

Adedotun, Samuel Babatunde; Tanimowwo, Nurain Bola; Ibrahim, Rafiu Babatunde

Article

A study of socio-economic characteristics of the urbanities and their travel pattern in Nigeria

Economic and Environmental Studies (E&ES)

Provided in Cooperation with:

Opole University

Suggested Citation: Adedotun, Samuel Babatunde; Tanimowwo, Nurain Bola; Ibrahim, Rafiu Babatunde (2017) : A study of socio-economic characteristics of the urbanities and their travel pattern in Nigeria, Economic and Environmental Studies (E&ES), ISSN 2081-8319, Opole University, Faculty of Economics, Opole, Vol. 17, Iss. 4, pp. 831-848, <https://doi.org/10.25167/ees.2017.44.12>

This Version is available at:

<https://hdl.handle.net/10419/193045>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

A Study of Socio-Economic Characteristics of the Urbanities and Their Travel Pattern in Nigeria

Samuel Babatunde ADEDOTUN

Department of Urban and Regional Planning, Osun State University, Osogbo, Nigeria

Nurain Bola TANIMOWWO

Department of Urban and Regional Planning, Ladoko Akintola University of Technology, Ogbomoso, Oyo State, Nigeria

Rafiu Babatunde IBRAHIM

Department of Urban and Regional Planning, Osun State University, Osogbo, Nigeria

Abstract: This study, examined the relationship between socio-economic characteristics of the urbanities and their intra-urban mobility patterns in and across six selected cities in Osun State, Nigeria. Primary source of data for this work is the households across the cities studied. Instruments of data collection were focusing group discussion and questionnaire administered on the urban residents to investigate the socio-economic characteristics of the households and their travel patterns. Stratified sampling technique was employed to select two cities each from large, medium and small urban centres in Osun State. One percent (2133) of the households in the selected cities was systematically and randomly sampled for data collection. The resulting data were descriptively and inferentially analyzed using tables, percentages and multiple regression analysis. Analysis reveals a positive relationship between the socio-economic and travel pattern of urbanites in the cities. The study shows that about 92.5% of the variability in the observed travel pattern is explained by the socio-economic characteristics of urban residents. The study concluded with the suggestion that urban planning must be done in such a way that it will enhance effective travel pattern within and among different socio-economic groups.

Keywords: Socio-economic characteristics, urbanites, travel pattern, Osun State

JEL codes: O18, R4

<https://doi.org/10.25167/ees.2017.44.12>

Correspondence Address: Samuel Babatunde Adedotun, Department of Urban and Regional Planning, Osun State University, Osogbo, Nigeria. Tel.: +234 8033827092. Email: samuel.adedotun@uniosun.edu.ng. Nurain Bola Tanimowwo, Department of Urban and Regional Planning, Ladoko Akintola University of Technology, Ogbomoso, Oyo State, Nigeria. Tel.: +234 8033588983. Email: tanimoowo1@yahoo.com. Rafiu Babatunde Ibrahim, Department of Urban and Regional Planning, Osun State University, Osogbo, Nigeria. Tel.: +234 8104294271. Email: rafiu.ibrahim@uniosun.edu.ng.

1. Introduction

The issue of transport mobility cannot be over emphasized in our modern society. It enables individuals to participate in activities, to earn a living, to supply their basic needs, to relax and recreate and to develop and maintain social bands (Snellen, 2001). Mobility is equally important for economic development, exchange of knowledge, ideals, experience, and culture. According to Rodrigue (1998), urban transportation is organized in three broad categories of collective, individual, and freight transportation. Collective Transportation (public transit) is to provide publicly accessible mobility over specific parts of a city. It has to do with transporting large numbers of people and achieving economies of scale. Individual transportation includes any mode where mobility is the outcome of a personal choice and means such as the automobile, walking, cycling and the motorcycle. Freight Transportation is characterized by delivery trucks moving between individual, distribution centres, warehouse and retail activities as well as from major terminus such as ports, rail yards, distribution centers and airports.

Rapid urban development occurring across much of the globe implies increased quantities of passengers and freight moving within urban areas. Movements also tend to involve larger distances as the cities developed or grow. This means that commuting has gradually shifted to faster transport modes and consequently greater distance could be traveled within a short time (Ibrahim, 2012).

Evidences abound that households' socio-economic characteristics affect travel behaviour of urbanites across the globe (Tanimowo, 1996; Tanangsnakol, 2011; Muili, 2013). Most of the studies however, focused on a single city thereby ignoring the much desired variation in the phenomenon between cities. This study intends to fill this gap by examining the relationship between socio-economic characteristics of urban households and frequency of trips generated by different activities purposes in Osun state, Nigeria. While some of the previous studies had affirmed that socio-economic variables have relationships with urban mobility pattern, most of the studies examined only relatively few measures of mobility pattern ignoring the importance of interrelating variables. Moreover most of the secondary and fast growing cities have been neglected (Solanke, 2005) or assumed not to have mobility problems. However most of these cities in Osun State such as Osogbo, Ilesa, Iwo, Ikirun, Ila-Orangun, Ejigbo are already showing serious bottlenecks in their travel system.

