

**Intra-urban transportation, gender and psychological distress in  
developing countries: Nigeria**

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**Abstract**

*The paper examines the effects of urban transport infrastructure condition and intra-urban travel on the psychological well-being of women and men in Nigeria using Ibadan as a case study. The study uses primary data, which were obtained, through a cross-sectional survey of 721 households in Ibadan, Nigeria. The null hypotheses tested in the paper are that: (i) there is no significant effect of urban transport infrastructure condition and intra-urban travel on women's and men's psychological distress and (ii) there is no gender difference in the effects of urban transport infrastructure condition and intra-urban travel on the psychological distress of women and men. Variables used in the analysis include urban transport infrastructure condition indicators (neighbourhood road quality; neighbourhood public transport condition; neighbourhood street light condition; neighbourhood state of security; neighbourhood crime level; and neighbourhood drainage system); intra-urban travel indicators (weekly trips made for each of the following purposes secular work, children school, childcare, recreation, shopping, religion, fetching water, getting rid of household waste) and psychological distress information. The result of the regression analysis shows that urban transport infrastructure condition and intra-urban travel has significant effects on the psychological well-being of women and men. Gender difference is found in the effects of urban transport infrastructure condition and intra-urban travel on women and men's psychological well-being. The effects are found to be more on working and nursing mothers compare to the effects on working men. These findings shows that urban transport infrastructure condition and intra-urban travel constitute a major threat to psychological well-being of women and men and the effect is more on the psychological well-being of women than of men due to gender differences in the socially prescribed roles. The issue of concern therefore is to make intra-urban transportation not only accessible, safe affordable and appropriate, but also gender sensitive. Historically, transportation planning and engineering have been gender neutral. Traditional transportation planning models do not characterise gender differences in transportation. There is therefore the need to develop transportation planning models that capture gender differences in trip purpose, frequency and distance travel, mode of transportation used and complexity of trip making. There is the need to improve public transport. This could be achieved through increasing subsidies in order to reduce fares or increase services, providing more buses, staff, stations and bus stops. Improving safety on the street is very crucial. Routes should connect homes with other activity centers. Therefore, there is an urgent need for planning. That is, urban development and transport have to be pursued together at the same time. Provision of efficient public transport should precede any major housing development. Measures should be taken to avoiding alienation of any existing right-of-way, especially in the dense areas. A design of integrated metropolitan transport master plans with a clear vision of train, bus and taxis as well as urban motorcycle and non-motorized transport roles is needed. Urban transportation policies which emphasize accessibility, that is, reducing the need to travel, should be pursued. Such policies relate to land use planning and decentralization of activity areas and the prioritization of walking and cycling over motorized transport.*

## 1.0 Introduction

Transport system represents a major interface between the location of activities and the general movement of people in an urban system (Ayeni, 1998). Hitherto, urban transport problems are becoming more and more acute in the cities in Nigeria (Filani, 1994; 2002; Adesanya and Adeniji, 1998; Egunjobi, 1999; Ogunsanya, 2002 Oyesiku, 2002a; etc). World Health Organization (2000) recently articulated that health concerns related to traffic and transportation have become a worldwide phenomenon and will likely become more of an issue in the future. Findings from other recent studies suggest that stress from transportation may represent an important factor that influences the well-being of urban population (Asiyanbola, 2004; Gee and Takeuchi, 2004). The focus of the paper is to examine gender difference in the effects of urban transport infrastructure condition and intra-urban travel on the psychological well-being of women and men in Nigeria using Ibadan as a case study. Although research findings have shown that women's transportation patterns differ from men's, and a significant positive relationship have been found between intra-urban travel and psychological distress (Asiyanbola 2002; 2004), there is no empirical study that has examined gender differences in the effects of urban transport infrastructure condition and intra-urban travel on the psychological distress of women and men. The present work is an addition to the existing literature and an attempt to make contribution along this gap. The null hypotheses tested in the paper are that: (i) there is no significant effect of urban transport infrastructure condition and intra-urban travel on women and men's psychological distress and (ii) there is no gender difference in the effects of urban transport infrastructure condition and intra-urban travel on the psychological distress of women and men.

The study area, Ibadan city, is located on longitude 7°20' and 7°40' east of the Greenwich Meridian and latitude 3°35' and 4°10' north of the equator. The city is situated near the forest-grassland boundary of south western Nigeria, in a geopolitical entity known as Oyo State. in the South-western part of Nigeria (Fig. 1). In Nigeria, women constitute about half of the total population (Table 1). The total population size of the wider Ibadan region was 1,258,625 according to the 1963 national census and 1,991,367 in 1991 national census out of which 988,923 are male while 1,002,444 are female (Afolayan, 1994). The city was for a long time the largest city in tropical Africa. By virtue of its historical, political, administrative, cultural and socio-economic importance over the years, there is hardly any major ethnic or sub-ethnic group in Nigeria that is not represented in this city (Mabogunje 1968; Filani et al 1994).

