

# Travel Behaviour of the Elderly in Planned and Unplanned Communities of Lagos Metropolis, Nigeria

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## Abstract

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*Interests in the study of travel behaviour of the elderly have been growing in the last two decades and many of the works done are concentrated in the global north. Evidence from literature reveals that most of these studies focus more on the impact of individual and household socioeconomic attributes, urban form, travel attributes, and policy factors on the travel behaviour of the elderly, but less on the influence of neighbourhood planning. This paper examined the travel behaviour of old people in Festac town (planned) and Ketu (unplanned) community of Lagos metropolis, southwest Nigeria with a view to determining the influence of neighbourhood planning on travel pattern. The two neighbourhoods were carefully and purposively selected for collection of socio-economic and travel data through structured questionnaire that was administered on 155 randomly selected elderly respondents. The study revealed significant differences and some similarities in respondents' socio-economic and travel characteristics. Respondents from the planned community have a higher daily mean trip rate and mean trip time than those in unplanned community. Residents of planned community also undertake higher work and social trips and rely on automobile more than those in unplanned community. Apart from the fact that the majority of respondents travel more during the off-peak period, frequent road congestion was reported as the top mobility challenge among respondents in the two neighbourhoods. The study concluded that neighbourhood planning affects travel behaviour and recommended a walkable neighbourhood concept and promotion of elderly friendly public transport system for the study area.*

**Keywords:** Travel Behaviour; Elderly; Aging; Community; Neighbourhood Planning

## INTRODUCTION

Clifton and Handy (2001), noted that the study of travel behaviour over the last half century has yielded critical insights into the choices that individuals and households make about their daily travel and this has contributed to the development of more studies in America, Europe and Asia with increasingly sophisticated methods by researchers and transport experts to understand and predict travel behaviour. The outcome of many of these studies have influenced to a great extent several transport planning decisions and policy issues in many countries of the global north and south (Fadare, 1989; Mokhtarian & Meenakshisundaram, 2002; Srinivasan, 2005; Harper, 2014; Liu, 2016; Liu, Lu, Sun & Liu, 2017; Nobis & Lenz, 2017; Alade, Adeniji & Adeleke, 2018).

Studies have established that the socio-economic characteristics of households and individuals, level of infrastructure, level of economic activities, and level of motorization, local culture and city structure, land use pattern, density of development and location of households among others affect households' travel behaviour (Pucher and Renne 2003; Fujiwara et al, 2005; Steve, 2006; Fadare, 2010 and Alade, 2012). Of significance among these is the influence of households' socio-economic characteristics on travel behaviour (Fadare and Hay, 1990; Pucher and Renne, 2003; Fujiwara et al, 2005; Okoko and Fasakin, 2007; Alade, 2012). In recent years, studies have begun to add the factor of season and

sustainability (Liu et al, 2017) and neighbourhood design (Aditjandra, Mulley & Nelson, 2012) and explore its impact on the elderly's travel behaviour.

Scholars have noted that age as a socio-economic attribute of individuals can significantly affect travel behaviour across the globe (Black, 1995; Pucher and Renne 2003; Morikawa et al, 2004; Fujiwara et al 2005; Alade, 2012). The aging of the population is a significant social challenge that the world is facing (Liu, Lu, Sun and Liu, 2017). Some studies predict that, by 2050, the proportion of the elderly population aged 60 and over will reach 34%, from 16.1% in 2015, in China, and reach 42.5%, from 32.7% in 2015, in Japan; the proportion of the elderly population aged 65 and over will reach 20.9%, from 13.1% in 2010, in the United States. (National Bureau of Statistics of China, 2016; OECD, 2016).

Studies on aging and mobility are legion in developed countries (Pillemer and Glasgow, 2000; Coughlin, 2001; Rosenbloom, 2004; Scheiner, 2006; Helena and Juliet, 2007) but scanty in developing countries (Odufuwa, 2006; Daramola and Adeniji, 2009; Ipingbemi, 2010). However, the dimension of neighbourhood planning and travel behaviour of old people is an emerging trend in developing countries and this explains the dearth of literature in this area.

