



AN ANALYSIS OF TRAVEL DEMAND BEHAVIOUR OF WOMEN AND THE NEED FOR THEIR INCLUSION IN TRAVEL SCENARIO, WITH SPECIFIC REFERENCE TO WOMEN IN PUNE CITY

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Abstract: *Urban passenger transport demand arises out of a need for making journeys from residences to work places, shopping areas, educational institutions etc. A city can grow either vertically or horizontally. In the former case, the density of population and the level of activities increase, there by having an impact on transport demand. In the latter case, the city expands to the periphery resulting in urban sprawl, with human elements moving in all directions, while the Central Business District (CBD) continues at the centre. In both the cases, there is severe pressure on the transport system. Indian cities are experiencing both intensive vertical and extensive horizontal growth.*

Worldwide, less than 50 percent of women have jobs, whereas almost 80 percent of men do have jobs. Roughly 50 percent of both working men and working women are wage earners. This statistic hides substantial variation across countries and regions. Women are significantly under represented. (WDR, 2013)

There is lot of similarity regarding character of trips among women in developed and developing countries. Women travel is more complex than men. Women are found to undertake a number of trips and chaining of a number of trips. Women have to cater to requirements of family, domestic, chores and work. As women contribution to workforce increases their travel requirements have also increased. Miles travelled, greater vehicle ownership, more trips, increased driver licensing is seen with regard to women. The issue of taking account of gender in transport is a fairly recent one. Since the statistics do not differentiate between men and women, it is hard to understand the differences in reasons for making trips, trip frequency, distances travelled, mobility-related problems in gaining access to health services, employment, etc.

It is against this background that we felt it necessary to undertake a detailed study of the factors influencing travel demand behaviour of households in Indian cities with a focus on women in the context of Pune city. The paper examines the travel concerns of women and provides solution to make transport inclusive for women. The data for the study is collected from 450 households in the Pune Municipal Corporation area. In this sample there are total of 1854 members. This indicates that most of the families are nuclear in composition. Of the 1854 members, 909 were the female respondents. Since this study is limited to female respondents, the analysis is restricted to studying only female respondents in the households.

The study examined the demographic, socio-economic and travel demand characteristics of women. The study found that women travelled shorter distance. But those who travelled longer distance relied on public transport and thus spent a lot of time travelling. Women travel issues are of concern since their travel is more complex.

Keywords: *Travel Behaviour, Non-Motorized Transport, Inclusion.*

Introduction

Urban travel patterns are the result of movements of people and distribution of activities requiring access, facilitated by the transport system. The concentration of economic activities in urban areas attracts the movement of people towards the urban centre. The mass movement of people and goods, intra-urban and inter-urban while contributing

to growth of cities resulted in the emergence of severe transport problems in cities across the world.

Urban passenger transport demand arises out of a need for making journeys from residences to work places, shopping areas, educational institutions etc. A city can grow either vertically or horizontally. In the former case, the density of population and the level of activities increase, there by having an impact on transport demand. In the latter case, the city

expands to the periphery resulting in urban sprawl, with human elements moving in all directions, while the Central Business District (CBD) continues at the centre. In both the cases, there is severe pressure on the transport system. Indian cities are experiencing both intensive vertical and extensive horizontal growth.

Scope of the Paper

It is against this background that we felt it necessary to undertake a detailed study of the factors influencing travel demand behaviour of households in Indian cities with a focus on women in the context of Pune city. The paper examines the travel concerns of women and provides solution to make transport inclusive for women

Methodology

A primary survey is conducted to gather information on demographic, socio-economic and travel demand characteristics of households in Pune city. Data is collected from 450 households. Pune city is classified into clusters. In order to select households from each cluster, socio-economic classification (SEC) is used. SEC is used by the Market Research Society of India (MRSI) to classify households based on two variables: education of the chief earner and occupation

Review of Literature

The role of women in a household has seen a change. Earlier, she was solely a home maker. Today, a woman is a home maker and also a working woman. Thus, her travel is also of importance. A comparison between travel to work by men and women indicate that men travel to activity sites that are further away from home than women (Hanson & Hanson, 1981). Women work close to home (Madden, 1981). Women search for a job at the local level more than what men do and from a residential location that cannot be shifted to accommodate a job location (Hanson and Pratt, 1991). Women's lower incomes, their concentration in female-dominated occupations, and their greater reliance on the bus and auto-passenger modes explain women's shorter work trip distances (Sarmiento, 1998; Mensah, 1994). Mensah (199

4) indicated that women are less willing and able to participate fully in paid employment because of their children and household responsibilities. Gordon et.al. (1989) found that women tend to have shorter work trips regardless of marital status, household structure, income, occupation, travel mode, and location. Women select jobs closer to their residences because "their lower wage rates and shorter work hours reduce the earnings return to their commuting and also because their household responsibilities increase the cost of longer commutes" (Madden, 1981, p.193). Sarmiento (1998) showed that women made more trips than men. They make shorter commute trips and more non-work trips. Women are more likely to trip chain on the way to and from work, especially when they have younger children. Also, employed married women show far more variability in their day-to-day trip frequencies than employed married men. Lu and Pas (1999) have shown that women make more trips than men, especially when, short and non-motorized trips which are undertaken more by women are included. Women, in general, and poor women, in particular, face severe constraints. They face constraints that restrict geographic mobility in the labour market, greater household and children responsibility, income and occupational constraints and limited access to reliable private modes (Mensah, 1994).