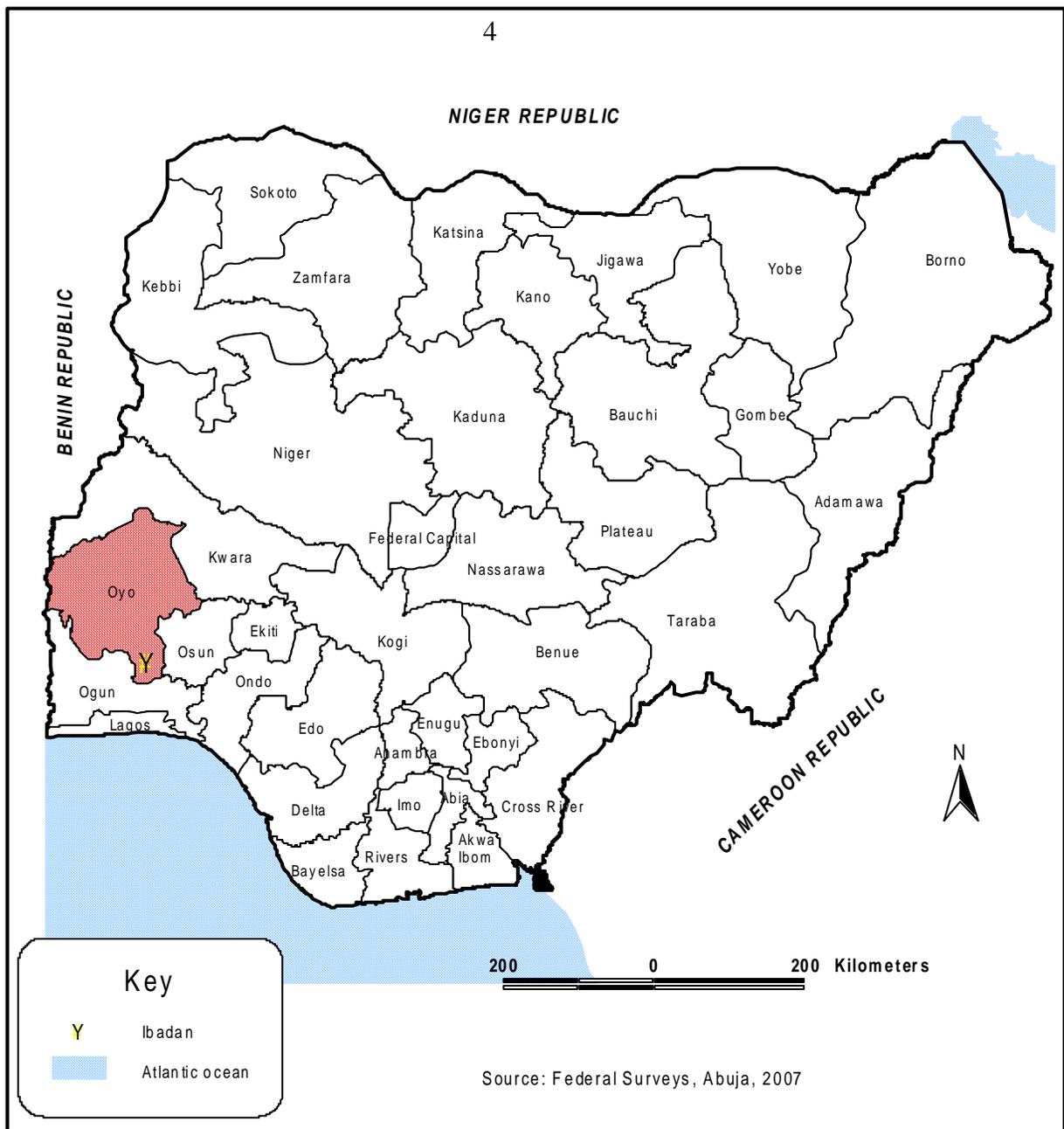


Fig. 1. : Map of Nigeria showing Oyo State and Ibadan

Table 1: Nigerian population by gender (2001 – 2006)

	2001 (‘000’)	2002 (‘000’)	2003 (‘000’)	2004 (‘000’)	2005 (‘000’)	2006 Population census figure
Total Female population	59,519	61,203	62,936	64,716	48,531	68,293,683
Total Male population	59,282	60,960	62,685	64,459	67,111	71,709,859
Total population	118,801	122,163	125,620	129,175	133,767	144,003,542

Source: National Population Commission (NPC) & Federal Office of Statistics, Lagos

Following the introduction section is an overview of urbanization and urban transport condition in Nigeria in section two. This is followed by an overview of gender and transport in section three. In section four is the methodology, while results and discussion are in sections five and six respectively. Section seven is the summary, policy implication and conclusion.

## 2.0 Urbanization and urban transport condition in Nigeria

The trend of urbanization and city growth in developing countries are characterized by rapidity of urban increase, urbanization outpacing industrialization, and a high rate of urban population growth by natural increase and migration (Oyesiku, 2002a). In Nigeria, urbanization has a fairly long history in its growth and development. Historical account shows that extensive urban development in Nigeria predates the British colonial administration. Early explorers, missionaries and merchants estimates of population of towns show the existence of substantial human settlements in this part of the world in the 19<sup>th</sup> century (Mabogunje 1968). During this period, the major factors crucial to the growth and development of cities were trading, marketing and administration. The second half of the 20<sup>th</sup> century witnessed rapid rate of urbanization and emergence of cities in various parts of Nigeria due to a number of factors among which are: introduction of wheeled transportation, particularly railway and road; categorization of settlement into hierarchical order of township; introduction of monetized economy and consequently production of cash crops and exploitation of mineral resources; continuous geopolitical restructuring, through creation of states and local governments in 1967, 1976, 1987, 1991 and 1996,; and the industrialization process between 1960 and 1975, which was based on import substitution strategies and consumer market for imported goods and services (Oyesiku 2002a).

In Nigeria the pace of urbanization has been dramatic showing extraordinarily high rates of 5-10 percent per annum (Egunjobi 1999). Consequently, there has been rapid

expansion of Nigerian cities' areal extent, which is now sometimes ten fold their initial point of growth (Egunjobi 1999; Ogunsanya 2002; Oyesiku 2002a). A crucial aspect of this is that city growth and expansion in Nigeria has been largely uncontrolled (Agbola, 1989; Agbola and Agbola, 1997; Egunjobi, 1999; 2002; Oyesiku, 2002a; Olanrewaju, 2004; etc). Consequently, the scaring and unsatisfactory situations in the cities have been increasing at an alarming rate. Egunjobi (1999:3) noted that our cities in Nigeria are not only ailing, quite a majority of them are on the verge of breathing the last breath. Several studies have shown that inadequate planning of urban landuses in Nigeria and great intensity of use of land in the urban areas has exacerbated urban problems (Filani, 1994; Egunjobi, 1999; 2002; Oyesiku 2002a; Foundation for Urban Development in Africa, 2006; etc). The current trend in the Nigerian cities is very frustrating. Mabogunje, notes that whether we think of welfare services or employment opportunities, the urban system in Nigeria today is already proving inadequate as a means of achieving the type of social order that the country desires (Foundation for Urban Development in Africa, 2006:23).