This paper presents an empirical study of the relationship between neighbourhood and the travel behaviour of the elderly in Lagos, southwest Nigeria using a case study approach. The case study is based on Festac town and Ketu, a planned and an unplanned neighbourhood in Lagos. The two neighbourhoods were carefully and purposively selected to characterise their planning attributes. The study is premised on the notion that neighbourhood planning can influence the quality of transport infrastructure and this can affect the travel behaviour of old people. The paper is divided into five sections. Following the introduction is the review of literature. In the third section, the study area and research approach are discussed. Analysis and discussion of findings are presented in section four and the final section highlights policy issues, conclusion and recommendations.

## LITERATURE REVIEW

Literature on travel behaviour of old people in developed nations are quite profuse, encompassing traditional policy precepts of social inclusion (Farrington, 2007; Farrington and Farrington, 2005; Rosenbloom, 2004; Halden, 2002, Murray & Davis, 2001) as well as the more contemporary discourses on 'active aging' (Coughlin, 2006, 2007; McDaniel, 2003; Gee, 2000; Lindsay, 1999). The copiousness of empirical studies on elderly mobility has increased the attention given to this population group and have helped to inform benchmarking and evaluative policy and program strategies in several developed countries as observed by Mercado et al (2007).

Aging is defined as the process of growing old and the chronological age of a person in years is used to distinguish between the young and the elderly which vary from one place to another based on life expectancy. The aged are interchangeably referred to as 'elderly' or 'senior citizens'. The definitions of these terms have been controversial because of regional differences in life expectancy. For instance, the UN adopted 60 years in defining an elderly person in developing countries and 65 years for developed countries (Daramola and Adeniji, 2009). For the purpose of this paper however, older people refer to the group of people who are 60 years and above in age; notwithstanding the World Bank (2012) life expectancy of 51 years for Nigeria. This definition is adopted considering the UN viewpoint and the retirement age in the country, which is 60 years for majority of public servants.

Several studies exist on the influence of age on mobility. Pillemer and Glasgow (2000) argued that individual's mobility is largely determined by resources such as time, money; car availability; physical capacity; supply of transportation services and the spatial distribution of land uses. Morikawa et al (2004) also observed that age affects the travel behaviour as shown in four Asian cities of Bangkok, Kuala Lumpur, Manila and Nagoya. It was noted that people who are 18 years old or more prefer to use car and motorcycle while older ones from 65 years and above prefer bus travel due to the free transit passes offered to the aged people in Nagoya. In contrast, travellers who are 45 years in Bangkok, Kuala

Lumpur and Manila dislike bus transport, and they may prefer taxi or other para-transit modes. The rail is however, a preferred mode among school children.

Compared to the past, the elderly's travel demand continues to show a growth trend and studies in some European countries have found that old people are more likely to rely on cars than in the past (National Bureau of Statistics of China, 2016; OECD, 2016). Fujiwara et al (2005) revealed that, though age structure is similar in selected thirteen cities of Asia, Central America and Middle East, the younger generation's trips are greater in Cairo, Managua and Tripoli. On the other hand, the older ones' trips are greater in Japanese cities, Bucharest and Chengdu in China. The high rate of aged people's trips in Chengdu was linked to the single child policy in China.

Disaggregating urban population into different age groups has produced good results in understanding the influence of age on mobility, however, mobility of challenge of the elderly is better understood by isolating and focusing attention on their travel pattern. The elderly experience diversity of mobility challenge and become transportation disadvantaged as aging process takes its toll. Organization for Economic Co-operation and Development (OECD, 2001) noted that older people will continue to have travel needs after retirement, although the nature of these needs may change. Similarly, as people age, they make fewer journeys, mainly due to reductions in the number of work journeys and the average length of all journeys consistently decreases. However, relative to earlier cohorts, older people are increasingly driving greater distances, partly due to their greater access to cars (OECD, 2001).

