

# Travel behaviour of working women in Indian cities

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**Abstract** - The evolution of the labor force, which includes more women and working mothers than ever before in emerging economies like India, has increased the interest in study of the travel behaviour of women, particularly the unique needs, burdens, and patterns associated with women's travel. It is well known that safe, comfortable, convenient and affordable transport can play an important role in not only helping meet women's practical needs such as access to schools and markets but also in contributing to their strategic empowerment through access to social and economic opportunities. It is in this context that this paper attempts to assess the travel behaviour of working women in four emerging metropolitan cities of different sizes and locational settings and topography namely Ujjain (0.5 million, central India plains) Dehradun (0.6 million, north India hills), Gurugram (0.9 million, north India plains) and Nashik (1.5 million, west India plains) respectively. The paper, based on empirical investigation from household surveys in the case cities, attempts to bring forth the impact of socio-economic characteristics on travel behaviour of women in general and working women in particular. Further it also analyses the impact of household structure in terms of household size and composition i.e., nuclear or joint family to identify possible constraints impacting her travel behaviour. The paper concludes that the apparent observed inequities in travel demand warrants a more sensitive gender biased approach to planning of social and transport infrastructure in Indian cities.

**Key Words:** Travel behaviour, Mobility, Policy, Equity, Gender biasness, Household surveys

## 1. INTRODUCTION

Proper planning of transport and mobility policies is essential to guarantee people's equality in accessing to goods and services. Mobility of persons, is an important component of any space economy with the major focus on their safety and security, lack of this particular factor discourages many of the women commuters (Shah, et al., 2017). The inclusion of a gender perspective in the analysis of mobility aims to avoid the creation of barriers and inequalities for women. It is widely acknowledged that needs of women for travel purpose differs from men's, and these differences are characterized by persistent inequalities between two gender groups (Bhatt, et al., 2015) (Woetzel, et al., 2015) (Transport for London, 2016). From gender-oriented transport issue, women face inequities in terms of intra-household allocation of transport tasks and resources (Peters, 2006). During the last few decades there have been several investigations that have studied the interrelationship between mobility and gender,

showing different travel patterns between women and men, motivated largely by the reasons behind these trips (Hanson & Hanson, 1980) (Gordon, et al., 1989) (Rosenbloom & Burns, 1993). Overall, women commute more than men, except for those caused by work trips, in which case it is men who perform the highest number of commuting (Olmo & Maeso, 2013) (Sumeeta, 2005). Research on women's highlights the shift in mode choice and subsequently the demand placed on the infrastructure for walking and cycling as well (Shah & Raman, 2019). Besides studies have found different mode choice behaviour by gender, where going on foot and by public transport is more for women compared to men (Olmo & Maeso, 2013) (Scheiner & Sicks, 2014). Despite having a similar role at work and home than ever before, men and women continue to exhibit different travel patterns (Olmo & Maeso, 2014) (Fan, 2015) (Sandra, et al., 2011) (Gould & Zhou, 2011).

However, policies and investments focusing on sustainable modes of transport have largely ignored women (Khosla, 2009) (GRHS, 2013). Recent literature on mobility of women focuses on their travel demand and concerns related to the available infrastructure (Rachmita & Siregar, 2018) (Sen, 1996). The major focus as evident from research presented at recent conferences was on to eliminate the gender differences in access to transport facility and mobility, safety and security of women commuters and consideration of women in inclusive decision making process of transport sector (Adeel, et al., 2014) (Elias & Shiftan, 2014) (Ishigami, et al., 2014) (Kronsell, et al., 2014) (Morency & Sioui, 2014). Further according to Sandra, et al. (2011) there is a need to study the mobility patterns of women who do not work and women who work full time or part time (Sandra, et al., 2011). In all the above cited research efforts the focus on understanding the travel behaviour of working women specifically in context of developing countries and an emerging economy like India is sadly lacking to paucity of documentary evidence.