In Nigeria, urban transport that serves as the sinew, binding together various land uses has not only remained inefficient, it has grown over the years to be expensive and dangerous (Egunjobi 1999). In many Nigerian cities, urban transport exhibits remarkable features. Several studies have revealed these features of Nigerian urban transport (Adeniji, 1993; Adesanya, 1996; Adesanya and Adeniji, 1998; Torres, 2001; Oyesiku, 2002b, 2002b; Ogunsanya, 2002; Olukoju, 2003; Osita et al, 2003; Vandu-Chikolo, 2004, etc). Among these features as summarized by Oyesiku (2002b:257) is shown in Box 1.

**Box 1: Features of Urban Transport System in the Nigerian cities.**

- 95% of urban trips are by road. Out of this, about 70% of the urban trips are made by public transport. Private operators dominate the public transport system and characterized by taxis, unregistered fare paying cars, para-transit, minibuses, two-wheeled motorcycle and three-wheeled motorcycle.
- Intermodality of trips is limited to public transport journey by road based public transport. The import of this is that most city travelers have no option of traveling by rail (light, metro, or tram) as well as by ferry.
- Ownership and organization of road public transport systems are characterized by haphazard and uncoordinated operators.
- Complete absence of comprehensive and integrated of urban mass transit public transportation system. Proliferated and largely uncoordinated private operators of para-transit and motorcycles public transport services accompany this.
- Decrease in the supply of new vehicles of all types and depletion of existing fleet, since the middle of 1980s. For instance, there were 248 people to one vehicle in 1980, which declined to 600 people to one vehicle in 1998. The low level of motorization is partly connected with decline in the economic fortune of the country, high rate of inflation occasioned by continued pressure on the general domestic level has reflected in the double digits increase in the overall urban consumer prices for all items, and that for the transport in particular

rising to the third digits.

- The rapid population growth and mismatched between urbanization and economic growth has led to inability of planners to adequately planned for existing cities and emerging settlements. The same gap between urbanization and economic growth has resulted in inadequate provisions for infrastructure and services, limp-frogging development in settlement that were never planned for and overall poor infrastructural base of the cities.
- Specifically poor condition of city roads which in turns shortens life span of motor vehicles and high cost of maintenance (Torres, 2001)

Source: Oyesiku (2002b:257)

Since Nigerian political independence in 1960, every successive government in the federation has shown appreciable concern for transport planning and development. This concern is reflected in the share of the transport sector out of the total planned public investment. As noted by Filani (2002) the transport sector has consumed on the average 20.3 percent of the total planned national resource outlay since the First National Development Plan Period (1962-1968). This according to him means that about 20 Kobo of every Naira in the planned expenditure in Nigeria's development efforts since 1962 had been allocated to the transport sector. Even though there had been significant achievement in this sector, the sector is still confronted with many problems which include among others, inadequate planning, lack of intermodal coordination, insufficient public transport to cope with rising demand, urban traffic congestion etc. The enormous resources committed to the development of transport still remain inadequate. Hitherto, cities in Nigeria suffer from inadequate intra-connectivity (Filani 2002; Oyesiku 2002a; Ogunsanya 2002; Egunjobi 2002; Osita et al 2003). There is lack of balance between urban structure and urban transportation system in Nigeria (Adeniji, 1993; Adesanya and Adeniji, 1998). Modal split is inappropriate due to the neglect of potentially viable modes of public transport, while the unbalanced capacity of networks creates traffic congestion, excessive consumption of energy and environmental pollution (Adesanya and Adeniji, 1998). A significant proportion of roads in Nigerian have been crumbling due to overused and inadequate maintenance resulting in their deterioration. According to the World Bank Report, only 30 percent of all categories of road in Nigeria could be regarded as being in good condition; the remaining 70 percent is in different states of disrepair (Filani 2002).

Filani (2002) notes that the country has the lowest level of motorization in West Africa with as low as 4 vehicles per 1000 inhabitants. To compound the problem further, the rate of vehicle growth is much lower than the population growth rate. Resulting from this mismatch is a general fall in the level of motorization in all parts of the country. Since 1982 and up till 1989/1990 there was a substantial reduction in new vehicle registration in all parts of the country (Fig. 2).