Indeed, (OECD, 2001) observed that in most countries, increased car use is replacing walking, and to a lesser extent, public transport use among older people. Available evidence suggests that, as older people develop age-related health problems and are likely to experience difficulties with driving while those who cease driving as a consequence of functional limitations are likely to experience substantial mobility difficulties, given their inability to use other transport forms. O'Fallon and Charles (2009) in a study on trends in older New Zealanders' travel patterns found out that, compared with younger adults, the older age groups made fewer trips per day as drivers; and travelled more as passengers and pedestrians.

Similarly, older people made shorter trip lengths; travelled fewer vehicle kilometres per day and made more discretionary trips (social/recreational/personal business). Older people continue to travel less than younger adults. This is true when considering the total number of trip segment per day, the typical distance per trip segment; average distance per day and average distance driven per day. The study also revealed that older people continue to make most (63%) of their trips in the 'off-peak' (between 9 am and 3 pm). Bocker, Amen & Helbich (2016) concludes that it is generally considered that the elderly's travel shows the characteristics of relatively short distances and low frequencies.

Giuliano, Hsi-Hwa and Kyoung (2003) examined the relationships between residential location and travel patterns of the elderly. The study noted that travel tends to shift to the middle part of the day with age; trip making declines after age 75 and that aging often leads to physical disabilities that make driving difficult, hazardous, or impossible. Some of the recommendations proffered to address the challenges of aging people include promotion of more transit-friendly, mixed-use communities, and behavioural adjustments to address mobility of the elderly. Rosenbloom (2001) examined travel characteristics of the elderly by residential location and noted that the elderly living in suburban or rural areas made more trips and travel longer distances than those living in urban areas. In addition, older people living outside urban cores make more of their trips in a car than those who live in central cities.

Similarly, there are studies on the relationship between mobility and the quality of neighbourhood where older people reside in terms of urban planning and transport infrastructure. Akinyemi (2003) established that levels of accessibility and mobility for motor vehicles were relatively good in low density areas (planned communities) in few cities of Africa, whereas, mobility is rather difficult in the medium and high-density residential areas where medium and low-income people reside. Similarly, Daramola and Adeniji (2009) noted that planned neighbourhoods (low density residential areas) have better road system and high level of accessibility to other land uses and these conditions eliminate

congestion, lower trip time and enhance mobility of older people. The study recommended better neighbourhood planning to enhance mobility and quality of life of old people.

Studies on aging and mobility in developing countries and Nigeria in particular are few compared to what obtains in the global north. Odufuwa (2006) noted that 80% of the elderly in Nigeria lack access to private car and thus rely on public transport facilities that are in deplorable condition and therefore affects quality of life. Daramola and Adeniji (2009) established in Ibadan, Nigeria that, though work trips are low in the city, old people in the low-density areas made more work trips than their counterparts in both medium and high-density areas as they are engaged in one form of work or the other. The study also noted that though, their access and waiting time at bus stop is relatively short (6-10 minutes), their journey time is relatively long.

A significant variation in trip time was noted across different residential density areas due to differences in spatial planning. The low-density areas were better planned and this enhanced easy flow of traffic unlike what obtains in the medium and high-density areas. Ipingbemi (2010) also noted in a study of mobility challenge of elders in Ibadan, that public transport was an important mode of transport. The study concluded that vehicle design, poor terminal facilities and long access and waiting time were the dominant challenges of elders' mobility in the city.

The position of this paper is that neighbourhood planning to a great extent determines the quality of transport infrastructure which in turn affects travel pattern. However, studies available are limited in scope on the relationship between neighbourhood planning and travel behaviour of the elderly. This paper therefore highlights the difference and the similarities in travel behaviour of old people in a planned and an unplanned residential neighbourhood of Lagos with a view to identifying their mobility challenges. The study areas in the context of Lagos metropolis are subsequently presented.