The present paper focuses on the travel behaviour specific to the working women in selected Indian cities to extend the research on gendered differences in travel patterns in four emerging metropolitan cities of different population size and locational attributes namely Ujjain (0.5 million population) being a historical city located in central India plains and is a popular pilgrimage centre; Dehradun (0.6 million population) capital city and in northern hills emerging as an economically active and vibrant city; Gurugram (0.9 million population) which has become a leading financial hub next to national capital of Delhi; and Nashik (1.5 million population) in west India plains, is an ancient holy city. The main focus of this paper is to study and investigate possible impacts of factors like accessibility by public transport, household and work

location distance, household attributes in terms of size, structure and income and individual attributes in terms of age, income, education and marital status on working women’s travel behaviour in the case cities and draw meaningful conclusions.

**2. METHODOLOGY**

The paper is based on the household survey data collected for the four case cities through personal interviews conducted at the city level by the Transport Planning Department of School of Planning and Architecture Delhi. The purpose of conducting household survey was to assess the daily travel pattern of the population specific to the women both working and non-working. The database includes 162 household samples from the city of Ujjain; 360 household samples from Dehradun; 400 samples from Gurugram; and 172 samples from Nashik respectively, specific to travel diary of both men and women. The samples were randomly selected from all the travel analysis zones, made for traffic characteristics assessment, throughout the city. The survey questionnaire focused on the socio-economic attributes as well as the trips details. In all 7977 trips were analysed across the four case cities with 1675 trips in Ujjain; 1824 trips in Dehradun; 2994 trips in Gurugram; and 1484 trips in Nashik respectively.

**3. FINDINGS**

In all 41% trips were performed by the women exhibiting trip purpose like work, education, recreation, shopping and for medical purpose.

**Table -1:** Purpose wise daily trips across the case cities

	Ujjain	Dehradun	Gurugram	Nashik
<b>Work Trips</b>	1080	938	1270	810
Male	637 (59%)	591 (63%)	1002 (79%)	494 (61%)
Female	443 (41%)	347 (37%)	268 (21%)	316 (39%)
<b>Education Trips</b>	399	630	814	422
Male	200 (50%)	321 (51%)	464 (57%)	232 (55%)
Female	199 (50%)	309 (49%)	350 (43%)	190 (45%)
<b>Other Trips</b>	196	256	910	252
Male	111 (57%)	143 (56%)	276 (30%)	101 (40%)
Female	85 (43%)	113 (44%)	634 (70%)	151 (60%)

From Table 1, it is clearly observed that there are inequities in mobility patterns across gender. The share of women in work trips ranges between 21% to 41% across various cities. In case of education trips the share of women

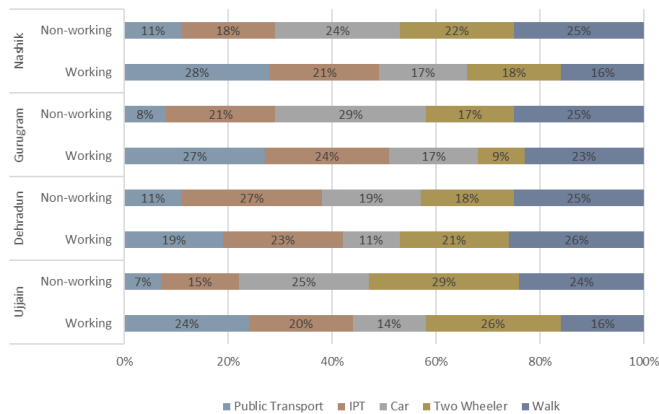
is higher ranging between 43% to 50% indicating a more equitable gender proportion in travel for education purposes. In case of other trips the share of women is relatively higher compared to other obligatory purposes ranging between 43% to 70%, even exceeding the male share largely owing to fulfillment of non- obligatory duties such as shopping, social trips, dropping and picking up kids from school, etc. largely performed by women.

