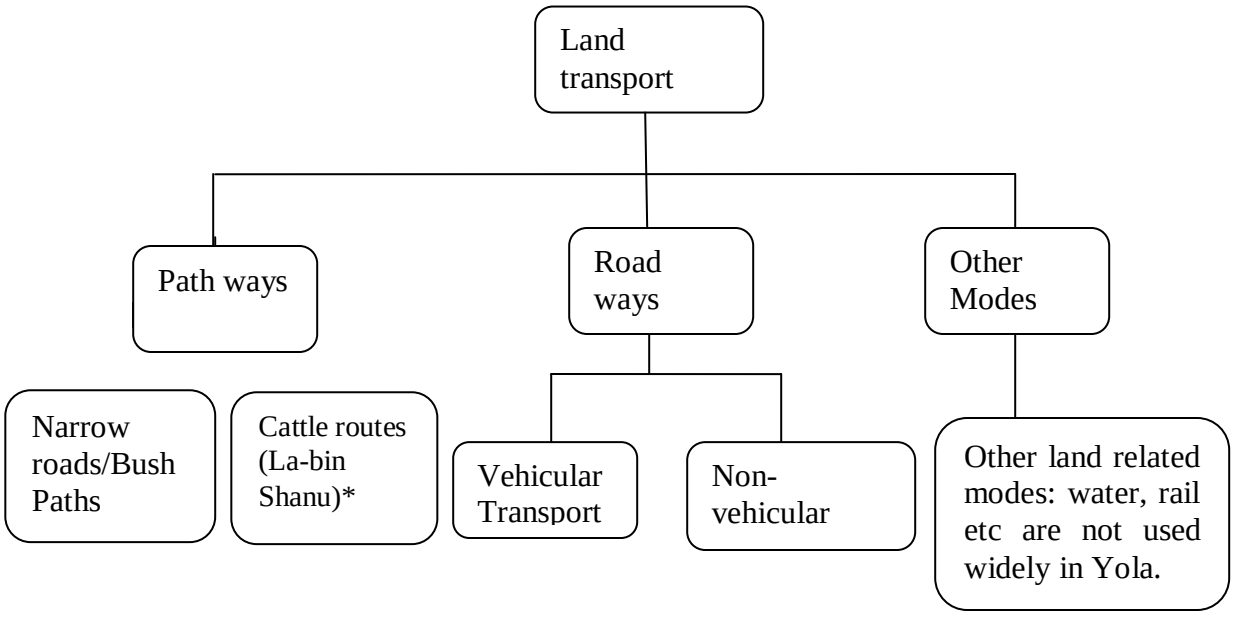
Fulani cattle herdsmen, who use pathways to either come to the metropolis for one reason, or another – sometimes to treat their animals, milk sales by Fulani women, etc.

Roadways are relevant to the socioeconomic life of the population of Yola metropolis. In most words, motorcycle transport has been banned due to the crisis in the three states. Other wards are allowed to use motorcycles but mostly restricted to Jimeta town, the administrative headquarters of the Adamawa state. Transportation by bus is the most-dominant mode apart from private transport. Prices of various transport modes fluctuate mainly with changes in the prices of oil (fuel). Other factors that determine changes in transport prices occur due to crisis eruption at different times in the state.

Accessibility issues

Accessibility according to Bocarejo and Oviedo, (2010), occurs in three dimensions – real accessibility as the mode used to travel between destinations, cost and time of travel, it also makes provision for the economic units (household) real incomes of such units. The standardized accessibility is defined to make specifically estimate of travel time and cost, say one hour a day and an expenditure of 7%-9% spent on personal income.

Figure 1 Modes of Land transport in Yola



Source: http://www.shodhganga.inflibnet.ac.in/bitstream/10603/705/9/09

** Bush roads earmarked as cattle routes by local authorities in Northern Nigeria.*

Desired conditions for accessibility – research the effects of homogeneous budget constraint as applied to different income groups that characterized such transport demand. Each of these has consequences on access, price and modes of transport.