## Study Area

Lagos Metropolis is located in Lagos State in South-Western Nigeria (See Figure 1). It is the largest metropolitan area in the country with an estimated population of 18.5 million inhabitants in 2008 (Badejo, 2011). Of this population, Lagos Metropolis (37% of land area of Lagos State) is home to 85% of the state population (Lagos State, 2010). Lagos population is growing 10 times faster than that of New York and Los Angeles, and more than the population of 32 African nations combined. By 2025, Lagos may likely become the third largest global city with an estimated population of 24 million people (Lagos State, 2010).

Lagos has the highest vehicular density in Nigeria (222 vehicles/km) as against the national average of 11 vehicles/km. These scenarios have implications for travel demand and mobility of old people who are less than 5% of the state's population (Lagos State, 2010). Neighbourhoods in Lagos metropolis are largely unplanned and to achieve the goal of the study, Festac Town (planned neighbourhood) and Ketu (unplanned neighbourhood) were purposively selected as case study neighbourhoods. Their locations in the context of Lagos metropolis are shown in Figure 1.

Festac town (see figure 2) was planned and built in the early 1970s when the country accepted to host the Second World Black and Africa Festival which took place in 1977 in Lagos. The town was built in the short term to accommodate participants of the Festival and ultimately to create a model residential community in Lagos. It covered a land area of 1,770 Hectares (approximately 0.5% of Lagos in 1977) with an estimated population of 120,000 people. It enjoys a high level of accessibility by its location along the Lagos-Badagry expressway in the south-western part of the city. The roads within the neighbourhood are provided with sidewalks and drains. Traffic signs also exist but very deficient towards pedestrian safety. The Bus Rapid Transit (BRT) infrastructure has not been extended to the neighbourhood; hence, residents have not been privileged to enjoy the services offered by the system.



Figure 1: Location of Festac Town and Ketu within Lagos Metropolis.  
Source: Google Map

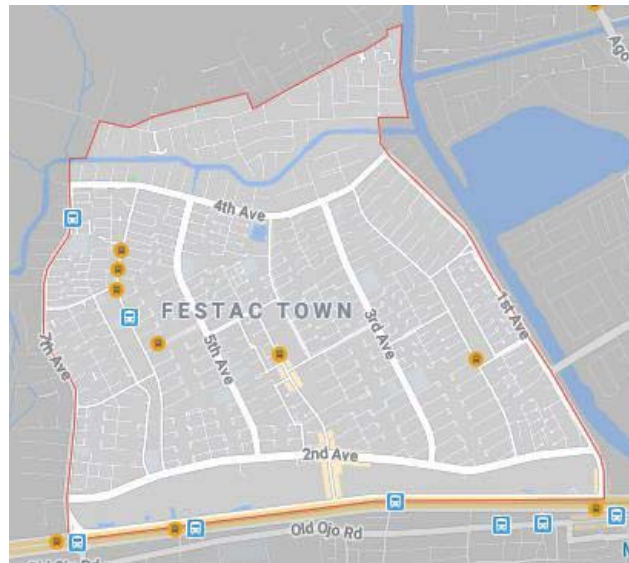


Figure 2: Layout of Festac Town  
Source: Google Map



Figure 3: Layout of Ketu  
Source: Google Map

Unlike Festac town, Ketu emerged as an organic neighbourhood near a major transport node (Ojota) and accessible through two major corridors (Ikorodu road and Lagos-Ibadan expressway) in the northern part of the city. It is a densely populated unplanned community (see figure 3) with a population of over 600,000 who are largely low-income earners. The neighbourhood lacks adequate facilities which enhance quality of life. Many roads in Ketu are unpaved and lack drainage, walkways and traffic control devices. The bus stops are not properly designated and lack shelters for passengers; however, there are BRT bus stops along Ikorodu road with decent bus stops which are not provided with seats that the elderly could use while waiting for bus.

