Gender differences in intra-urban travel behaviour: a preliminary survey in Ibadan, Nigeria.

Différences de sexe et comportement dans les déplacements intra-urbains: une étude préliminaire à Ibadan, Nigeria

Asiyanbola R. Abidemi
Department of Geography and Regional Planning,
Faculty of the Social &Management Sciences,
Olabisi Onabanjo University,
Ago-Iwoye,Ogun State,
Nigeria.

ABSTRACT : The paper examines women and men intra-urban travel behaviour. The result of the cross-sectional survey of 232 households sampled in Ibadan, Oyo State, Nigeria shows that: there are significant differences between women and men intra-urban travel behaviour for most of the purposes considered except for work and religious purposes. While work trip distance is found to be shorter for women more than men in the high and medium density residential areas, the contrary is found in the low density residential area. Significant relationship is found between the socio-economic status including stages in the life cycle and travel behaviour of women only. Also significant relationship is found between the combined residential pattern variables and the intra-urban travel behaviour of women and men. Policy implications of these results are highlighted in the paper.

RESUME : Cet exposé étudie le comportement des hommes et des femmes dans les déplacements intra-urbains. Le résultat d'une étude transversale sur un échantillon de 232 ménages d'Ibadan, Etat d'Oyo, Nigeria montre qu'il existe, pour la plupart des motifs de déplacement, à l'exception des raisons de travail ou religieuses, des différences significatives de comportement entre les femmes et les hommes dans les déplacements intra-urbains. Tandis que le déplacement pour le travail est plus court pour les femmes que pour les hommes dans les zones d'habitation à moyenne et haute densité, c'est le contraire dans les zones d'habitat à faible densité. On ne trouve que pour les femmes une relation significative entre le statut socio-économique selon les étapes de la vie et le comportement en matière de déplacement. Un autre lien significatif apparaît entre les variables de résidence et le comportement des femmes et des hommes en matière de déplacement intra-urbain. L'exposé met en évidence les implications de ces résultats en matière de politique de transport.

1.GENDER AND TRAVEL: AN OVERVIEW

Since the 1970's there has been growing awareness of wide differences in the ways in which men and women travel (Bauret, 1991) most especially in the advanced countries. This increasing awareness is from different studies carried out on women and transportation. Such studies include Hanson and Hanson, et al (1980); Wekerle (1980); Rosenbloom (1985, 1989a, 1989b, 1991, 1993); Rutherford, et al (1989); Pickup (1989); Johnson-Anumonwo (1989); Prevedorous, et al (1991), Schintler (2001) and so on. Research findings shows that women's transportation patterns differ from men's on several dimensions: the journey-to-work trip, the use of public transit, and the kinds of trips made.

Several studies in the past decade (e.g Rutherford 1988; Rutherford and Wekerle 1987; Pisarski, 1987; Nelson, 1986; Singell and Lillydahl, 1986; Hanson and Johnson 1985; Dasgupta, Frost and Spence 1985; Michelson, 1983. Howe and O'Connor 1982; Madden, 1981; Ericksen 1977; Gordon, Kumar and Richardson 1989 etc.) have found that the work trip is shorter for women than for men. This results holds across countries (e.g the United States, Canada, Australia and the United Kingdom) in spite of differences in public transit versus automobile use and in female labour participation rates. Women try to reduce the distance between home and work and the time spent in commuting; the shortest journey-to-work trips are found among married women. As a result, women tend to confine themselves to a much smaller work-preference area than men do, and this either diminishes women's chances of competing in the job market or limits them to lower paying local jobs (Kains and Robins 1974; Cichocki 1980). Observations in the literature shows that transportation studies have not been sensitive to the

fact that even within the same household men and women often have differential access to family car. Thus even in affluent families, women may suffer serious spatial disadvantages when compared with their husbands. This is reflected in the findings that when there is only one automobile it is frequently the husband who uses it on a regular basis (Rosenbloom 1993). The evidence from studies conducted in a larger number of North American cities shows that the proportion of female workers using public transit is consistently twice and three times that of male workers using it (Wekerle 1980). Women worker's heavier dependence on public transportation affects their ability to take paid work and the extent of the job-search area in which they can look for work. It increases the hours spent in work-related activities and cuts into time for family and leisure activities. Paradoxically according to Wekerle (1980) women's increased labour force participation creates a greater demand for public transportation at a time when there are cutbacks in both the quality and availability of services.

