Measuring shared mobility feasibility through shared mobility readiness and hesitation indices

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Abstract: The think tanks of developing countries have decided to go ahead with a shared mobility initiative to target the traffic-related challenges. The focus of the initiative is on making structural changes. Behavioural changes, although important, find a secondary place while planning such implementation. The current research has developed a conceptual and hypothesised model based on the documents and literature advocating shared mobility and tested the same using secondary and primary data. The shared mobility readiness index (SMRI) and shared mobility hesitation index (SMHI) are created to understand the acceptability of this initiative. The research concludes that the people are influenced by the idea but when it is their turn to implement it, they will hesitate. It has also been observed that since the problem is city-specific, the responsibility of the behavioural change lies with the local self-governments.

Keywords: traffic congestion; vehicle pooling; pollution; shared mobility readiness index; SMRI; shared mobility hesitation index; SMHI; sustainable environment; security; privacy.

Reference to this paper should be made as follows: Metre, S.G. and Jain, M. (2022) 'Measuring shared mobility feasibility through shared mobility readiness and hesitation indices', *Int. J. Economics and Business Research*, Vol. 24, Nos. 1/2, pp.176–196.

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This paper is a revised and expanded version of a paper entitled 'Shared mobility feasibility in India through shared mobility readiness & hesitation indices' presented at FsCongress-2020 Turkey International Conference, Turkey, 30 May 2020.

1 Introduction

Major cities in developing economies are growing exponentially. Economic growth is linked with automotive industry output (Dinç et al., 2019). India is expected to surpass China as the most populous nation in the world in less than ten years (Hurworth, 2019) and has congested more than any other nation. Vehicles are scattered unequally in India. Most counties have cars, buses, vans, boats, motor vehicles, bikes, scooters and bicycles. But in India, in addition to this daily urban transportation, and significantly adding to congestion, there are networks of auto-rickshaws and two-wheelers as well as bullock carts, hand-pulled rickshaws that have staggered a hundredfold increase in the motor vehicle population. However, the increase was not commensurate with the growth in the road network. Traffic is one of the biggest issues in towns and has made people's lives very difficult. It leads to unproductive activities. People face delays in their essential jobs. This can also contribute to personal and professional losses. It is also the key cause of fuel wastage and air pollution. It raises stress and frustration among drivers and passengers. The biggest drawback of traffic congestion is the loss of human lives when emergency vehicles are trapped in during rush hours. This situation is consistent with many developing economies of the world.

NITI Aayog (previously Planning Commission of India) has come up with a draft policy document on shared mobility opportunities, challenges, and some suggestions to implement shared mobility in India. The policy is based on the case of Helsinki, Finland. (International Transport Forum, 2017): Helsinki, Finland is a prime example of the shared mobility transition. Helsinki has set an ambitious target of making private cars redundant by 2025 by transitioning to shared mobility, incorporating both commercial and public transport into a single interconnected network with ease of payment using digital platforms. A recent study by the International Transport Forum (2017) found that moving to shared mobility in Helsinki could reduce CO_2 emissions by 34% and congestion by 37%, and increase rail/metro riding between 15% and 23% as a result of improved first and last-mile connectivity. On-demand private cars, vans, or buses, and other vehicles, such as big taxis, shared by passengers going in the same direction. A more realistic exercise for Helsinki, assuming that only 20% of car and taxi trips were replaced with shared mobility, found that vehicle miles travelled would go down by 7%,

CO_2 emissions would go down by 2%, and congestion would go down by 13%. Some of the opportunities are low personal vehicle ownership in India as compared to the USA (Matthan, 2017), supportive policies for shared mobility by many states, etc. According to NITI Aayog, current challenges to shared mobility in India are inadequate mass transit infrastructure and services, and inadequate infrastructure for the adoption of bike/cycle sharing schemes (Ghate, 2014), private vehicle ownership as a status symbol (Ghate and Sundar, 2013) and lack of awareness of private vehicle use, on society and environment, data standards and guidelines between the provider of public and private transport.

Shared mobility is one of the important recommendations by NITI Aayog and it has also recommended many policies and structural changes to implement it in India. Tier 2 cities in India need to adapt to the shared mobility concept very fast to avoid traffic-related challenges. There is a need to understand and measure the readiness and hesitation of citizens in these cities.

The current research is being framed as follows:

1 Modelling the recommendations of NITI Aayog on shared mobility.

2 Reinforcing the recommendations and model through a literature review.

3 Testing the feasibility of recommendations for shared mobility implementation through measurement of shared mobility readiness index (SMRI) and shared mobility hesitation index (SMHI) using primary data.

4 Identifying the push, pull, and other determinants for sustainable shared mobility policy through structured telephonic interviews of select respondents.

This research will help in understanding the willingness and hesitations on the part of citizens when the policy is implemented. Moreover, the research will help in updating the policy in the current form to policy in a more acceptable form.