## METHODOLOGY

This paper presents an empirical study of the relationship between neighbourhood and the travel behaviour of the elderly in Lagos, southwest Nigeria using a case study approach. The study is premised on the notion that neighbourhood planning can influence the quality of transport infrastructure and consequently, the travel behaviour of old people. The case study is based on Festac town and Ketu, a planned and an unplanned neighbourhood in Lagos. The two neighbourhoods were carefully and purposively selected to characterise their planning attributes. The study through a cross sectional survey and random sampling, utilized primary data obtained through structured questionnaire that was administered on 155 randomly selected elderly people (1.5% of aged population) in the two communities. The use of systematic random sampling that is peculiar with this type of study was precluded due to high incidence of non-availability of an aged respondent in the  $n^{\text{th}}$  building selected.

Eighty sets of the questionnaire were administered on respondents in Festac town and 75 in Ketu in the evening hour of working days and weekends to achieve a high response rate. The difficulty faced by respondents in the accurate estimation of their trip distance was a major challenge in data collection on travel attributes. Thus, trip time was found more reliable as an alternative to estimating trip distance. Descriptive analysis was generally used for interpretation of data. Chi-square test was found adequate and used to test the research hypothesis which seeks to validate the significance of the effects of neighbourhood planning on the travel behaviour of old people in Lagos using a planned and an unplanned neighbourhood as case study.

## ANALYSIS AND RESULTS

### Socio-economic Characteristics of Respondents

The study shows that 51.0% of respondents were males, 62.0% were between 60 and 69 years, 84.0% had formal education and the mean years of education was 13.3. Similarly, 56.8% did not earn beyond ₦18,000 which is the national minimum wage in the country. This translates 112.5 US Dollars at an exchange rate of ₦160 to 1 USD per month. Similarly, 55.2% of respondents were self-employed, 41.6% had at least one car in their household and 66.5% had no personal means of mobility (See Table 1).

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

	Neighbourhood Type		Total %
	Planned (%)	Unplanned (%)	
<b>Age Group</b>			
60-69	34.0	28.0	62.0
70-79	14.4	12.4	26.8
80-89	3.9	7.3	11.2
<b>Gender</b>			
Male	32.9	18.1	51.0
Female	18.7	30.3	49.0
<b>Years of Formal Education</b>			
None	2.0	14.0	16.0
1-6	5.3	18.0	23.3
7-12	12.7	10.6	23.3
13-18	28.7	5.4	34.1
19+	3.3	0.0	3.3
<b>Monthly Income in Naira</b>			
1-18,000	14.9	41.9	56.8
18,001-36,000	18.8	.7	19.5
36,001-54,000	9.5	1.4	10.9
54,001-72,000	3.3	.7	4.0
72,001+	6.8	2.0	8.8
<b>Employment</b>			
Retired	23.4	16.9	40.3
Self-Employed	24.7	30.5	55.2
Employed	3.9	0.6	4.5
<b>Car Ownership</b>			
Yes	21.3	12.3	33.6
No	30.3	36.1	66.4
<b>No of Household Cars</b>			
None	24.7	33.8	58.4
1	10.4	9.1	19.5
2	10.4	1.9	12.3
3	5.8	1.3	7.1
3+	0.6	1.8	2.4

Source: Authors Field Survey, 2015

The study reveals that significant difference exists in the socio-economic characteristics of old people between the two types of neighbourhood in terms of number of years of formal education, income and car ownership. For instance, 44.7% of respondents had seven years and above of formal education in Festac while those with the same number of years in Ketu constitutes 16%. The difference in number of years of formal education of respondents between the two neighbourhood is statistically significant ( $\chi^2 = 70.903, p < 0.05$ ). Similarly, those who earn above the minimum wage of 18,000 Naira per month

constitutes 38.4% in Festac but constitutes 4.8% in Ketu. This shows that respondents from Ketu are generally low-income people, hence, the difference in income is statistically significant ( $\chi^2 = 62.462, p < 0.05$ ).