A STUDY OF SOCIO-ECONOMIC CHARACTERISTICS OF THE URBANITIES AND THEIR TRAVEL PATTERN IN NIGERIA

The cities selected for this study in Osun State, Nigeria is an attempt to extend the frontiers of knowledge in urban transport mobility studies reflecting on the hierarchy of urban system and considering different variables of urban travel pattern, socio-economic characteristics of the urbanites and their effects on the observed commuting structure of the inhabitants.

2. Literature Review

It has been found that the socio-economic characteristics of households and individuals, level of transport infrastructure development, religion, culture, government policy, city structure and location of households within the city among others affect households travel behavior (Fadare, 1989, 1992, Stephen et al., 2012 and Solanke 2014). Studies in the developed world have demonstrated that residential density or location has positive effect on trip rate, trip length and mode of travel of households of individuals (Aguilera et al., 2009; Aditjandra et al., 2010 and Richwood and Glazebrook, 2009).

The analysis of travel behaviour in Uppsala by Hanson, (1982) indicates that age, income, gender and car ownership have a clear impact on household's travel behavior. Further studies also revealed that people with higher incomes make more vehicular trips, undertake more social trips, travel greater distances and visit more shopping areas in a weekday (Tardiff, 1975, Badejo 2011 and Nass et al., 2011). Though works based on Nigeria residential density and travel behavior is very scanty, the works of Ayeni, (1975) in his studies of Jos, Fadare, (1989) in the studies of Ibadan and Fadare and Alade, (2009) in the study of Lagos revealed that residential density has a positive effect on trip rate of households in those places. These studies also confirmed that the higher the income, the higher the number of vehicles per household. Ewing and Cervero, (2010) noted that three quarter of the poorest in USA own a car. A comparative study of car ownership in USA and Britain noted that nearly one-third of Britain households have one car unlike only 8% of American households, also that 60% of the USA sample households have two or more cars. The study also revealed that 90% of person trips in the USA are made in private vehicle as against 62% in Great Britain. In excess, increases in number of cars per household have significant impacts on travel in that culture (Akindele et al., 2014). In the study of Lagos, Fadare and Alade, (2009) maintained that income and car ownership variables are significant in both the medium and low-density areas expressing the status structure of the people in Lagos.

In Netherlands, according to Schwanen et al., (2001) household type is clearly a major factor in the distance of individual travel. Here, two employed couple travel longer distance per day than families where at least a member is not formally employed. Adetunji and Aloba, (2013) and Samson, (2012) also noted in their various studies that age and sex showed a significant influence on the individual and household trip length to activities on a weekday. It is shown that women's work trip are shorter than those of men due to differences in work place location. The study claimed that women are more likely to take job from nearby employers to reduce traveling time to facilitate their traditional household responsibilities more than anything else. Fadare and Morenikeji (2001) notes a gender bias in Niger state as indicated by the overall statistically significant higher mean trip rate of men 4.6 against women 3.9 in Zaria, Nigeria. Westford (2010) found that self-employed trip makers make shorter trips than those in regular employment, because many self employed people here locate within close proximity to their homes. Also in Zaria income is found to influence trip length considerably because low-income groups cover shorter distances from most weekday activities.

3. Conceptual Issues

Concepts of spatial interaction

Urban travel pattern constitute a form of spatial interaction. This is due to the area differentiation in land uses and activities such as working, Schooling, shopping, recreation etc. There have been many models on diffusion studies; commuting, transportation and immigration, which are based on the understanding of the concept of spatial interaction. The concept has been variously defined but all definitions tend to agree with Ewing and Cervero (2001) that it is the movement and mobility of things, ideas, goods and people between spatially separated parts or places. Ullman (1996) gave three conditions, which are called Ullman's triad. They provide answers to the question on why people move. These three conditions as outlined by Ullman are Regional complementarity, Intervening opportunity and spatial transferability.

Regional complementarity is largely created by area differentiation in the availability of resources; goods and services. This results in different area being able to provide different goods and services. Thus, some areas have advantages in rendering certain services and production of certain goods over others. Hence, spatial phenomenon provides the basis for spatial interaction

between two areas. Therefore, there must be a demand in one place and the supply at another place before spatial interaction takes place. In essence, it is the complementarity of supply and demand that brings about movement and interaction.

However, complementarity generates interaction between two areas only in the absence of intervening opportunity. This is the occurrence of alternative supply or demand for goods and services between two areas concerned. According to Rodrigue (1998), intervening opportunities are spatial sponges soaking up potential interaction between complementary areas.

Finally, transferability is the constraints imposed on movement of people, goods and services. It is generally measured in time and money cost. According to Ullman (1996), if the time and money costs of traversing a distance are too large, movement to such point will not take place despite perfect complementarity and the absence of intervening opportunities. This may result in area or products substitution.