Some other studies investigated non-work trips of women. Hanson and Hanson (1980), for example, found that Swedish working women made more shopping and domestic trips than their spouses – and fewer trips for social and recreational travel. Studies by Rosenbloom (1989a, 1993) in the Netherlands, France, and the United States found that women's travel patterns varied significantly with the age of their youngest child. Perez-Cerezo (1986) also found that the age and presence of children influenced travel patterns in all types of household. A study carried out in the 1990 by Prevedourous and Schefer (1991) found that employed women made twice as many trips as comparable to men for errands, groceries, shopping and chauffeuring children. Pickup (1985) studying British women in Reading, found that those with the greatest child-care obligations made the shortest work trips, passing up better jobs with longer constituting time. He concluded that women do not travel further because their child care obligations – and not the travel costs – limit them. To buttress this, he found that a significant number of women without children were willing to drive considerable distance even for low pay.

Some other studies have investigated the role of marital status. For example, Kostyniuk, et al (1989) found that, except for the very poorest women, who did not drive, single parents made more trips and traveled further for all purposes than comparable married workers; they attributed these patterns to the need to balance employment and domestic responsibilities without the help of a resident partner. A study carried out by Johnson-Anumonwo (1989) in Worcester, Massachusetts found that although women were less likely to own cars, they were more likely to make their work trip in cars; she also found that single women made longer work trips than comparable married women. She concluded that other variables – such as occupational differences, and differences in residential location – might explain these patterns and must be studied. Rutherford and Wekerle (1989) studied single and married workers in a Toronto suburb and concluded that it was important to disaggregate women by family composition; they found that single women spent more time traveling to work, and that they were less likely to work in the suburb in which they lived than were comparable married women.

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 Borland 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). `Schintler (2001:353) asserted that even though the needs and responsibilities of women play an important role in shaping their travel activity patterns, specifically, in their impact on trip purpose, frequency and distance of travel, mode of transportation used, and complexity of trip making; transportation planning models have failed to capture these differences because they are not designed to capture such variations.

In spite of this revealed knowledge from these various researches, Beuret (1991) observed that the integration of this knowledge into other areas of social policy has been slow to develop. If that is true of the developed countries, how much more in the developing countries where research on women in the area of transportation in particular has been rare. Even though there are women movement in Nigeria, for their voice to be heard sufficiently enough by the policy makers in the area of transportation planning, among others, there is the

need for increasing awareness through research of the wide differences in the ways in which men and women travel.

The present study is a step towards filling this gap. The paper examines men and women transportation patterns with respect to journey to work trip, the use of public transport and the kind of trip made. The null hypotheses tested in the paper are:

1. that there is no significant differences between men and women intra-urban travel behaviour;
2. that there is no significant relationship between the socio-economic status including the stages in the life cycle and the travel behaviour of men and women; and,
3. that there is no significant relationship between the residential patterns and the travel behaviour of men and women.

Ibadan city is used as a case study. Ibadan is located at the South-western part of Nigeria. The city was for a long time the largest city in tropical Africa. Although, it has now been surpassed by Lagos, it remains a truly Nigerian city. 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). It is important to note that the literature on this important black city is ever expanding representing different academic and research interests (see Filani et al 1994). However, in the area of gender studies available in-depth empirical work are extremely dearth.

2. METHODOLOGY

The primary data used in this study were obtained through a cross-sectional survey of 232 households in Ibadan. Information were collected on the following variables: socio-economic variables e.g occupation, income level, educational qualification etc.; weekly trips by gender and the use of car in the household. Respondents were asked to fill in all the number of the trips made for the immediate past week for the following purpose: secular work, children school, childcare, recreation, shopping, religion, fetching water and getting rid of household waste. Respondents were also asked to indicate who use the car most (woman or man) where there is only one car in the household. Variables used to measure residential pattern include: housing condition variables, neighbourhood condition variables and the distance from the CBD (modern and traditional) variables. Housing condition is measured by dummy variables. Information were collected on the following: type of house (if roomy apartment or traditional type of building a score of one is assigned, other type of buildings are assigned a score of zero); essential facilities in the house e.g kitchen, toilets, bathrooms etc. (shared or not shared); condition of the floor and the walls of the building (crack or not crack); type of materials the walls is made of (if cement block, 1 others zero); condition of the roof of the house (bad and leaking or not bad and leaking) etc.

Dummy variable (good or bad) is also used to measure neighbourhood condition variables which include: neighbourhood road quality; neighbourhood public transport; condition of the neighbourhood street light; neighbourhood water supply etc. Respondents were also asked to state the names of the location of their place of work. Distance from each neighbourhood to respondents place of work location and to the Central Business Districts both traditional (Mapo) and modern (Dugbe) are measured in kilometers directly on the map of Ibadan metropolitan area collected from the Oyo State Ministry of Land housing and Survey.