Further, the difference in car ownership between the two neighbourhoods is also statistically significant ( $\chi^2 = 17.453, p < 0.05$ ). In the final analysis, respondents in Festac Town are more educated, belong to higher group and own more cars per household than their counterparts from Ketu. This is because planned neighbourhoods in Lagos are generally designed as low or medium density residential areas and are usually inhabited by households and individuals with higher socio-economic status (Oduwaye, 2002, Alade, 2012). The observed variation in socio-economic status between Festac town and Ketu is expected to influence the travel behaviour of old people in the two neighbourhoods.

## Travel Behaviour of Respondents

Table 2 shows that 98.0% of respondents made at least one trip per day. The mean trip of 2.1 generated per day in Festac town is higher than that of Ketu (1.4). The combined mean trip generated by respondents from the two neighbourhoods is 1.8. The observed difference in trip generation between Festac town and Ketu is statistically significant ( $\chi^2 = 26.400, p < 0.05$ ). The pattern of trip purpose appeared almost even. Work (28.8%), social (24.8%) and shopping (23.5%) trips were dominant. Of the 28.8% who engaged in work related trips, 20.9% are from Festac town. On the contrary, of the 23.5% who made shopping trips, the percentage of those in Ketu (14.0%) is higher than those in Festac town. The large proportion of employed respondents is responsible for predominance of work trip.

The pattern of trip mode is somehow similar to trip purpose. Those who use car, bus and walk mode is 32.5%, 26.0% and 23.3% respectively. The difference in trip mode between the two neighbourhoods is statistically significant ( $\chi^2 = 29.866, p < 0.05$ ). The proportion of those who use car mode in Festac town (22.1%) is higher than those in Ketu (10.4%). On the contrary, those who use walk mode in Festac town (4.5%) are much lower than their counterparts in Ketu (18.8%). In both communities, 21.0% of respondents are not satisfied with their usual mode of travel, although the proportion of this category of respondents in Festac town (13.8%) almost doubles the figure (7.2%) for Ketu. This may be due to the fact that a high proportion (44.2%) of respondents depends on public transport services which are not reliable in Lagos.

The study also reveals that majority of respondents (74.8%) travelled during the off-peak period of the day (9am-4pm). This may be due to the fact that elderly people are mostly retired, hence do not travel during the peak period when many residents of Lagos are rushing to work in the morning of in the evening when returning from work. Similarly, the results presented in Table 2 shows that the trip time of 58.2% of respondents did not exceed 0.5 hour (30 minutes). The proportion of respondents in Festac town (24.2%) is lower than those in Ketu (34.0%). The observed mean trip time of 0.58 hour (35 minutes) for all respondents is lower than 0.68 hour (41 minutes) in Festac town but higher than that of 0.5 hour (30 minutes) in Ketu.

The observed difference in trip time between the two neighbourhoods is statistically significant ( $\chi^2 = 17.889, p < 0.05$ ). The longer trip time observed for respondents in Festac town suggests that they travelled longer distance than those in Ketu and this could be explained by the higher proportion of the working population and car ownership earlier established in Festac town. Besides, the road system in planned communities stimulates higher trip length (Daramola and Adeniji, 2009). In the two communities, 47.4% of respondents use one vehicle per trip per day and the mean of number of vehicles used per day is 1.6 and 23.6% does not make use of automobile for their trips. This proportion corresponds to those who use walk mode for their daily trips. Examination of trip time to bus stop shows that 41.7% spent between 1 and 5 minutes. The trip mode to bus stop was undertaken largely by walking (38.1%) while 41.7% experienced a waiting time of 1 to 5 minutes at the bus stop. The low trip time and waiting time to bus stop in the study areas could be explained by the fact that majority of respondents travel during the off-peak period. Besides, both neighbourhoods have a high level of accessibility. The



access to and waiting time at bus stop in the study area is lower than 5 to 10 minutes observed in Ibadan by Daramola and Adeniji (2009).