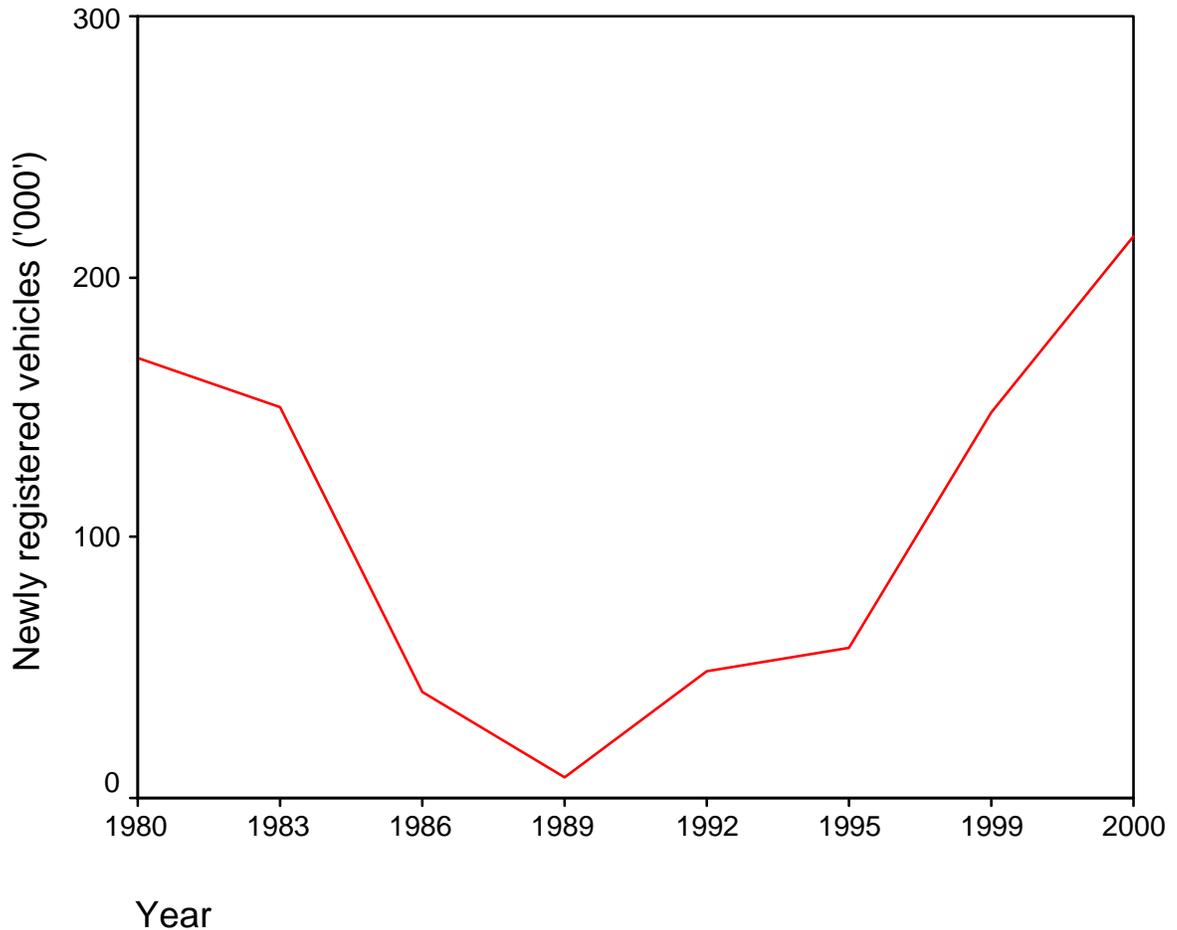


Fig. 2: Yearly trend of new vehicle registration in Nigeria (1980-2000)  
Source: Federal Office of Statistics, Lagos

The reduction then is a reflection of the economic recession and the consequent stricter restriction on all categories of imports, which include private vehicles and spare parts. The slump in the oil revenue since 1983 resulted in the institution of series of economic adjustment program (SAP) in Nigeria. This involved the strict control of foreign exchange spending. Since SAP involved, among other things, adjustment of the local currency (Naira) to international convertible currencies as well as withdrawal of petroleum subsidy, vehicle prices and maintenance costs skyrocketed beyond the reach of most individuals in the country. The consequences are the following crises (Filani 2002:40):

- High prices prevent the purchase of new vehicles; the astronomical prices of the available limited spare parts make vehicle maintenance almost impossible;
- Public transport operators are saddled with rickety and ill-maintained vehicles due to exorbitant prices of spare parts and their inability to purchase new ones to expand their fleet of vehicles; and

- Queues of passengers at major urban terminals and along routes get longer and longer everyday.

Mabogunje notes that most of the problems faced by African cities stem from the fact that urban population are growing faster than urban economies (Foundation for Urban Development in Africa, 2006:25). All the crises highlighted above have resulted from serious distortion and gap, which have been created between demand and supply of means of mobility among the populace (Filani, 2002). The demand for public transport among Nigerians, especially those living in the urban centres have increased to a scale hitherto unprecedented. Plate 1 shows one of the agonies experienced by the public transport operators in Nigerian cities. Plate 2 shows the agonies experienced by the commuters as they struggle to board buses in the Nigerian cities.



Plate 1: Showing the agonies of the public transport operators in Nigerian cities