In order to get a representative sample, Ibadan metropolis was stratified into three residential density (high, medium and low density residential areas) following existing work on the Ibadan metropolis (Olatubara 1994). From these residential areas, 44 neighbourhoods were selected. High density residential area is more widely spread so 22 neighbourhoods were selected. From medium density residential area 12 neighbourhoods were selected and 10 low density residential area neighbourhoods. Also in the high density residential area 105 questionnaires were administered. 76 and 51 in the medium and low density residential areas respectively. The number of questionnaires administered in each neighbourhoods were proportional to their respective projected 1996 population as given by the National Population Commission (NPC). From each of the neighbourhood systematic random sampling technique was used to select the dwelling units and a man and a woman particularly (husband and wife) respondents from the same household were interviewed.

The data were analysed using statistical methods which include ratio; percentages, and the analysis of variance (ANOVA) and correlation statistical techniques.

3. RESULT AND DISCUSSION

The result of the analysis of differences in women and men weekly intra-urban travel for various activities is shown in Table 1.

Table 1: Result of the Analysis of Differences in women and Men Weekly Intra-Urban Travel for Various Activities

Weekly Activity	High density (n=105)	Medium density (n=76)	Low density (n=51)	All the three residential areas together
	't' value	't' value	't' value	't' value
Work	-1.63	-0.23	-0.85*	-1.61
Children school	-8.74***	-2.77**	-2.88**	-8.09***
Childcare	-2.71**	-2.82**	-1.51	-4.09***
Recreation	2.60**	-0.22	1.36	2.50**
Shopping	-5.08***	-3.69***	-3.51***	-6.38***
Religion	0.74	-2.77**	-1.23	-1.43
Fetching water	-8.00***	-5.64***	-2.41**	-9.42***
Getting rid of household waste	-7.06***	-4.68***	-4.00**	-9.20***

* p < .05; ** p < .01; *** p < .001
Source: Field survey, November 1999 – April 2000.

In all the three residential areas combined, there is no significant differences in the trips made for the purpose of religious and secular work, while there are significant differences in all the other variables which are trips made in respect of children school, childcare, recreation, shopping, fetching water and getting rid of household waste. Similar result is obtained in the high density residential area. In the medium density residential area, while trip made for the purpose of secular work is found not to be significantly different, significant difference is found in the trip made for religious purpose. However, trips made for recreational purpose is not significantly different. In the low density residential area, trips made in respect of secular work, childcare, recreation and religion are found not to be significantly different. There are significant difference in all the other variables which include trips made in respect of children school, shopping, fetching water, and getting rid of household wastes.

The result obtained with respect to trips made for the purpose of secular work is not a surprise. It is expected. It is an indication that the era of women as only homemakers is gone. Women are now joining labour force in large numbers. The result obtained with respect to trips made for the purpose of children school, childcare, shopping, fetching water and getting rid of household waste which indicate significant differences is also not a surprise. Inspite of the fact that women are now joining the labour force, they are still saddled with childcare and domestic activities. However, the result obtained with respects to trips made for recreation activities in the medium and low density residential areas; and childcare in the low density residential area which are not significantly different are a surprise. These results are not expected. Probably, it is due to the small sample size. If a larger sample size had been used, maybe the result would be different. This is because, from mere observation, men recreate more than women. In fact, men have more time for leisure than women. Also childcare responsibility falls heavily on women than men.

Table 2 shows the distance from home to work place of women and men in Ibadan, while Table 3 shows the mean, standard deviation and the result of the 't' test of distance from home to workplace of women and men in Ibadan.

Table 2: Distance from Home to Workplace of Women and Men in Ibadan (%)

Distance	High density (n=105)		Medium density(n=76)		Low density(n=51		All the three residential areas (n=232)	
	Women	Men	Women	Men	Women	Men	Women	Men
Below 2km	63.8	52.4	47.4	56.6	52.9	76.5	56.0	59.1
2.1-4km	21.0	19.0	18.4	9.2	25.5	13.7	21.2	14.6
4.1-6km	4.7	13.4	11.9	10.5	7.9	5.9	8.1	10.8
6.1-8km	9.5	4.7	13.1	9.2	9.8	3.9	10.4	6.0
8.1-10km	1.0	2.9	3.9	6.6	1.9	-	2.1	3.5
Above 10km	-	7.6	5.3	7.9	2.0	-	2.2	6.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Field survey, November 1999 – April 2000

Table 3: Mean, Standard Deviation and the Result of 't' Test of Distance from Home to workplace of women and Men in Ibadan

Residential Areas	Distance from Home to Workplace				
	Mean (km)		Standard deviation		't' value
	Women	Men	Women	Men	
High density (n=105)	1.98	9.43	2.14	29.75	6.17***
Medium density (n=76)	7.51	13.75	23.68	39.70	6.55***
Low density (n=51)	2.50	1.31	2.76	1.85	3.14**
All the three residential areas combined (n=232)	3.91	9.06	18.86	30.52	9.33***

* $p < .05$; ** $p < .01$; *** $p < .001$
Source: Field survey, November 1999 – April 2000

In the high density residential area more of the sampled women than men work within 2km distance (63.8% women; 52.4% men) from their home; 2.1-4km distance (21.0% women; 19.0% of men) from their home and 61 – 8km distance (9.5% women; 4.7% men) from their home. While more men than women work within 4.1 – 6km distance (4.7% women; 13.4% men) from their home. Also within 8.1 – 10 km and above 10km, more men than women work within those distances (Table 2).