Kim (1994) compared male and female commuting distances based on 1991 data from the Los Angeles Metropolitan area. The study found that in the case of a two-worker household, residence is closer to female workers work place so that female workers have less burden of commuting. The study also found that household with two women travel less than household with two men. In terms of race, non-white commutes shorter duration than whites. There is no difference in commuting behaviour of male and female due to the presence of children. Household income does not influence commuting significantly. Given the sample, it was obvious that it was difficult to say why male and female commuting behaviors are different.

Astrop (1996) in his study of the city of Pune tried to examine the factors that influence travel demand patterns in low income households. It was found that income plays an important indicator in deciding the mode of travel and also found that women who were earning spent on personalized transport i.e. two-wheeler and mopeds to travel to work. Women faced discrimination, in use of personal transport and in the lower income groups women were not allowed to use cycle for transportation purpose. The low income community relied on public transport services and travel on foot to meet their mobility requirements. Bicycles were found to be an important means of personal transport for the poor.

The authors Hanson and Johnston (1985) compare the work-trip distances and work trip times of 303 employed women with those of 484 men, drawn from the 1977 Baltimore Travel Demand Data, USA. The study found that women's work trips are significantly shorter than men's in both travel time and distance. Women's lower incomes, their concentration in female-dominated occupations, and their greater reliance on the bus and auto passenger modes are the reasons for their shorter work trips. A higher

proportion of women than of men live and work in the central city, where journey to work distances are shorter, and there is some evidence that female-dominated employment opportunities are more uniformly distributed. The authors concluded that working women are more sensitive to distance than men are for reasons related more to their mobility than to their "dual roles" of wage earner/homemaker. Also, because of women's sensitivity to commuting distance, the location of different types of employment opportunities is likely to play a role in the occupational segregation of women. (Hanson and Johnston, 1985)

Analysis of Data

Descriptive Analysis of Household Sample

The data for the study is collected from 450 households in the Pune Municipal Corporation area. In this sample there are total of 1854 members. This indicates that most of the families are nuclear in composition. Of the 1854 members, 909 were the female respondents. Since this study is limited to female respondents, the analysis is restricted to studying only female respondents in the households. The analysis of data in Table 1 shows that 57.21% of the respondents are in the productive age.

Table 1: Distribution of Respondents According to Age

Age Group (in years)	Number of Female Respondents	Percentage of Total
Upto 20	277	30.47
21-60	520	57.21
above 61	112	12.32
Total	909	100

Source: Primary survey conducted by the author

Table 2 shows the distribution of respondents according to education. In the study, 19.36% of respondents are graduates, followed by women who have done their secondary education (that is from 5th to 10th)

Table 2: Distribution of Respondents According to Education

Education	Number of Female Respondent	% of Total
Illiterate	81	8.91
Primary	145	15.95
Secondary	191	21.01
Tenth	158	17.38
Twelfth	73	8.03
Some College (including Diploma) but not Graduate	36	3.96
Graduation/PG (General)	176	19.36
Graduation/PG (Professional)	43	4.73
Other	2	0.22
Not Applicable	4	0.44
Total	909	100

Source: Primary survey conducted by the author

Table 3 shows the different occupation followed by women respondents in the study. In the study majority are housewives, followed by student. In case of women respondents engaged in occupation more women (11.66%) are working in private jobs than in Government jobs. 3.96% of women undertake domestic business. It refers to women working from home and undertaking different activities like selling vegetables, stitching, bidi making, tuitions, etc. In case of domestic business the women worked mainly from home.