The outcome of the research will help local authorities to understand the shared mobility solutions in tier 2 cities in a better way. This will help policymakers to formulate the policies more effectively considering the push factors and the pull factors.

Growing shared mobility in tier 2 cities can draw a large migrant population from rural areas as opportunity gateways, generating high demand and high supply of small, semi-skilled jobs. The urban mobility sector provides for the use of automobiles and modes of transport for everyday travel by the city-dwellers. Primary and intermediate public transportation, such as two-wheelers, car-rickshaws, taxis and cabs, minibuses, etc. can drive opportunities for micro-entrepreneurship. Shared mobility entrepreneurs will scale and act as a viable business model. It will stimulate new private sector companies, investment and innovation.

The paper is arranged in six sections. Section 1 briefs the context of the study and research setting. Section 2 deals with the background of the study and literature review. Section 3 describes the model, variables of the study and their measurement. Section 4 deals with research methodology and Section 5 explain the validation of the model through literature reinforced with primary data. Section 6 elaborates on the findings and concluding remarks. Section 7 presents the limitations and future scope. Finally, Section 8 concludes the paper.

2 Background and literature review

Vehicle pooling is the sharing of vehicles during journeys by more than one person. Vehicle pooling can contribute to a reduction in vehicular pollution. In 1997, a report by the Ministry of the Environment and Forests, India, examined the environmental situation in Delhi following complaints about worsening conditions. One area of concern identified in this study was air pollution. Congestion is largely due to the extensive use of cars. Private cars have advantages in facilitating personal mobility, giving a sense of security, and even increased status, especially in developing countries. However, they are not an effective means of transporting passengers because every occupant of a private car causes around 11 times as much congestion as a passenger on a bus on average during rush hours (Bull, 2003). Using prediction models ultimately leads to a quantified estimation of the vehicle kilometres travelled (VKT) that has been saved by certain cases of reduction of car-equipment linked to ride-sourcing but the relation between car ownership and traffic-related effects remain uncleared (Bekka et al., 2020). The government can promote the use of carpools in urban areas through initiatives including the funding of carpool demonstration projects and encouraging local authorities to setup schemes through various means, including information circulation (Dewan and Ahmad, 2007). According to Dewan and Ahmad (2007), ridesharing can only increase substantially in Delhi when there are strong rewards for the participants. In practice, the first and most important opportunities for ridesharing are dedicated road space and parking space. Shaikh et al. (2018) developed a bike sharing system, which is an Android application that lets people ride safely or easily at lower costs. The device has two user and biker logins. Bike pooling is an android application for regular transportation for the students and employees. Users can have guardian number for safety purposes as well. In carpooling, one may be travelling with strangers therefore a protection framework must be enforced such that only authenticated individuals can use this program. Carpooling may include users travelling with strangers; hence it is also advisable to put a security mechanism into effect that will lend a hand to users in difficulty (Parikh et al., 2014).

To counteract the negative effects of car traffic, the term CC, also known as congestion charging, can be defined as any method of charging for the use of some roads during peak demand periods (Janssens et al., 2009). The revenue created by such a policy could be used to develop public transport, build new infrastructure, and maintain existing road networks (Manville and King, 2012). Such a policy is a potentially potent strategy to change the travel behaviour of road users (Cools et al., 2011; Olszewski and Xie, 2005). The ultimate goals of such schemes include efficient use of infrastructure, efficient provision of infrastructure, and improved financial viability (Link and Stewart-Ladewig, 2006), as well as increased revenues and congestion management. Efficient implementations of the road pricing, in Singapore, London, and Stockholm that have effectively mitigated. The application of the London CC strategy decreases car traffic to 15%–20% (TfL, 2004). The multiple-indicators multiple-causes (MIMIC) model aims to investigate determinant factors on the acceptability of CC proposal in Jakarta, which can be divided into seven categories ‘awareness of city’s environment’ (ACE), ‘awareness of problem car in society’ (APC), ‘recognition of scheme’s effects’ (REC), ‘car dependency’ (CDC), ‘inhibition freedom of movements’ (IFM), ‘trust in government policy’ (TGP) and ‘correct and acceptable policy’ (CAP), showed that psychological scenarios can be divided into seven categories. These determinants explain the acceptability of the proposed scheme there (Sugiarto et al., 2020).

The governmental efforts alone are not enough. The participation of the community is crucial to make a palpable effect on the reduction of pollution. The use of public transport needs to be promoted. The use of metro rail can be encouraged by the provision of an adequate number of feeder buses at metro stations that operate with the desired frequency (Suliankatchi et al., 2013).

There is a need for strong policies that can be more effective to reduce congestion. Many governments have sought to establish traffic congestion management strategies by making it more costly.