This theory offers some explanations to the issue of spatial interaction in urban centers. The day-to-day movements of people which involve activities such as trip making to and from places of work, recreation, market and health institutions are important in the spatial pattern of cities. The movement pattern of the urban residents is the function of the spatial separation of points of origins and destinations as well as the characteristics of the movers (Oyesiku, 2003). Even though the characteristics of the movers are not inclusive in the theory, yet it provides some explanations on why interactions take place in space (Solanke, 2005). However because of the theoretical nature of the theory, it cannot be used in transportation planning and forecasting. It however forms a springboard from which a leap into a more satisfactory framework could be made (Solanke, 2005).

4. Materials and method

Osun State is located between Latitudes $7^{\circ} 30' N$, Longitudes $4^{\circ} 30' E$ and Latitudes $7.5^{\circ} N$, Longitude $4.5^{\circ} E$. According to the 2006 population census, Osun state population was three million, four hundred and sixteen thousand, nine hundred and fifty nine (3,416,959) people. The state currently has thirty local governments. The state lies in the south -western part of Nigeria and shares boundary with Kwara in the North, Ekiti in the East, Ondo in the South East, Ogun in the South

and Oyo in the West. The state is an inter-land state and one of the most urbanized states in the country (Adedotun, 2014).

Table 1. Population and Sample size of Selected Cities in Osun State

S/N	Cities	1991 Census Report	Estimated year 2012 Population	Estimated Households Based on 5 per household	Sample size
1	Osogbo	183,223	355,021	71,004	710
2	Ilesa	139,445	270,195	54,039	540
3	Iwo	91,791	177,858	35,572	355
4	Ikirun	57,354	111,132	22,226	222
5	Ila- Orangun	45,401	87,971	17,594	175
6	Ejigbo	34,047	65,971	13,194	131
	Total	551,261	1,068,148	213,629	2,133

Sources: Author's computation (2016).

Table 1 shows the estimated households and sample size of households for questionnaire administration across the cities studied. Two thousand one hundred and thirty three (2,133) households were surveyed. In each of the residential density areas surveyed, the numbers of streets were identified and random selection made. On each of the streets selected, a systematic random sampling technique was employed to select each housing unit in one of every 20th buildings. In each of the building selected only one head of the household was selected for questionnaire administration.

The descriptive techniques such as percentages, frequency tables, cross-tabulations (with chi-square test) and means were used to describe the extent to which the socio-economic characteristics of the urbanites can be used to explain their intra-urban travel patterns. Multiple Regression Analysis was employed to test the assumption that there is no relationship between the socio-economic characteristics of urban residents and their travel pattern. .

5. Findings and Discussion

This study examines socio-economic characteristics of the urbanites and their travel pattern in Osun State, Nigeria. Data on respondents' socio-economic characteristics and their movement patterns were obtained from 2,133 randomly selected household. The socio- economic variables considered

A STUDY OF SOCIO-ECONOMIC CHARACTERISTICS OF THE URBANITIES AND THEIR TRAVEL PATTERN IN NIGERIA

in this study are: gender, age, education, occupation, marital status, monthly income, vehicle ownership and numbers of vehicle per households. There is no doubt that these socio-economic variables have strong influence on man's knowledge, attitudes, and perception of issues generally (Adeboyejo, 1998). Elements of mobility pattern considered in this study are the trip purposes which are: works, shopping, schools, religion, social, recreation and others. Study on Trip purpose is so important in the sense that it sharpen our understanding of the preponderance of services/activities that people make most. This will no doubt informed policy directions on the priority of services provision required in the city.

5.1. Socio-economic characteristics and Trip purposes

The status of human being in terms of gender, age, marital status, education, occupation and income is what considered as their socio-economic characteristics. Moreover, people tends to move in order to obtain access to a variety of other people's services and facilities that are not available at the origins of their journeys. These services and or activities like work, shopping, school, religion, social, recreation etc., according to Jones (2003) is referred to as trip purpose. Thus, studies in urban transport were however suggests that there is a link between peoples' socio-economic characteristics and the trip purpose they make.

Gender of respondents and frequency for trip purposes

Table 2 reveals that 38.11% of the male respondents made their trips to works, while 36.86% of the female respondents made their trips to works. The study further reveals that 30.47%, 21.43%, 5.57%, 2%, 1.24% and 1.18% of male respondents' trips are for school, religion, shopping, recreation, social and others respectively. On the other hand, female trips purpose reveals that 30.31%, 20.69%, 5.6%, 4.5%, and 1.95% are for school, religion, others, shopping, and social respectively. The analysis reveals that there is no significant percentage difference in the trips made to school, religion and shopping by the male and female respondents. The study also reveals that females are more involved in other trips such as visitation and grocery compared to males. This could be as a result of women's involvement in domestic trips compared to men in the study area.