Table 2: Travel Characteristics of Respondents

	Neighbourhood Type		Total %
	Planned (%)	Unplanned (%)	
<b>Trip Frequency</b>			
0	1.3	0.0	1.3
1	18.1	35.5	53.6
2	18.1	8.4	26.5
3	9.0	3.2	12.2
4+	5.1	1.3	6.4
<b>Trip Purpose</b>			
Leisure Walk	0.7	5.2	5.9
Religious	.7	7.8	8.5
Social	15.7	9.2	24.8
Shopping	9.2	14.4	23.5
Medical	4.6	3.9	8.5
Work	20.9	7.9	28.8
<b>Trip Mode</b>			
Walk	4.5	18.8	23.3
Motorcycle	3.2	5.9	9.1
Three Wheelers	3.9	3.2	7.1
Car	22.1	10.4	32.5
Minibus	17.5	9.1	26.6
BRT	0.0	1.4	1.4
<b>Trip Mode Satisfaction</b>			
Not Satisfied	13.8	7.2	21.0
Satisfied	26.3	40.8	67.1
Very Satisfied	11.9	0.0	11.9
<b>Time of Departure</b>			
Morning Peak Period	9.3	12.6	21.9
Off Peak Period	41.1	33.7	74.8
Evening Peak Period	1.3	2.0	3.3
<b>Trip Time (Minutes)</b>			
1 – 30	24.2	34.0	58.2
31 – 60	17.7	13.0	30.7
61+	9.1	2.0	11.1
<b>No. of Vehicles Used Per Trip</b>			
None	3.9	19.7	23.6
1	28.3	19.1	47.4
2	7.2	8.6	15.8
3+	11.9	1.3	13.2
<b>Trip Time to Bus Stop (Minutes)</b>			
1 - 5	51.5	36.7	88.2
6 – 10	3.0	4.4	7.4
10+	1.4	3.0	4.4
<b>Waiting Time at Bus Stop (Minutes)</b>			
1 - 5	54.4	33.8	88.2
6 – 10	0.0	1.5	1.5
10+	1.5	8.8	10.3
<b>Need for Trip Companion</b>			
Yes	13.9	9.9	23.8
No	37.8	38.4	76.2

<b>Mobility Challenge</b>			
Traffic Congestion	27.2	11.8	39.0
Road Condition	11.8	0.0	11.8
Safety	9.6	0.0	9.6
Health	0.0	15.4	15.4
Cost of Travel	5.0	11.8	16.8
No Personal Mobility	1.5	2.2	3.7
Age	3.7	0.0	3.7

Source: Authors Field Survey, 2015

The study established that 76.2% of respondents needed no one to accompany them for their daily trips, suggesting that age and health condition minimally affect the mobility and travel behaviour of old people in the study area. However, respondents identified some mobility challenges and these include congestion (39.0%), high cost of travel (16.9%), health (15.4%), poor road condition (11.8%) and safety (9.6%). The observed challenges varied significantly between the two neighbourhoods ( $\chi^2 = 64.826, p < 0.05$ ). All respondents (21.4%) who

identified road condition and safety as mobility challenge are from the planned neighbourhood while all those who identified health challenge were from the unplanned neighbourhood.

## DISCUSSIONS AND RECOMMENDATIONS

It has been established that the phenomenon of aging brings a significant effect on people's mobility (Liu, Zong & Zhang, 2013). The results obtained in this study showed some similarities and differences with the experience in other parts of the world. For instance, the observed trip generation in the two neighbourhoods is similar to what is obtain in some cities in Asia, Central America and Middle East where mean trip generated per day is approximately 2.0 (Fujiwara et al, 2005). Similarly, in Ibadan, Nigeria, Daramola and Adeniji (2009) observed that the trip rate of old people in low density (planned) residential areas is higher than what obtains in high density (unplanned) residential areas. This aligns with the finding in this study as the trip generation (2.1) in Festac is higher than that of Ketu (1.4). This can be explained by the fact that road system in low density residential areas is better planned, enhances free flow of traffic and thus increases the propensity of old people to travel. Harper (2014) concluded that regardless of country, travel by the elderly is generally characterized by relatively short distances and low frequencies.