Table 3: Distribution of Respondents According to Occupation

Occupation	Number of Female Respondent	Percentage of Total
Govt. Job	54	5.94
Private Job	106	11.66
Contract/Daily Basis	37	4.07
Business	12	1.32
Domestic Business	36	3.96
Housewife	329	36.19
Student	275	30.25
Retired	35	3.85
Unemployed	16	1.76
Other	2	0.22
N.A	7	0.77
Total	909	100

Source: Primary survey conducted by the author

The next table (Table 4) shows the classification of women respondents under different income classification. The income slab given in Table 4 is as followed by Maharashtra Housing and Area Development Authority (MHADA). Among the women respondents 19.25% are earning below Rs 16,000, followed by 7.70% in the income category Rs 16000-Rs30000

Table 4: Respondents under Different Income Category

Income Classification(Monthly)	Number of Female Respondent	% of Total
Below Rs. 16,000	175	19.25
Rs. 16,000 - Rs. 30,000	70	7.70
Rs. 31,000 - Rs. 62,000	31	3.41
Above Rs. 62,000	9	0.99
Not Earning	624	68.65
Total	909	100

Source: Primary survey conducted by the author

Travel Demand Analysis of the Respondents for The Purpose of Work

In the study majority (35.71%) of women travelled less than 5km to work. 25.24% of women travelled upto 10km for work purpose.

Table 5: Distance to Work Place from Residence

Distance to Work Place	No. of Female Respondents Working	%
Below 1km	46	21.90
1km – 5km	75	35.71
5.1 km – 10km	53	25.24
10.1km – 15km	20	9.52
15.1km – 25km	13	6.19
Above 25km	3	1.43
Total	210	100

Source: Primary survey conducted by the author

Time spent on travel to reach work place was inquired from the respondents (Table6). Time taken to return home is greater in the evening than the time taken to travel to work in the morning. In case of

women respondents a majority (29.52%) are travelling 30 to 60 minutes to reach their work place. This could be because women travel mostly by public transport or NMT and thus take longer time.

Table 6: Time Spent on Travel to Reach Work Place

Time taken to travel to Work Place	No. of Female Respondents	% of Total
Upto 10 minutes	57	27.14
10 to 20 minutes	56	26.67
20 to 30 minutes	29	13.81
30 to 60 minutes	62	29.52
60 to 90 minutes	5	2.38
Above 90 minutes	1	0.48
Total	210	100

Source: Primary survey conducted by the author

Respondents also share information about money spent on travel per day to reach work place. The travel time is considered one way but money spent on travel is considered to and fro.36.67% of respondents spend between Rs25 to Rs 50 to reach their work place

(Table7). There is nil expenditure involved on travelling to work in case of women who walk to reach their work place. 23.81% of women walk to their place of work.

Table 7: Money Spent on Travel per Day to Reach Work Place

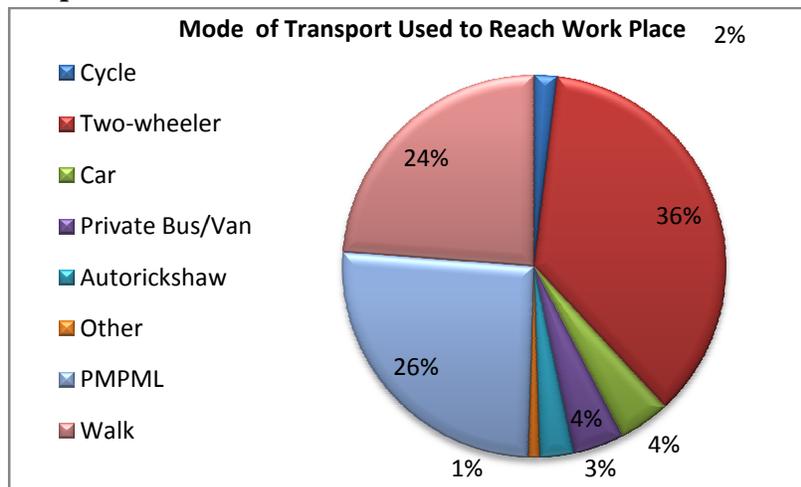
Money Spent to Reach Work Place	No. of Female Respondents	% of Total
Above Rs 100	0	0
Total	210	100

Source: Primary survey conducted by the author

Figure 1 shows the mode of transport used by the women respondents to reach work place. In the study 85 respondents use personalized transport to reach place of work. Personalized transport consist of two-wheeler and car. About 54 respondents use non-motorized transport (NMT). NMT consist of walking

and cycling. Similar number of respondents use public transport to reach their place of work. In Pune Pune Mahanagar Parivahan Mahamandal Ltd (PMPML) is the public transport. The rest of respondents use private transport which consist of private bus/van, autorickshaw etc.

Figure 1: Mode of Transport Used to Reach Work Place



Source: Primary survey conducted by the author

1. Main Findings

The study reveals the following:

- There is high usage and ownership of personalised modes of transport.
- People move to personalised transport with higher income. In Pune, it has become a necessity rather than being a luxury or a reflection of being elite.
- People with higher income and higher education qualifications travel longer distance to work.
- Women travel shorter distance than men for work. Women who travel longer distance take more time than men to reach place of work. This could be due greater usage of public transport
- The greater usage of personalised mode increases the per capita expenditure incurred on travel.
- In order to change the attitude of the consumer towards usage of personalised mode, it is important to provide them with either with good public transport or have mixed land use which reduces travel needs.

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