Table 2. Gender of respondents and frequencies of trip purposes

Gender	Work (%)	Shopping (%)	School (%)	Religion (%)	Social (%)	Recreation (%)	Others (%)	Total %
Male	38.11	5.57	30.47	21.43	1.24	2	1.18	91
Female	36.86	4.55	30.31	20.69	1.95	0	5.64	9
Total	38	5.5	30.5	21.3	1.3	1.8	1.6	100

Source: Field works, 2016

Age of respondents and trip purposes

Table 3 shows the age range of the respondents and their trips purposes. The analysis reveals that respondents below the age of 30years made 9.9% of the total trips in the study area, respondents between the ages of 31-40years made 11.5% of the total trips, while 55.8% of the trips were made by respondents between age 41-50years. Another 20.7% of the trips were made by respondents between age 51-60years, while only 2.1% of the trips were made by the respondents above 60years of age. The analysis shows that respondents within the official working age in Nigeria make more trips than the aged and the youth in the study area.

The study however shows that irrespective of the age bracket bulk of the trips were made to works, followed by school and religion centres, while others trips purpose came far behind. The study further reveals that respondents below 40years and those above 60years, works trip constituted bulk (45%) of their trips, while other trips purpose constituted bulk of trips made by respondents between 40 and 60 years of age.

Table 3. Age of respondents and trip purposes

Age(years)	Work (%)	Shopping (%)	School (%)	Religion (%)	Social (%)	Recreation (%)	Others (%)	Total (%)
<30	49.6	4.9	17.2	17.2	3.3	5.6	2.3	9.9
31-40	46.1	7.4	24.5	15.4	1	0.9	4.7	11.5
41-50	33.7	5.8	34.9	22.1	1.1	1.1	1.4	52.8
51-60	38.6	3.9	29.7	23.9	1.2	2.7	0	20.7
61 above	47.2	4.8	15.8	29.1	1.2	0.4	1.5	2.1
Total	38	5.5	30.5	21.3	1.3	1.8	1.6	100

Source: Field works, 2016

A STUDY OF SOCIO-ECONOMIC CHARACTERISTICS
OF THE URBANITIES AND THEIR TRAVEL PATTERN IN NIGERIA

Educational status of respondents and trip purposes

The study shows that 3.3% of the trips were made by the respondents that had no formal education, 2.6% by the respondents with primary education, and 9.3% by the respondents with secondary education. It could also be noted that only 2.2% of the trips were made by the respondent that have National Certificate of Education or National Diploma Certificate. However, most of the trips (55.1%) were made by the respondents with Higher National Diploma or Bachelor Degree followed in decreasing order by respondents with Post Graduate Certificates (27.5%). It was observed from the report on Table 4 that most of the trips were made by the people who are well educated.

Table 4. Educational statuses of respondents and trip purpose

Education	Work (%)	Shopping (%)	School (%)	Religion (%)	Social (%)	Recreation (%)	Others (%)	Total (%)
None	46.3	2.2	21.4	24.6	0	5	0.5	3.3
Pry. Sch.	46.6	0.8	14.9	31.8	4.8	0.6	0.5	2.6
Sec. Sch.	42.4	7.2	32.4	17.3	0.11	0.24	0.33	9.3
NCE/ND	55.95	12.12	3.09	11.44	3.71	7.42	6.18	2.2
HND/BSc.	37.73	4.13	29.65	23.86	1.12	2.07	1.44	55.1
PG	33.75	7.88	36.2	17.18	1.7	1.15	2.14	27.5
Total	38	5.5	30.5	21.3	1.3	1.8	1.6	100

Source: Field works, 2016

Occupational categories of respondents and trip purposes

This is another crucial socio- economic status of the people that could affect the frequency of the trips made for various purposes in the study area. However, Table 5 shows the occupational distribution of respondents in relation to the number of trips they made for various purposes per week in Osun State, Nigeria. It was observed in Table 5 that 55.1% of the trips were made by the respondents in the public sector occupational category. This is followed by the respondents in the private sector category with 22.2%. The respondents who are self-employed accounted for 18.5% of the trips, while the retired and the unemployed categories of the respondents made 2.6% and 1.6% of the trips respectively.

Table 5. Occupation categories of respondents and trip purpose

Occupation	Work (%)	Shopping (%)	School (%)	Religion (%)	Social (%)	Recreation (%)	Others (%)	Total (%)
Public Sector	35	6.1	30.3	23.4	1.9	2	1.3	55.1
Private Sector	39.2	4.2	36.5	15.4	0.6	2	2.1	22.2
Self Employed	43.2	5.8	25.7	23.5	0.06	0.8	1	18.5
Retired	48.5	3.6	22	15.2	0	5.1	5.4	2.6
Unemployed	50.8	1	21	17.3	7.3	0.7	2	1.6
Total	38	5.5	30.5	21.3	1.3	1.8	1.6	100

Source: Field works, 2016

Marital status of respondents and frequency for trip purposes

Analysis of data shows that most of the trips (83.1%) for various purposes were made by the married respondents. Followed far behind are the single respondents who made 11.7% of the trips. It was found that 2.7%, 2.1%, 0.4% of trips was made by the divorced, widowed(er) and separated respondents respectively. There is a close percentage similarities in the frequency of trips made for works, schools and religion purposes by the single and married urbanites on Table 6.