In the medium density residential areas more women than men work within 2.1-4km distance (18.4% women; 9.2% men); 4.1-6km distance (11.9% women; 10.5%men) and 6.1 –8km distance (13.1% women; 9.2% men) from their home. Men are found to be more working, within 2km distance (56.6% men; 47.4% women); 8.1-10km (6.6% men; 3.9% women) and above 10km (7.9% men; 5.3% women) from their home.

In the low density residential areas men work trip is found to be shorter than women (see Table 2). The mean distance from home to workplace of women in the low density residential areas is 2.50km while that of men is 1.31km (Table 3). Although the result of the standard deviation shows that there is more variations in the distances of women's workplace to home (2.76) than that of men's (1.85), yet the results of the 't' test shows that the pattern found is significant at the .01 level (see Table 3).

However, in both high and medium density residential areas the mean distance from home to workplace of men (9.43km and 13.75km respectively) are higher than that of the women (1.98km and 7.51km respectively). Although the result of the standard deviation shows that in the high and medium density residential areas, there is more variations in the distances from home to workplace of men (29.75 and 39.70 respectively) than that of women (2.14 and 23.68 respectively); the result of the 't' test shows that the pattern found, that is, work trip of women shorter than men in both residential areas are significant at the .001 level (Table 3).

In all the three residential areas combined, the mean distance from home to workplace of men is higher (9.06km) than that of women (3.91km). The standard deviation result shows that there is more variations in the distances from home to workplace of men (30.52) than that of women (18.86). The 't' test result is 9.33 and is significant at the .001 level (see Table 3).

Table 4 shows that in households where there is only one car, men use the car most.

Table 4: "If there is only one car in the Household, who takes the car to workplace most?"

Residential Areas	Response	
	Women (%)	Men (%)
High density (n=28)	8.6	91.4
Medium density (n=26)	7.9	92.1
Low density (n=26)	31.4	68.6

Source: Field survey, November 1999 – April 2000.

Similar results have been found in the developed world. From personal observation, women rely heavily on walking and public transport. Similar observations have been made in the literature particularly in the developed countries (Beuret 1991).

Table 5 shows the results of the correlation analysis between residential condition variables, socio-

economic status and intra-urban travel of women and men in Ibadan.

Table 5: Results of the Correlation analysis Between Residential Pattern Variables, socio-economic Status and Intra-urban Travel of women and Men in Ibadan (n=232)

Variables	Intra-Urban Travel	
	Women	Men
Housing condition	-.0864	.0253
Neighbourhood condition	-.2045**	-.3123***
Housing and neigbourhood condition	-.1393*	-.2301**
Distance from CBD (Modern)	-.0870	-.1821**
Distance from the CBD (Traditional)	-.1449*	-.2491**
Residential condition variable combined	-.1829**	-.3058***
Socio-economic status	-.2923***	-.0038

* Correlation is significant at the .05 level (two tailed)
** Correlation is significant at the .01 level (two-tailed)
*** Correlation is significant at the .001 level (two-tailed)

Source: Field survey, November 1999 – April 2000

From this table, significant relationship is found between combined residential condition variables (housing and neighbourhood condition, distance to the CBD: modern and traditional) and the intra-urban travel behaviour of women and men. However while significant relationship is found between the socio-economic status of women and their intra-urban travel, no significant relationship is found between the socio-economic status of men and their intra-urban travel.
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. Infact, 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 dense areas. More importantly, there is the need to design an integrated metropolitan transport master plans with a clear vision of train, bus and taxi roles.

4.0 SUMMARY, POLICY IMPLICATION AND CONCLUSION

This study, though preliminary, have found that there is significant differences between men and women intra-urban travel behaviour for most of the purposes considered except for work and religious purposes. Even for work purpose significant difference is found in the low density residential area. Work trip distance is found to be shorter for women more than men in the high and medium density residential areas while in the low density residential areas, the work trip for women is found to be longer than men.. Also significant relationship is found between the socio-economic status including stages in the life cycle and travel behaviour of women only. Significant relationship is found between combined residential patterns, variables (housing condition, neighbourhood condition, distance to the CBD: modern and traditional) and the intra-urban travel behaviour of women and 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 activity centers.

In other to meet the basic mobility needs of women, there is the need to improve public transport. This could be achieved through increasing subsidies in order to reduce fares or increase services, providing

Also, since most women have a high propensity to walk, to operate in the locality and to juggle demands of home, work and community, 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.

There is also 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.

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