Income inequality

Problems of income inequality have been an age old research issue by economists for a long time and date back to as far as Adam Smith era. For instance, “It is unjust that the whole of society should contribute towards the expense of which the benefit is confined to a part of the society.” (Smith, 1776). Over the years, this trend continued for many decades. Karl Marx viewed this groupings or classes in the society. He commented: “the capitalist bourgeoisie mercilessly exploited the proletariat." In Africa and most parts of the world, these gaps still exist. Income inequality and other socioeconomic factors Nigeria, including income inequality, have resulted into frequent demands for an increase in wages in Nigeria (Haggard and Webb, 1993). The approaches in above mentioned cases are parallel with wage income, but the common denominator is on differences in earnings from a paid job, as in the case of Karl Marx’s bourgeoisie and proletariats that existed. Another popular measure of income inequality is done through the Gini index, which is constructed by summing income differences, expressed as a ratio to the mean, across all individuals in a population and then dividing it by the number of people. This measure has an intuitive interpretation: if two individuals are drawn at random, then the expected difference in their incomes, normalized by the mean, will be equal to twice the Gini index.

These trends were the starting point to what has become an enormous empirical and theoretical literature seeking to measure and explain changes in wage inequality (Katz and Murphy, 1992). Since wages are a major part of people’s income and economic well-being, an increase in wage inequality feeds through to income, consumption and poverty rates. In Nigeria, the differences in incomes from different sources are measures to average social welfare, the ability to access transportation modes and suitable means to various inequalities that exist in the Nigerian society. There are various arguments about causes of such differences, for instance, the educational wage differentials - measured as the gap in pay between skilled and unskilled workers. The concern of this study is to assess how such wage differentials have facilitated the ability of individuals to move to economic activity locations with a smaller percentage of their incomes spent on transportation in a month. This is important because we have already stated above that the major part of people’s income and economic well-being depended on their types of income. In Nigeria, corruptions and absenteeism in the civil service has roots in the drive for extra income and societal/cultural requirements of the Nigerian society,

is springboard for increased in these vices. Some of the problems associated with differences in incomes as a result corruptions or related aspects was to be 'remedied' by the Economic and Financial crime Commission (EFCC) but this has not solved the complex problem of corruption in Nigeria and the 'gulf' of income inequality.

METHODOLOGY

Data was collected from the eight wards of Yola metropolis by questionnaires administered to 280 respondents. Respondents for this study are chosen through stratified sampling method. The grouping this case is selected wards. Data is related to types of modes, costs, changes in income due to several factors and other related issues. Questionnaires were administered to 300 respondents; 280 were returned, thus achieving about 93 percent mark.

The methodology used for data analysis is the multinomial marginal effects model, since the concern of this study has to do with choice of modes and cost of accessibility of individuals from the sample wards as shown on figure 2. Frequency is measured in percentages of access for sampled areas and the significance of transport to an area. It also defines affordability factors. Sangere and Yola towns are where bulk of the civil servants, businessmen (including academic class and students due to the location of two universities, a Federal Medical Centre, Polytechnic, etc.) are located.