Table 6. Marital status of respondents and trip purpose

Marital Status	Work (%)	Shopping (%)	School (%)	Religion (%)	Social (%)	Recreation (%)	Others (%)	Total (%)
Single	38	5	29.6	20.4	2	1.5	3.5	11.7
Married	39	5.6	29.4	21.7	1.1	2	1.2	83.1
Divorced	25.5	3.7	46.9	18.7	2.1	0.4	2.7	2.7
Widowed	18.7	7.2	54.9	15.1	1.8	0	2.3	2.1
Separated	15.4	3.1	28.8	20.8	19.6	0.8	11.5	0.4
Total	38	5.5	30.5	21.3	1.3	1.8	1.6	100

Source: Field works, 2016

Monthly incomes of respondents and trips purposes

The monthly income group of respondents is another socio-economic parameter which influences the number of trips made by the households. Table 8 shows that most of the respondents in the monthly income group of ₦61, 000- ₦80, 000 made 50.8% of the trips in the study area. This is followed by the monthly income group of ₦81, 000- ₦100, 000 with 18.4% of the trips. Most of

A STUDY OF SOCIO-ECONOMIC CHARACTERISTICS
OF THE URBANITIES AND THEIR TRAVEL PATTERN IN NIGERIA

the respondents (58.3%) within the low income groups' of less than #20,000 per month respondents made school trips, followed by work trips (32.2%). Within the income groups of #21,000-#40,000, 38.5% made work trips, 27.7% made school trips, and 21% made religion trips. Another 47.6% of respondents' earnings between #41,000- #60,000 per month made work trips, followed by school trip 28.1%. In addition, 40% of respondents within the monthly income group of #61,000-#80,000 made work trips, 29.7% made school trips, while 17.6% made religion trip. Similarly, most of the trips (47.2%) by the monthly income group of #81,000-#100,000 were made to work, 35.1% to religion and 24.5% to school. Unlike other income groups, most of the trips made by the income group of above #100,000 were made to school (37.2%). This is followed by religion trips with 32.9% and with work trip of 23.8%.

Table 7. Monthly incomes of respondents and trip purpose

Income('000) Naira	Work (%)	Shopping (%)	School (%)	Religion (%)	Social (%)	Recreation (%)	Others (%)	Total (%)
<20,000	32.2	0.06	58.3	8	0.2	0.06	1.2	5.2
21-40	38.5	5	27.7	21	1.3	5.1	1.5	8.8
41-60	47.6	5.3	28.1	13.4	0.26	1.1	4.3	9.4
61-80	40	7.3	29.7	17.6	1.7	1.9	1.7	50.8
81-100	47.2	4.4	24.5	35.1	0.8	0.3	0.2	18.4
Above 100	23.8	0	37.2	32.9	1.8	3.4	0.9	7.4
Total	38	5.5	30.5	21.3				100

Note: ₦350.00 (Naira) = \$1.00 (Dollar)

Source: Field works, 2016

Vehicle ownership of respondents and trip purposes

Another socio -economic characteristic of households considered in this study is the ownership of vehicle. Table 8 shows that 69.9% of the trips were made by households with ownerships of vehicles while the remaining 30.1% of the trips were made by the households without vehicles. The analysis shows that motorization of the study area is very high with the high significance impact on the frequency of trips made for various purposes in the study area. The study further reveals that 38.4% of the respondents with ownership of vehicles trips were made to work, 30.2% were made to school, and 21.2% were made to religion places. Similarly, respondents without vehicle ownership, 37.1% made work trips, 31% made school trips, 21.8% religion trips.

Table 8. Vehicle ownerships of respondents and trip purpose

Vehicle ownership	Work (%)	Shopping (%)	School (%)	Religion (%)	Social (%)	Recreation (%)	Others (%)	Total (%)
Yes	38.4	5.6	30.2	21.2	1.3	1.8	1.5	69.9
No	37.1	5.2	31	21.8	1.3	2	1.6	30.1
Total	38	5.5	30.5	21.3	1.3	1.8	1.6	100

Source: Field works, 2016

Number of vehicles of respondents and trip purposes

The study reveals that most of the trips (67.8%) made by the vehicle owners were made by the households with one (1) vehicle. This is followed by the households with two(2) vehicles 22.6%, however, very far behind is the household with four(4) vehicles with 5.5% of the trips and the least is households with three (3) vehicles with 4.1%. However, the analysis on Table 9 shows that irrespective of the number of vehicles available in a household, most of their trips were made to works, followed by school and religion. The study also reveals that households with 3 and 4 vehicles made no trip to social and recreation at all. It was also observed on Table 9 that number of vehicle do not have effect on the volume of trips generated since households with one vehicles even generated about 68% of the total trips made by the vehicle owners.