Source: IFRA 2002:2

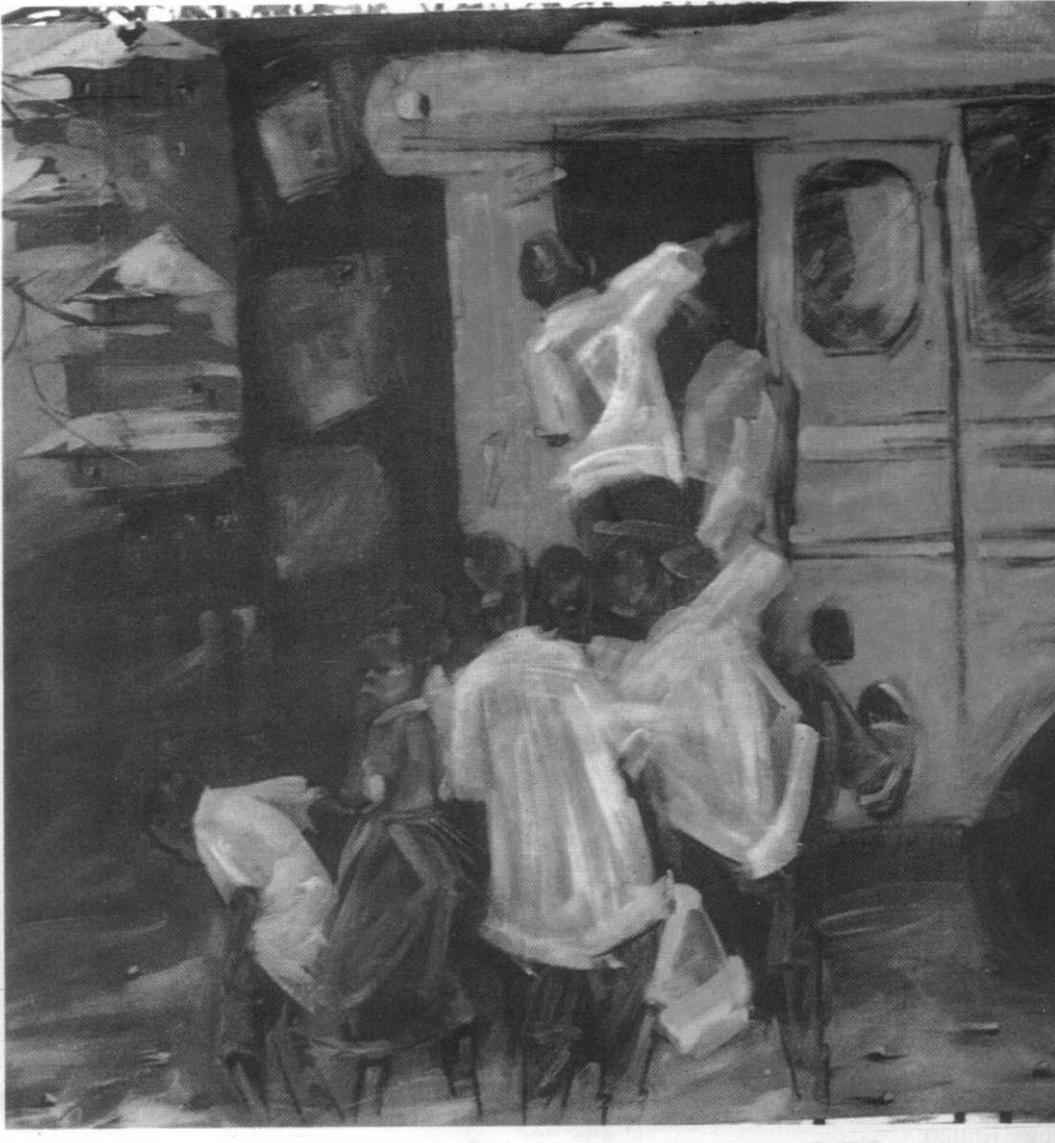


Plate 2: Showing one of the agonies of the public transport commuters in Nigerian cities  
Source: IFRA 2002:3

Thus, even though, the role of urban transportation is to facilitate the movement of people and goods comfortably and safely, when they are required and recognizing that there is no alternative to mobility, what exists in the Nigerian cities are a litany of inconvenience, and frustration (Egunjobi, 1999, 2002; Osita et al, 2003; Olukoju, 2003; Asiyanbola, 2004). Transport infrastructure is inadequate and the available public transport facilities are not adequately maintained.

### 3.0 Gender and Transport

Although the situation of urban transport system in the Nigerian cities affects women and men, previous empirical and theoretical discussions most of the time assumed the universality of women and men's experience (Seager 1992; Moser 1992; 1993; McDowell 1983; Weisman 1992; Robinson 1998 etc.). Hitherto, every attempt at solving intra-urban mobility problems was made without gender considerations. The assumptions have always been such that the solutions are applicable equally to both men and women. In most cases, pure traditional economic variables, which ignore crucial cultural roles and the salience of the life course, are used to derive some of these solutions (Rosenbloom, 1993). Yet those missing variables are parts of our realities, which of course need to be applied in formulating any transportation policy. The place of gender has been found to be very important in effective policy formulation because man and woman are not equal urban space users and actors (Townsend 1991; Seager, 1992; Moser, 1993; Bowlby et al, 1989; Short, 1996; etc).

Up till the 1970s, women generally, are noticeably absent from the discussion of development theory and practice. They have remained invisible in many analyses of social space. In fact, Robinson (1998) notes that with respect to the human geography techniques and models many of which originated within geography from the pioneering studies in the 1960s, they were applied in research and completely ignored gender. According to him, although there were references to consumers, decision makers and heads of household, there was no attempt to distinguish between the different realities confronting men and women, and the differential power relations associated with gender (Jackson 1990). Gender was largely a taken-for-granted variable and the different nature of women's lives was simply ignored.

Not until recently, studies, mostly in the advanced countries, have sought to uncover women's experience of different places. Such studies according to Robinson (1998: 456) have often thrown into sharp focus the different types of experience of place had by men and women. Some of such recent researches based on sex differentiated data have shown clearly that there is gender differences in spatial experiences and that differences between women and men run through all aspects of urban life: in commuting patterns and transportation use; in patterns of housing and homelessness; in labour force participation and work opportunities and in the use of urban social space (Seager, 1992; Weisman, 1992; etc).

In the developed countries since the 1970s, there has been growing awareness of wide differences in the ways in which men and women travel (Beuret, 1991). This increasing awareness is from studies carried out on women and transportation. Box 2 shows highlight of some of these research findings in the developed countries.

Box 2: Highlight of research findings on gender and travel in the developed countries.

- Women's transportation patterns differ from men's on several dimensions: the journey-to-work trip; the kind of trips made, complexity of trip-making, and the use of public transit (Wekerle, 1980; Gordon, et al 1989; Hanson and Johnson, 1985; Schintler, 2001; etc).
- Work trip is shorter for women than for men (Rutherford and Wekerle, 1989; Pisarski, 1987; Nelson, 1986; Singell and Lillydahl, 1986; Hanson and Johnson, 1985; Pickup, 1985; Dasgupta, Frost and Spence, 1985; Michelson, 1983. Howe and O'Connor, 1982; Madden, 1981; Ericksen, 1977; Gordon, Kumar and Richardson, 1989 etc.). This result holds in spite of differences in public transit versus automobile use and in female labor force participation rates. Women try to reduce the distance between home and work and the time spent in commuting; the shortest journey to work is found among married women.
- Working women made more domestic related trips and chauffeuring children than their spouses (Hanson and Hanson, 1980; Prevedourous and Schofer, 1991).
- Single parents made more trips and traveled further for all purposes than comparable married workers (Kostyniuk, et al, 1989; Johnson-Anumonwo, 1989; Rutherford and Wekerle, 1989)
- Age and presence of children influenced travel patterns in all types of household. Women's travel patterns varied significantly with the age of their youngest child (Rosenbloom and Raux, 1985; Perez-Cerezo, 1986).
- Women's entry into the workforce, along with their continued role as primary caretakers of domestic responsibilities, has led to the emergence of "knock-on" trips, or trips generated by the substitution of home production for market production. Women are more likely than men to make these types of trips. (Rosenbloom 1993; Schintler, 2001).
- Complex travel behavior such as trip chaining is more common for women than men even when both males and females are in employment. Women stop more for running household errands than do men, on both inward and outward commutes and irrespective of the number of persons in a household or its structure (Root et al, 2000; Schintler, 2001).
- Married women are more likely to make a greater variety of trips for young children, and more of those trips are directly related to household responsibilities (Rosenbloom, 1989)
- Women frequently use public transportation for shopping and household errands and women workers combine these trips with the journey to work to save precious time (Skinner and Borlaug, 1978; Hanson and Hanson, 1978; Beuret, 1991).
- Within the same households, men and women often have differential access to family car, where there is only one automobile, it is frequently the husband who uses it on a regular bases (Wekerle, 1980; Hanson and Hanson, 1980; Beuret, 1991; Rosenbloom, 1993).
- In studies of traveller information services, women are often less prone to switch routes after receiving traveller information on alternative routes. Women tended to be more conservative in their selection of travel alternatives (Abdel-Aty et al, 1996; Schintler, 2001)