The predominance of work trip in both communities is similar to what obtains in Ibadan (Ipingbemi, 2010) but at variance with the experience in Great Britain and some other developed countries where shopping and medical trips predominate (Helena and Juliet, 2007; Rosenbloom, 2004). Medical trip is expected to be high among old people; however, poor access to medical facilities in the study area limits the number of medical trips undertaken by respondents. Besides, results show the dominance of car mode (22.1%) in planned area against walk (18.8%) in unplanned area. This is at variance with the general pattern in the city where public transport dominated by bus was observed as the dominant trip mode (Alade, 2012). The reckless driving habit in Lagos city and lack of care for elderly people by the public transport operators may be responsible for high reliance of older people on car mode. This has been established in Zimbabwe where old people are pushed and shoved by younger passengers and in Brazil and Argentina where buses do not stop for old people. The results also show that 74.8% of respondents travel during the off-peak period and this is similar to the findings of O'Fallon and Charles (2009) among older New Zealanders where most of their trips were undertaken between 9am and 3pm. The concentration of old peoples' travel during the off-peak period is due to their inability to compete with the younger people for road space and seats in public transport.

Again, the study establish that respondents rely heavily on public transport in the two neighbourhoods unlike in the United States where 75% of households rely on private mode of travel (Pucher and Renne, 2003). However, the public transport system is unfriendly to the aged. The BRT system which could have been a succour to the old people is highly inaccessible to them as this means

of travel is limited to one of the two communities where 1.4% of respondents use the mode. From researchers' experience, the waiting time at BRT bus stops is longer than 10 minutes and this may likely explain respondents' low level of patronage of BRT.

Conscious efforts should be made to minimize waiting time at BRT bus stops and extend the infrastructure as quickly as possible to other places including Festac town. The listing of traffic congestion as a major mobility challenge by 39% of respondents calls for concern. Old people cannot withstand stress associated with traffic congestion in Lagos where average trip time is more than one and half hours (Alade, 2012) and in public transport vehicles that are not convenient.

Cost of travel is identified by 16.8% of respondents as mobility challenge. This is not strange considering the fact that 40.3% of respondents are retired, hence, are less active economically. To help them in this regard, a cue could be taken from the experience in Nagoya, Japan where free transit service on buses is given to old people (Morikawa et al, 2004). Similarly, that 15.4% of respondents identify health as their mobility challenge calls for concern as many of them lack personal mobility and the alternative public transport is costly and user unfriendly to the aged. Finally, the dissatisfaction of 21% of respondents with their usual mode of travel showed that the transport system in the study area needs more improvements especially in areas that affect the mobility of older people. Besides, there is need for a city-wide study of the mobility of older people to determine the magnitude of their mobility challenges in both planned and unplanned communities.

## CONCLUSION

The thrust of this study is that neighbourhood planning affects travel behaviour of the elderly. The paper reveals similarities and differences in socio-economic and travel characteristics of the elderly in planned and unplanned neighbourhood in Lagos; and that the differences are statistically significant; reinforcing the fact that neighbourhood planning affects travel behaviour. The paper also reveals that the elderly experience some mobility challenges such as congestion, high cost of travel; health; and lack of satisfaction with their usual mode of travel, the study recommends introduction of that elderly friendly public transport system. This can take the form of travel subsidy for the elderly during the off-peak period on the BRT as done in Nagoya, Japan. Besides, there is need for better planning of the road system and traffic management to minimize congestion which the elderly cannot withstand for too long. Better neighbourhood planning with good pedestrian facilities would promote safe mobility and wellbeing of older people in Lagos.

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