Table 9. Number of vehicles of respondents and trip purposes

No. of Vehicle owned	Work (%)	Shopping (%)	School (%)	Religion (%)	Social (%)	Recreation (%)	Others (%)	Total (%)
1	35.3	4.1	31.7	24.4	1.2	1.7	1.6	67.8
2	42.7	11.1	25.1	15.2	2.1	2.8	1.0	22.6
3	51.4	3.4	30.2	11.2	0	0	3.8	4.1
4	48.7	3.3	33.1	13.2	0	0	1.7	5.5
Total	38.0	5.6	30.0	21.0	1.3	1.7	1.5	100

Source: Field works, 2016

5.2. Relationship between the socio-economic characteristics and travel patterns of the urbanites

The relationship between socio-economic characteristics such as age, gender, income, education, occupation, marital status etc., and urban travel pattern was investigated using multiple regression technique.

A STUDY OF SOCIO-ECONOMIC CHARACTERISTICS
OF THE URBANITIES AND THEIR TRAVEL PATTERN IN NIGERIA

The results of the Multiple Regression Analysis are shown in appendix 1, 2,3.

With the F- value of 24.937 and P- value of 0.000 in appendix 2, it was observed that the relationship between socio- economic and travel pattern of urban households is significant. Moreover, with correlation coefficient (R) of 0.962 and coefficient of Multiple Determination (R^2) of 0.925 as shown in appendix 1, one observes that about 92.5% of the variability in observed travel pattern is explained by the level of socio- economic characteristics of urban residents. The remaining 7.5% may be accounted for by other factors that may influence mobility pattern such as taste of households, city environment among others.

To determine the weight of each of the variable of socio- economic characteristics on travel, reference is made to their regression coefficients as shown in appendix 3. Using the standardized beta coefficients the constant “a” would disappear and the regression equation is of the form:

$$Y = 0.82x_1 + -0.103x_2 + -0.321x_3 + 0.223x_4 + -0.002x_5 + -0.133x_6 + 0.846x_7 + -0.388x_8$$

As obtained from appendix 3, the regression coefficients for factors – vehicle ownership, religion, income, marital status, occupation, education, age and sex are: 0.082, -0.103, -0.321, 0.223, -0.002, -0.133, 0.846, and -0.388 respectively.

The analysis shows that among the socio-economic variables considered in this work, age, sex, income and marital status of urban residents with the P- value of 0.000, 0.004, 0.022 and 0.033 respectively have significant relationship with urban household’s mobility pattern. The study confirms the work of Hanson (1982) on the analysis of travel behaviour in Uppsala that age, sex, and income have clear impacts on household travel behaviour.

6. Summary and Conclusion

This study was done with a view to determining whether there is a relationship between Socio-economic characteristics of residents in some selected urban areas in Osun State, Nigeria and their travel behaviour. With the use of appropriate statistical techniques data collected were analysed and presented as shown in the body of the work. The report showed that 54.3% of the trips were generated by the respondents within the age bracket 41-50 years. The study also confirms that most

of the trips generated (49.8%) in the study area were made by the respondents who are college graduate.

It was observed in the study that 52.8% of the trips were made by the respondents in the public sector occupational categories. Analysis of data also showed that most of the trips (86.1%) for various purposes were made by the married people. Another socio-economic characteristic of people that may influence trips making is the monthly income of people. The study reveals that people within the income bracket of #61,000-#80,000 (\$174.3-\$228.6) per month made about 49% of the total trips in the study area.

The study further shows that 73% of the trips generated within the study period were made by the vehicle owners, while the remaining trips were made by the households without vehicles. The study also confirms that the motorization of the study area was very high with very high significant impacts on the frequency of trips made for various purposes in the study area. It was revealed from the study that households with a single vehicle made most of the trips (47.4%) by the vehicle owners.

However, finding from Regression Analysis confirms a positive relationship between the socio-economic and travel pattern of urban households in the cities studied. The study shows that about 96% of the variability in observed travel pattern is explained by the level of socio-economic characteristics of urban residents. The analysis also confirms that amongst the socio-economic variables considered; age, sex, income, and marital status of urban residents have significant relationship with urban households' travel pattern.

7. Recommendations

Considering positive significant relationship between socio-economic characteristics of urban households and their travel patterns, it is hereby recommended that governments and civil engineers should take socio-economic characteristics of people in to consideration in the design, construction and management of roads. For instance pedestrian crossing, over head bridges and walkways for school children and households must be considered in road development.

The study revealed that most of the commuters depend on the use of privately owned vehicle, especially in Osogbo, Ilesa and Iwo; it is therefore recommended that Government should embark on roads expansion to facilitate road transport and improve footpaths movement. It is

A STUDY OF SOCIO-ECONOMIC CHARACTERISTICS OF THE URBANITIES AND THEIR TRAVEL PATTERN IN NIGERIA

hereby recommended that Government should introduce articulated buses for public transport, introduce bus routes and routes planning to increase accessibility and enhance travel pattern in the cities.