Historically, transportation planning and engineering have been gender neutral. The needs and responsibilities of women which now extend beyond the domestic sphere, due largely to the increase in female labour force participation play an important role in shaping their travel activity patterns, specifically, in their impact on trip purpose, frequency and distance travel, mode of transportation used, and complexity of trip making. However, as observed in the literature, transportation planning models are not designed to capture these differences (Wekerle 1980; Schintler 2001). The design of the transportation systems is such that it is primarily to carry workers to and from their jobs. Planning does not take into account the fact that the journey to work for women workers is often more time consuming, more costly, and more complicated than men's. Women frequently use public transportation for shopping and household errands and women workers combine these trips with the journey to work to save precious time (Skinner and Borlaug, 1978; Hanson and Hanson 1978). Yet fare structures and the location of transit lines do not accommodate this trips pattern. In addition mothers are generally responsible for taking children to child-care facilities and picking them-up. These trips are not reflected in transportation models even though they require an extra trip twice a day, sometimes in a direction away from work, and involve additional time and money (Wekerle 1980). These models according to Schintler (2001:356-357), assume that each traveller's primary concern is to minimize travel time and cost, whereas other factors such as safety, comfort, and accessibility to opportunities may be more important than travel time to many women, and that the unique circumstances and psychology of women may lead them to very different rules of travel related decision-making than men, and this behaviour cannot be accurately reflected in travel demand models based on rational behaviour and utility maximization.

In the developing countries and in Nigeria in particular, studies have shown that there are significant differences between women and men intra-urban travel behaviour (Asiyanbola 1999; 2002; Fadare and Morenikeji, 2001; Oyesiku and Odufuwa, 2002). A study carried out in Abeokuta, Ogun State revealed that women linked-trips to and from work; women make more activity trips weekly than men and women and children depend heavily on public transport for their intra-urban travel (Asiyanbola, 1999). Observation in Ibadan city revealed that work trip distance is shorter for women than for men, women make domestic related non-work trips more than men and walking as well as public transport are crucial in enabling access to various activities centers; and in a household where there is one car, men use the car most (Asiyanbola 2002). In Niger State, Fadare and Morenikeji, (2001) found that among people without means of transport women make more trips than men, but among the group with means of transport men have a higher mean trip rate than women. Also, study by Oyesiku and Odufuwa (2002) on gender perspectives in travel behaviour of motorcycle passengers in Nigerian intermediate cities shows that females frequently use motorcycle mode for short and long distance trips more than males; the use of motorcycle has significant effects on the pattern of dressing of women and that two of every three passengers that have motorcycle accidents are women. Although, recent study have shown significant relationship between intra-urban travel and psychological distress as well as between intra-urban travel stress experience and the household income, educational level, occupation and household size (Asiyanbola, 2004), there is no empirical study that has examined gender

differences in the effects of urban transport infrastructure condition and intra-urban travel on the psychological distress of women and men.

#### **4.0 Methodology**

Data used in the paper were obtained from a cross-sectional survey of 721 households carried out by the author on gender and housing in Ibadan, Nigeria. In this household survey, the sampling frame utilized was the total number of estimated households in Ibadan municipal area. The average household size declared for Nigeria in the result of the National Population Commission (NPC) 1995/96 household survey is 4.48. This was used to divide the projected 1999 population of each locality as defined by the National Population Commission (NPC) in the Ibadan municipal area to get an estimate of the number of households. To make for effective and objective coverage, due to non-availability of the list of all households in each locality in Ibadan, the number of questionnaires administered in each locality was proportional to the total number of estimated households in each locality. The sampling procedure adopted was aimed at sampling along the major streets in each locality. Systematic random sampling was used in the selection of houses along the streets. The first house was selected by the use of random numbers and all subsequent units in the sample were chosen at uniform intervals of fifth houses. From each of the selected houses, representative of the household, normally a woman and her spouse (if any) were interviewed.

Variables that are used in the analysis include:

(i) Urban transport infrastructure condition variables (1 if bad, 0 otherwise). These variables are: neighbourhood road quality; neighbourhood public transport condition; neighbourhood street light condition; neighbourhood state of security; neighbourhood crime level; and neighbourhood drainage system;

(ii) Intra-urban travel variables as indicated by weekly trips (total number). Respondents were asked to fill in all the number of the trips made for the immediate past week for the various purposes (secular work, children school, childcare, recreation, shopping, religion, fetching water, getting rid of household waste); and

(iii) Psychological well-being information. Psychological distress has two major forms (Mirowsky and Ross 1989; Theodore et al 1993;) depression (feeling sad, demoralized, lonely, hopeless, worthless, wishing you were dead, having trouble sleeping, crying, feeling everything is an effort and being unable to get going); and anxiety (being tense, restless, worried, irritable and afraid). Argument in the literature is that depression and anxiety are no distinct forms of psychological distress. They are instead closely intertwined (Mirowsky and Ross 1989; Dohrenwend et al 1980). In this study, I have adopted Theodore et al (1993) scale of psychological distress, which comprises ten items that reflect various symptoms, including aspects of both anxiety and depression (Theodore et al 1993:1421-1422).

(iv) Gender role in the household: Most researches are based on the conception of the household defined as spatial units where members live in the same dwelling and share basic domestic and/or reproduction activities such as cooking and eating (Chant 1997; Young 1995; Mishra 1992; Robertson 1984; Harris 1994 etc.) Households are seen as natural units. This conception of households is based on the following assumptions: that

households are constituted around relationships centered on marriage and parenthood, that co-residence is a defining feature, that the housing unit and the consumption unit are co-existence and that members of the unit pool and share economic resources, and that within the household there is a clear division of labour based on gender – the man of the family, as the breadwinner is primarily involved in productive work outside the home, while the woman as the house-wife and “housemaker” takes overall responsibility for the reproductive and domestic work involved in the organization of the household. These conceptions of the households have been criticized in the literature. Households mean different things to different people in different places, and there is growing debate on the desirability or otherwise of generating definitions which might be universally applicable (Chant 1997). Households are not homogenous in terms of family structure. Women in the households perform “triple role” (Moser 1992; 1993; Brent 1991; Young 1995). First, women’s work includes reproductive work; childbearing and rearing responsibilities. Second it includes productive work and thirdly, women’s work increasingly includes community-managing work. The first two gender roles, which are reproductive work and productive work, are used in the analysis. In the paper, the analysis focused on women and men generally and the subgroup of men that is working as well as the subgroup of women that are nursing mothers and working.