Figure 2: Sample wards of Yola Metropolis

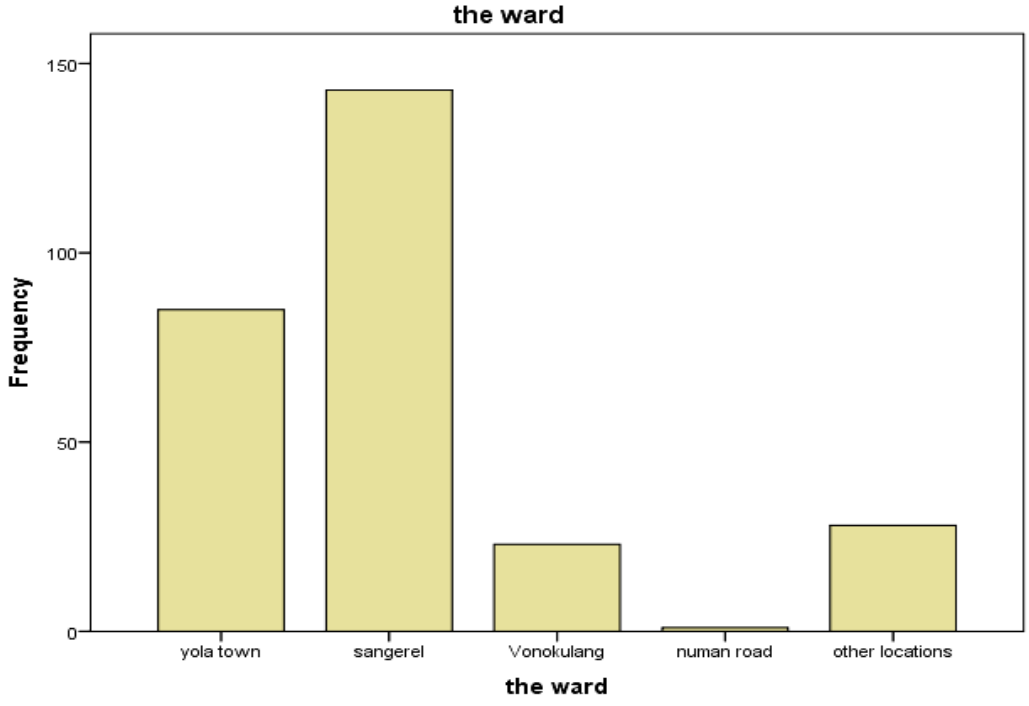
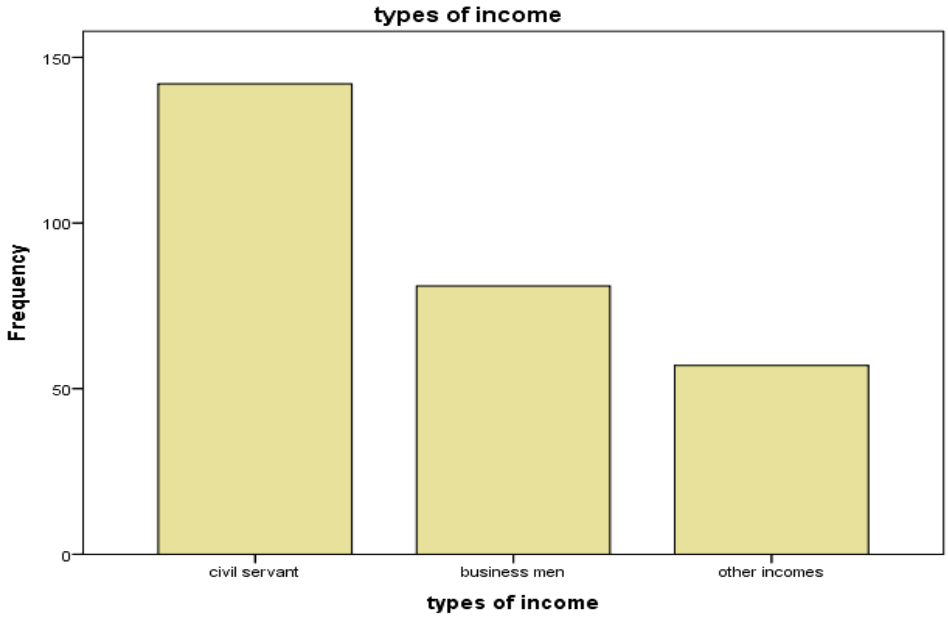


Figure 3 shows income groups – civil servants with the highest percentages, not in terms of income differentials, but that most civil servant form the bulk of the survey in Yola metropolis.

Figure 3: Income categories



To determine the effect of a unit change in the value of some attributes, transport price, modes selection, etc, we use the multinomial logit, one of the models of discrete choice models: $Pr(y = j|x_i) = \frac{exp\left(\boldsymbol{\beta}'_j \boldsymbol{x_i}\right)}{\sum_{j=1}^{J} exp\left(\boldsymbol{\beta}'_j \boldsymbol{x_i}\right)}$, $\times$, β. Where $\times_i$, vector of characteristics specific to the jth individual, and β_j is a vector of coefficients respectively. The multinomial logit model shows each response probabilities once we know the probabilities for j=1 ...j

The multinomial marginal effects measure the $\Delta y/\Delta x$ (changes in mode choice as per various locations of the wards in Yola metropolis, affected by the predictors, x_i). Several changes had occurred in Nigeria over the years, especially the familiar fuel subsidy that 'without warning' had affected the transport price. This affects the choice of mode or route to a desired location and had introduced inequality in accessibility overtime. Marginal effects in Multinomial logit (MNL) analysis can be performed to observed the effect of change as a result of a unit change: $\frac{\partial p_{ij}}{\partial x_i} = p_{ij}(\beta_j - \beta_i)$, where the estimated $\beta_i = \sum_l p_{il} \beta_l$ is the probability of weighted average of $\boldsymbol{\beta}_l$ and the marginal effects vary with the point of computation of any one predictor because P_{ij} varies with the predictor (xi,), the marginal effect is positive if $\beta j > \beta^{-}i$. Thus, βj is the marginal change in log odds with respect to x_1, the higher the probability, the more likelihood of occurrence.