Literature

- Adedotun, S. B. (2014). Road Concession and Pricing: Panacea for urban road sustainable development in Osun State, Nigeria. *International Journal of Comparative Studies in International Relations and Development* 3(1): 47-59.
- Adetunji MA (2010). *Spatial Analysis of Urban Mobility Pattern in Ilesa, Osun State*. Unpublished Ph.D Thesis. Department of Geography, Obafemi Awolowo University, Ile- Ife.
- Adetunji, M. A.; Aloba, O. (2013). Urban spatial structure and work trip patterns in South-western Nigeria: The example of Ilesa. *Journal of Geography and Regional Planning* 6(4): 93-102.
- Aditjandra, P.; Cao, X.; Mulley, C. (2010). *Understanding neighbourhood design impact on travel behaviour: An application of structural equations model to the British micro- analysis data*. Presented at the 12th World Congress on Transport Research in Lisbon, Portugal, July 11–15, 2010.
- Aguilera, A.; Wenglenski, S.; Proulhac, L. (2009). Employment sub-urbanisation, reverse commuting and travel behavior by residents of the central city in the Paris metropolitan area. *Transportation Research A* 43(7): 685–691. doi: 10.1016/j.tra.2009.06.004.
- Akindele, O. A.; Ogunleye J. S.; Muili, A. B. (2014). Intra Urban Pattern and Acceptability of Bus Station in Ilorin, Nigeria. *Global Journal of Arts, Humanities and Social Sciences* 2(8): 65-79.
- Ayeni, M. A. O. (1975). Some Determinants of the Propensity to interact in an Urban System: A case study of Jos, Nigeria. *Nigerian Geographical Journal* 18(2): 111-119.
- Badejo, B.A. (2011). *Transportation, Removing the Clogs to Nigeria's Development*. Lagos, Nigeria: Anchorage Press and Publishers.
- Ewing, R.; Cervero, R. (2010). Travel and the built environment. *Journal of the American Planning Association* 76: 1–30. doi: 10.1080/01944361003766766.
- Fadare, O. (1992). Modeling Public Transport Choice in Varying Housing Areas of Ibadan. *Nigeria Journal of Economics and Social Studies* 34(2).
- Fadare, O.; Adewale, A. (2009). Intra-Urban Variation of Household's Trip generation in Lagos Metropolis. *Journal of Nigerian Institute of Town Planners* xxii(1): 74-87.
- Fadare, S.O. (1989). Analysis of factors affecting household trip generation in residential areas, Ibadan. *Ife Research Publication in Geography* 3: 38-48.
- Fadare, S.O.; Morenikeji, W. (2001). Gender bias in intra-urban trip making in Niger State. *International Journal of Transportation studies* 1(1): 73-85.
- Hanson, S. (1982). The Determinants of Daily Travel Activity Patterns: Relative Location and Socio demographic Factors. *Urban Geography* 3: 179-202.
- Ibrahim, R. Babatunde (2012). Evaluating Intra-Urban Transportation and Gender Travel Behaviour in Ilorin, Nigeria. *Global Journals of Human Social Science Arts and Humanities* 12(14): 7-17.
- Muili, A.B. (2013). *Analysis of Infirmity and Intra-City Transportation System in selected cities in Nigeria*. Unpublished PhD Thesis submitted to Department of Urban and Regional Planning, Ladoke Akintola University of Technology, Ogbomoso, Oyo State, Nigeria.
- Nass, P.; Strand, A.; Nass, T.; M. Nicolaisen. (2011). On their road to sustainability? The challenge of sustainable mobility in urban planning and development in two Scandinavian capital regions. *Town Planning Review* 82(3): 285–315. doi: 10.3828/tpr.2011.18.
- Nass, P.; Nass, T.; Strand, A. (2011). Oslo's farewell to urban sprawl. *European Planning Studies* 19(1): 113–139. doi: 10.1080/09654313.2011.530395.
- Rickwood, P.; Glazebrook, G. (2009): Urban Structure and Commuting in Australian Cities. *Urban Policy and Research* 27(2): 171-188.