**Table -2:** Trip characteristics of working and non-working women across the case cities

	Ujjain	Dehradun	Gurugram	Nashik
<b>Average Trip Length</b>				
Working	9 km	7 km	8 km	8.5 km
Non-working	2 km	1.5 km	<1 km	1 km
<b>Average Trip Time</b>				
Working	20 minutes	20 minutes	24 minutes	22 minutes
Non-working	13 minutes	16 minutes	18 minutes	15 minutes
<b>Average Trip Cost</b>				
Working	Rs. 40	Rs. 50	Rs. 60	Rs. 50
<b>Average Household Monthly Expenditure on transport</b>				
Working	Rs. 3000	Rs 2000	Rs. 3500	Rs. 2500
Non-working	Rs. 500	Rs. 500	Rs. 600	Rs. 500
<b>Household Attributes of Working Women</b>				
Average Household Size	4	4	3	4
Average Income (in Indian Rupees)	20000-30000	20000-30000	30000-50000	30000-50000
Driving License	63%	58%	78%	72%
<b>Household Attributes of Non-working Women</b>				
Average Household Size	5	6	5	5
Driving License	27%	21%	24%	29%

From Table 2, it is observed that working women usually belong to households which are smaller in size. Further working women have a higher vehicle ownership levels thereby offering them an option for use of personalised use of vehicles in meeting their travel requirements. The average trip length for working women are in the range of 7 km to 9 km compared to 1km to 2 km in case on non working women. The higher travel distances also reflects in higher commute time by working women exceeding by nearly

30% to 50% compared to non working as refelected from the Table 2. This contrasting difference is owing to the fact that non-working women have their trips limited to the short distance trips of less then 1 km for purpose like drop-off and pick-up of their school going children, shopping for household chores etc. While more than 60% of working women possess driving license they feel more comfortable in taking public transport rather than driving daily for work purpose .



**Fig -1:** Modal Split of Working and Non-working women in case cities

From figure1, it is observed that public transport accounts for a share between 19% to 28% in case of working women’s travel across cities. It further varies across cities owing to spatial structure in terms of spread etc. The intermediate public transport modes have a stable share of working women dependent on it (20% to 24%) and is more visible in cities which is not very large and does not have adequate public transport systems. Car travel accounted for 11% to 17% share while walk accounts for 16% to 26% share of working women’s trips made. It clearly points that working woman going to job is dependent on relatively comfortable mode like paratransit or public transport system.

It further is observed that in case of non-working women walk and private vehicles use is more dominant often as a accompanied traveller than public transport. Walk trips in particular are a stable proportion at nearly 25% share across all cities. Further intermediate public transport modes are equally preferred both by working and non -working respectively.

### 3. CONCLUSIONS

This paper attempts to study the gender travel pattern and specifically to the working women’s travel behaviour in four emerging metropolitan cities of India. The research findings reveal that women travel patterns differ from that of men. Women undertake more short trips than men in the city and are less accessible to personal means of transport to commute to different activities centres in the city. Married working women tend to undertake shorter trips. Working women are dependent on public transport and intermediate public transport for their work travel while non-working

women use personal modes besides walking to meet their mobility needs. The study concludes that with share of working women increasing in overall labour pool owing imminent societal trends it shall have potential ramifications in terms of quantity and quality of public transport and intermediate transport systems in spectrum of cities across emerging economy like India. The study emphasises a need for a greater thrust on women’s mobility implications in policy planning and adoption for a gender sensitive approach for transport system development in India.

While it is clear that in all cases individuals without vehicle ownership have less job prospects, it is also clear that labour market options vary depending on the urSban area where they live. As these areas can be classified according to corresponding degrees of urban multi-functionality and the level of public transport services offered. In the study area, these two elements are closely related (the more multi-functional the area, the higher the level of public transport), and juxtaposing urban characteristics with the study of the working life of those who do not own a private vehicle has illustrated appreciably different circumstances. Residents in the central areas, those with the best and most extensive public transport services, have more job opportunities than those who live in spaces poorly serviced by public transport. Thus, the abandonment of traditional compact urban typologies in case study areas, based on mixed uses and density, has resulted in the appearance of new forms of social exclusion of women from various opportunities.

The apparent inequity in transport sector is accountable for the inadequacies in transport related infrastructure for the disadvantaged group. Improvement in the sector of social and physical infrastructure with the consideration of pan city development including people of all strata will help in developing qualitative and quantitative standards of mobility.

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