Table 2 shows the measure of dependent and independent variables used in the analysis. Table 3 shows the measure of gender role used in the analysis.

Table 2: Measure of dependent and independent variables

Variables	How measured
<i>Dependent variable</i>	
Psychological distress	- 1 if often or sometimes experiencing any of the following, otherwise 0: (i) anxious about something or someone; (ii) that people are trying to pick quarrels or start argument with you; (iii) so depressed that it interferes with your daily activities; (iv) that personal worries are getting you down physically ill; (v) moody; (vi) felt you were confused; (vii) are you ever bothered by nervousness? i.e. by being irritable, fidgety or tense; (viii) do you feel that nothing ever turns out for you the way you want it to? (ix) do you have trouble concentrating or keeping your mind on what you are doing? - 1 if the respondent is the worrying type.
<i>Independent variables</i>	
Urban transport infrastructural condition indicators	- 1 if any of the following is in bad condition, otherwise 0: neighbourhood road quality; neighbourhood public transport condition;

	neighbourhood street light condition; neighbourhood state of security; neighbourhood crime level; and neighbourhood drainage system
Intra-urban travel indicators	Total number of weekly trips made for each of the following purposes (secular work, children school, childcare, recreation, shopping, religion, fetching water, getting rid of household waste)

Table 3: Measure of gender role in the household

Gender role	How measured
Working men	1 if working, 0 otherwise
Working women	1 if working, 0 otherwise
Nursing women	1 if the age of the youngest child is less than 6, 0 otherwise
Nursing & working women	1 if the age of the youngest child is less than 6 and if working, 0 otherwise

Regression statistical technique was used to test the stated hypotheses. One of the usefulness of the regression analysis is that it measures the amount of impact one variable produces in another (De Vaus 1996; Robinson 1998; Babbie 1998; etc).

## 5.0 Results

The effects of urban transport infrastructure condition/intra-urban travel on the psychological well-being of different categories of women and men are shown in Table 4. The result shows that urban transport infrastructure condition/intra-urban travel has significant effects on the psychological well-being of women and men. Generally, the effect of urban transport infrastructure condition/intra-urban travel is found to be higher for men ( $R^2 = .232$ ) than for women ( $R^2 = .178$ ). However, the effect are found to be more on working/nursing women ( $R^2 = .367$ ) followed by nursing mothers ( $R^2 = .306$ ), and, working women ( $R^2 = .276$ ) compared to the effect on working men ( $R^2 = .264$ ).

Table 4: Effect of urban transport infrastructure condition/intra-urban travel on psychological distress of women and men

Gender	R	Effect ( $R^2$ )	Std Error of the Estimate	F Change	Sig. F Change
Men generally	.481	.232**	1.9447	2.367	.000
Women generally	.422	.178**	2.1757	2.293	.000
Working Men	.514	.264**	2.0600	2.184	.000

Working Women	.525	.276**	2.2247	2.613	.000
Nursing Mothers	.553	.306*	2.2116	1.387	.048
Working & Nursing Women	.606	.367**	2.0778	1.600	.010

\*\*Significant at  $p < .01$

\*Significant at  $p < .05$

Source: Field survey, 2001

Table 5 shows the effects of urban transport infrastructure condition and intra-urban travel on women's psychological distress. This Table shows that the effects of intra-urban travel indicators on women's psychological distress is more than that of urban transport infrastructure condition. Also, the Table shows that the effects of urban transport infrastructure condition and intra-urban travel on women's psychological distress is more on working & nursing women compared to other categories of women.

Table 5: Effect of urban transport infrastructure condition and intra-urban travel on women's psychological distress

Category of Women	Variables	R	Effect ( $R^2$ )	Std Error of the Estimate	F Change	Sig. F Change
Women generally	Urban transport infrastructure condition	.140	.020*	2.4071	2.384	.027
	Intra-urban travel	.426	.162**	2.2918	2.312	.000
Working Women	Urban transport infrastructure condition	.189	.036**	2.3880	3.800	.001
	Intra-urban travel	.457	.173**	2.2699	2.168	.000
Nursing Mothers	Urban transport infrastructure condition	.145	.021	2.3402	1.190	.311
	Intra-urban travel	.508	.237**	2.2355	1.566	.010

Working & Nursing Women	Urban transport infrastructure condition	.210	.044*	2.2537	2.361	.030
	Intra-urban travel	.524	.230*	2.1724	1.416	.039

\*\*Significant at  $p < .01$

\*Significant at  $p < .05$

Source: Field survey, 2001

## 6.0 Discussion

The regression result which shows that urban transport infrastructure condition and intra-urban travel has significant effects on the psychological well-being of women and men are due to the fact that the urban transport problems which is characterized in terms by (Filani 1994; 2002; Ikporukpo 1994; etc): inadequate and poorly maintained infrastructural facilities, accidents; the relative immobility of the disadvantaged shown in, for instance, in waiting for long periods at the bus stops; pollution from transport; traffic congestion and the related parking problems, etc is becoming acute in the city. This is due to the city's rapid economic and industrial developments which have resulted in the large expansion of the city's areal extent which is now sometimes ten fold its initial point of growth (Filani 1994; Egunjobi 1999; Ogunsanya 2002; Oyesiku 2002). The city of Ibadan covered an area of about 5.40 sq. km in 1830 and by 1934 it increased to 12.50 sq. km (NISER 1988). This increased to 30 sq. km in 1963, an increase of about 56.8 percent in 29 years. In 1970, the total land area enveloped by the city was 103.80 sq. km, which reached 136 sq. km in 1984 (Bello, 2001). It is interesting to note that by 2006, the total land area enveloped by development in Ibadan has reached about 384.48 sq. km (Table 6 and Fig. 3). In other words, in 22 years, the city of Ibadan has expanded by about 54.2 percent.