SAMUEL BABATUNDE ADEDOTUN, NURAIN BOLA TANIMOWWO AND RAFIU BABATUNDE
IBRAHIM

- Rodrigue, J.-P. (1998). *Transport Geography*. An online Textbook. Department of Economics and Geography. Horstra University. Available at: <https://people.hofstra.edu/geotrans/>. Accessed 15 December 2017.
- Samson, B. O. (2012). An analysis of intra-city patterns of residents in Lagos metropolis, Nigeria. *International Journal of Development and Sustainability* 1(2): 560.
- Oyesiku, O.K (2003). Sustainable Transportation Strategies for Intermediate Cities in Nigeria. *Journal of the Nigerian Institute of Town Planners* XVI: 35-44.
- Schwanen, T.; Dieleman, F.M.; Dijst, M. (2001). Travel Behaviour in Dutch Monocentric and Polycentric Urban Systems. *Journal of Transport Geography* 19: 173-186.
- Snellen, D.; Arentze, T.; Borgers, A.; Timmermans, H. (2001). *Spatial Variability in Response Rates and Data Quality of a Designated Day-Leave Behind-Full Activity Dairy*. Paper presented at the 80th TRB Annual Meeting Washington, D.C., January 2001.
- Solanke, M.O. (2014). Socio-economic Determinants of Intra-urban Trips Generation in Ogun State, Nigeria. *Current Research Journal of Social Sciences* 6(1). Pg.15-20.
- Solanke, M.O. (2005). *Spatial Analysis of Intra-urban Travel Patterns in Ogun State*. A Ph. D. Thesis Submitted to the Faculty of the Social Sciences, Department of Geography University of Ibadan, Ibadan.
- Eluwa, S.E.; Siong, H. Ch.; Abayomi, O.K. (2012). Urban Fabric and Trip Pattern of Ibadan Residents, Nigeria. *Journal of Environment and Earth Science* 2(3): 1.
- Tanangsnakool Koranis (2011). *Urban form and Travel Behaviour. Evidence among individuals from two districts within Bangkok*. M.sc Degree Project No 2011:31, Environmenta management Sciences, University of Gothenburg.
- Tanimowo, N.B. (1996). *Transport Planning in the CBD of Pre-1900 Nigerian Cities: A case of Akesan CBD in Oyo Town*. Dissertation for NITP/TOPREC Professional Post-Graduate Diploma in Urban and Regional Planning.
- Tardiff, T. (1975). Comparison of Effectiveness of various measures of socio-economic status in Models of Transportation behavior. *Transportation Research record* 534: 1-9.
- Ulman (1996). *Action Planning*. London: Prince of Wales' Institute of Architecture.
- Westford, P. (2010). *Neighborhood design and travel: A study of residential quality, child leisure activity and trips to school*. Doctoral dissertation. Stockholm: Royal Institute of Technology.

A STUDY OF SOCIO-ECONOMIC CHARACTERISTICS
OF THE URBANITIES AND THEIR TRAVEL PATTERN IN NIGERIA

Appendix 1. Regression model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.962 ^a	.925	.889	.10729

- a. Predictors: (constant), Vehicle ownership, Education, Religion, Marital status, Age, Sex, Income, occupation

Source: Author's Data Analysis, 2016

Appendix 2. Test of Statistical Significance (ANOVA)

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2.297	8	.287	24.937	.000 ^a
Residual	.184	16	.012		
Total	2.481	24			

- a. Predictors: (constant), Vehicle ownership, Education, Religion, Marital status, Age, Sex, Income, occupation
b. Dependent Variable: Mobility Patterns

Source: Author's Data Analysis, 2016

Appendix 3. Regression Coefficients

Model	Un standardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(constant)	-3.925	1.657		-2.368	0.31
Sex	-.301	.089	-.388	-3.380	.004
Age	1.087	.168	.846	6.491	.000
Education	-.078	.048	-.133	-1.634	.122
Occupation	-.001	.051	-.002	-.015	.988
Marital Status	1.775	.760	.223	2.336	.033
Income	-.192	.076	-.321	-2.532	.022
Religion	-.041	.036	-.103	-1.122	.278
Vehicle ownership	.056	.069	.082	.802	.434

Dependent Variable: Mobility Patterns
P<0.05

Source: Author's Data Analysis, 2016

***Badania społeczno-ekonomicznych cech mieszkańców miast
oraz ich wzorców transportowych w Nigerii***

Streszczenie

W niniejszym artykule zbadano związek pomiędzy społeczno-ekonomicznymi cechami mieszkańców miast a ich wewnątrzmijskimi wzorcami mobilności w sześciu wybranych miastach w stanie Osun w Nigerii. Pierwotne źródła danych stanowią gospodarstwa domowe w badanych miastach. Dla zgromadzenia danych dotyczących społeczno-ekonomicznych cech gospodarstw domowych oraz ich wzorców podróżowania użyto dyskusji w ramach grup fokusowych oraz kwestionariuszy rozprowadzonych wśród mieszkańców miast. Dla doboru próby wykorzystano technikę warstwową i wybrano po dwa miasta z dużego, średniego i małego centrum miejskiego w stanie Osun. Próbę dobrano systematycznie i losowo z jednego procenta (2 133) gospodarstw domowych w wyróżnionych miastach. Otrzymane dane analizowano w sposób opisowy i dedukcyjny za pomocą tabel, odsetków oraz analizy regresji. Analiza ujawniła pozytywną zależność pomiędzy cechami społeczno-ekonomicznymi a wzorcami podróżowania mieszkańców. Badanie wykazało, że około 92,5% zmienności w obserwowanych wzorcach mobilności jest tłumaczone za pomocą społeczno-ekonomicznych cech mieszkańców. We wnioskach zawarto sugestię, że planowanie miast powinno sprzyjać efektywnym wzorcom podróżowania różnych grup społeczno-ekonomicznych.

Słowa kluczowe: cechy społeczno-ekonomiczne, mieszkańcy miast, wzorce podróżowania, stan Osun

Kody JEL: O18, R4

<https://doi.org/10.25167/ees.2017.44.12>