RESULT AND DISCUSSIONS

Table 1 shows the computation of the marginal effects. This is done after the multinomial logit has been computed using stata software. The data shows four explanatory variables – EXPEN (level of fixed level of known monthly expenditure – the household budgeted amount for the family in a month), FREQEX (frequently occurring cost which may not be budgeted but occurs periodically for instance, increase in bus fares, unexpected health expenditures, emergency expenditure (frequently occurring conflicts in the region as a results of religious crisis – for instance the Boko Haram sect in the Northeast geopolitical region (Yola metropolis is the capital state of Adamawa state, a state in the region). There are also frequent residential movements from one location to another in Yola; this is as a result of increasing religious divides and religious intolerance amongst the population of the metropolis. EXCESS (ability to access transport modes in the metropolis due to the constant increase in petrol prices and other factors, SAVINS (savings and insurance expenditures of the family to provide for the unexpected expenditures. Note that MODES is the base category and dependant variable.

In this section, we evolve two major approaches to take into cognizance when evaluating multinomial marginal effects: first is the point of evaluation, and secondly the significance of the predictors of the study. Table 1 show that EXPEN and SAVINS are both significant at 5 percent. EXPEN, the amounts budgeted for monthly expenditure, is significant at 5 percent. It means that for every month (the point in time), a decline in EXPEN as increased income source (may be the family has invested in some agricultural venture), enables the family to increase the SAVINS (savings and insurance) for unexpected expenditure.

Table 1: Marginal effects of outcome probabilities
Mode choice in Yola Metropolis

Explanatory Variables	Coefficient (∆y/∆x)	Std err	P-Value (∆y/∆x)	[95% CI]	
EXPEN	-.00414	.00188	0.028**	-.007826	-.000453
FREQEX	.00056	.01	0.955	-.019047	.020169
ACCESS	.00090	.02015	0.964	-.038593	.040407
SAVINS	-.08451	.03594	0.019**	-.154949	-.014079

*p<0.1, ** p<0.05, *** p<0.001

On the other hand, a fall in SAVINs (savings and insurance expenditure) affects the family's ability to build a 'guard' for unexpected expenditure, especially children's education, an important household budget item.

FREQEX and ACCESS are the subheads that affect levels of inequality of income groups and ability to access various transportation modes in Yola metropolis, which are not significant. There various studies that indicates that less developing countries (including Nigeria) are subject to chronic inflation (Adamson, 2000; Owoye and Onafowora, 2007; Ezeabasili and Mojekwu, 2012) and high cost of democracy has introduced erratic and a volatile Naira value. The household, especially low-income earners have been affected by this trend. Periodic changes in both the Naira value and prices of petrol in Nigeria have added lack of accessibility for individuals. Other factors that affect the purchasing power of the Naira are current trends in the location of Yola. For instance, residential location problems of families have added insecurity to the populous, especially the case of the advancing Bok Haram sect (Like the ISIS in Syria and Iraq that had affected many families). In such situations, no provisions are made, and as such, it introduces difficult adjustment to the family budget.

The arguments that FREQEX and ACCESS are not significant even though they may affect the household budget is because these variables are difficulty and measurement parameters are dynamic (depending on situations on ground), whether this type of expenditure occurring or the immediate needs of the family in periods that every expenditure is essential for the household, for residential movements needs, essentials of the family (security) and a wide range of expenditure needs, makes it an uphill task to keep up with immediate transportation requirements in the metropolis.

CONCLUSION AND RECOMMENDATIONS

The main objective is to access the degree of inequality in terms of the ability or inability of meeting-up the expenditure needs of the household (shown table 1), and especially movements around the metropolis, whether for emergencies or based on the known household budget at a point of time (monthly).

Conclusions were based on analysis that a decline in EXPEN is significantly important either due to an increase income source (may be the family has invested in some agricultural venture), it enables the family to increase the SAVINS (savings and insurance) for unexpected expenditure. On the other hand, a fall in SAVINs (savings and insurance expenditure) affects the family's ability to build a 'guard' for unexpected expenditure, especially children's education, an important household budget item, which also included transportation needs in a volatile environment.

The study recommends that increased public mass transit by government, which has been abandoned or not efficient due to fiscal problems, should be rehabilitated for efficient service delivery, to include all categories of vehicular transport, and an upward adjustments in transport subsidy that favour low income groups.

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