Table 6: The Successive Land Cover Change in Ibadan (1830-2006)

Year	Extent of Growth (sq. km)	Increase in sq. km
1830	5.40	-
1934	12.50	7.1
1963	30.00	17.5
1970	103.80	73.8
1973	112.00	8.2
1981	136.00	24
1984	176.00	40
1988	214.00	38
1997	322.00	108
2001	348.46	26.5
2006	384.48	36.0

Source: Adapted from Bello (2001)



adequate provision of sidewalks to facilitate pedestrian movements. Where sidewalks exist, they are usually taken over by roadside traders (Filani 1994; Egunjobi 1999), forcing pedestrians more to walk on road pavements. According to Filani (1994:188), this, in essence means constant conflicts between pedestrians and motorists. Also most of the existing roads in the city were constructed in the late 1940s and early 1950s when the city's economic base and territorial extent were very limited (Filani 1994). At that time the major commercial and industrial activities were concentrated in a few pockets area and fewer vehicles were in circulation within the city. Consequently, the roads are narrow, winding and lacking in pedestrian sidewalks and adequate parking facilities. The existing transport systems fall far short of the ever increasing commuter traffic demand and the complexity of intra-urban journey patterns. This has resulted in excess capacity utilization, which has contributed to the deterioration of the roads. Moreover, as there are very few organized parking lots people suffer stress in search for parking space. Vehicles and their owners are subjected to dangers in non-conventional car parks. Parking space inadequacy is the result of illegal street parking, which has already reaches crisis proportions in the city. In addition, such vehicles parked on the streets are ready targets of thieves and reckless drivers. Vehicles are always double-parked along the verges of the main roads thereby decreasing their lane capacity. As a result, traffic congestion, 'hold-ups' and bottlenecks are a common feature, particularly during rush hours.

The results of gender differences in the effects of urban transport infrastructure condition and intra-urban travel are due to the fact that the responsibility for housework and child caring falls more heavily on women and yet women still engage in productive work activities. In Nigeria, patriarchy structure has been a major feature of the traditional society (Aina 1998). It is a system of social stratification and differentiation on the basis of sex, with clearly defined sex roles (Aina 1998:6). Traditionally men do not participate in domestic work including child rearing – such tasks are considered to be the exclusive domain of women. The traditional stereotype in the division of labour within the domestic units is still rampant and women even if employed and regardless of social class still do the greatest share of household and childcare activities (Asiyanbola, 2006a). Grieco and Turner (1997) notes that women's greater domestic responsibilities, coupled with their weaker access to household resources have significant consequences on their transport and travel status. According to them, the lower the income of a household, the more probable it is that women experience greater transport deprivation than men which may take the form of women's journey having multiple purposes and thus generating greater anxiety in the travel context (Grieco and Turner 1997:46-47). In most communities and neighborhoods where basic amenities and infrastructures are in a very deplorable situation, women are forced to make several daily trips e.g. to the water source.

The results of the effects of intra-urban travel indicators on women's psychological distress which is found to be more than that of urban transport infrastructure condition may be due to the fact that women make more frequent and link trips due to their expected gender roles and responsibilities in the households. This result suggests that policies that reduce the frequency of trips made by women could reduce the psychological distress due to intra-urban transportation of women.

## 7.0 Summary, policy implications and conclusion

The paper examines the effects of urban transport infrastructure condition and intra-urban travel on the psychological well-being of women and men in Nigeria using Ibadan as a case study. The study shows that urban transport infrastructure condition and intra-urban travel have significant effects on the psychological well-being of women and men. However, the effects are found to be more on working/nursing women followed by nursing mothers and working women compared to the effects on working men. These findings suggest that urban transport infrastructure condition and intra-urban travel constitute a major threat to psychological well-being of women and men and the effect is more on the psychological well-being of women than of men due to gender differences in the socially prescribed roles.

The issue of concern therefore is to make intra-urban transportation services not only affordable, accessible, safe and appropriate, but also gender sensitive. These will facilitate the achievement of the Millennium Development Goal Number 3, which is to promote gender equality and empowerment. This is because, services which are gender-sensitive would improve the potential of women to enjoy and exercise their full human rights – political, economic, social, civil and cultural; would facilitate greater equality between women and men; and would contribute to greater equity (O’Connell, 2000: 9). To achieve this, there is the need for the involvement of women in discussions and decision-making that shapes service delivery. Of course policies to improving the socio-economic status of women should be pursued as this will increase the number of women that could be involved in policy making process. This is because, studies have shown that women and men do not have equal access to, or influence on, decision-making and that socio-economic status of women is an important factor that make women participate more or less in decision-making (Olatubara, 2003; Asiyanbola, 2006b). Among local decision makers – elected representatives, officials, service planners, and deliverers – and civil society organizations including NGOs and community-based organizations there is the need to build greater awareness of and sensitivity to gender differences as this is fundamental to developing gender sensitive services (O’Connell 2000). In addition, and more importantly there is the need to invest in reducing and redistributing women’s workload, as this will enhance women empowerment and facilitates the achievement of the Millennium Development Goal Number 3.

There is the need to develop transportation planning models that capture gender differences in trip purpose, frequency and distance travel, mode of transportation used and complexity of trip making. There is the need to improve public transport. This could be achieved through increasing subsidies in order to reduce fares or increase services, providing more buses, staff, stations and bus stops. Improving safety on the street is very crucial. Routes should connect homes with other activity centers. There is an urgent need for planning. That is, urban development and transport have to be pursued together at the same time. Provision of efficient public transport should precede any major housing development. Measures should be taken to avoiding alienation of any existing right-of-way, especially in the dense areas. A design of integrated metropolitan transport master plans with a clear vision of train, bus and taxis as well as urban motorcycle and non-motorized transport roles is needed. Urban transportation policies, which emphasize accessibility, that is, reducing the need to travel, should be pursued. Such policies relate

to land use planning and decentralization of activity areas and the prioritization of walking and cycling over motorized transport.

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