2.1 Research gap

The literature on vehicle sharing and different problems associated with it in tier 1 cities of the world is amply available. However, it was observed that there is no literature available for problems and solutions on shared mobility of tier 2 cities. This research focuses on upcoming traffic congestion problems of tier 2 cities and taking care of it in advance.

Various researches in this area are related to the implementation of charging congestion policy, motivating public shared mobility, working and implementation of different pooling apps, etc. However, this research proposed a model using pull and push factors and calculation of SMRI and SMHI which can help authorities to monitor the implementation of shared mobility.

2.2 Research objectives

1 To compute the SMRI.

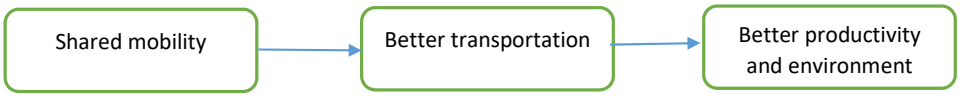
2 To compute the SMHI.

3 To evaluate the feasibility of a shared mobility model in India.

3 The model

The research started with the conceptual model that emerged through a literature review. The model proposed the linkages between shared mobility practices, transportation-related challenges, and improved productivity and the environment. It says that shared mobility eases the transportation problems and which in turn improves people's productivity and also positively impacts the environment.

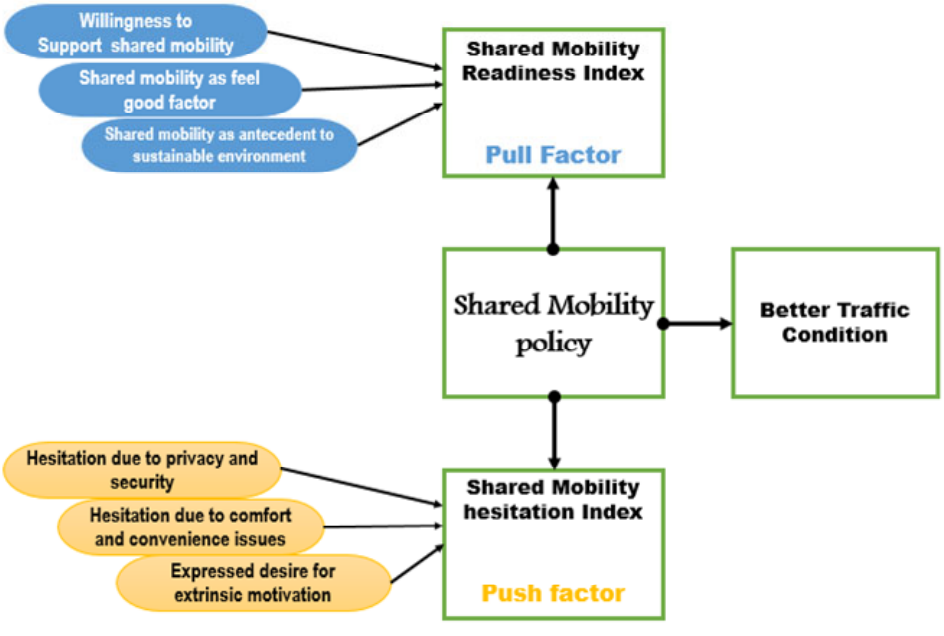
Figure 1 Conceptual model perceived by authors (see online version for colours)



To test the feasibility of the proposed shared mobility policy in India, the researchers have designed the push-pull factor model for shared mobility as follows.

3.1 Proposed model

Figure 2 Proposed model professed by authors (see online version for colours)



3.2 Variables in model and their measurement

SMRI is used to check the willingness of citizens towards shared mobility. The SMHI is used to check the factors that can contribute to the reluctance of citizens towards shared mobility. A questionnaire was designed to calculate SMRI and SMHI.

The independent and control variables were divided into seven categories:

1 Demographic information which consists of city, mode of transport, the number of vehicles owned, and per kilometre travelling per day of respondents.

2 Traffic congestion-related opinions which include citizen's experiences about traffic congestion during travelling and views on whether sharing could be a solution to it.

3 Shared mobility-related opinions which could show citizen's willingness towards shared mobility, and whether they can share a vehicle or not. If shared, with how many persons they are ready to share and so on. It also consists of questions that can gauge whether they are aware of the benefits of shared mobility on the overall productivity, travel time, travel cost and environment. Using these responses, it is possible to calculate SMRI.

4 Probable reasons for not supporting shared mobility.

5 The expectation from employee/HoI on shared mobility if it is made compulsory for employees/students.

6 The expectation of respondents from the government if shared mobility is implemented as a compulsory transportation policy.

7 The questions were asked to the citizens whether they support imposing fine for strict implementation of shared mobility so that we can know the real frame of mind on implementation of shared mobility policy. Using these responses (4 to 6), it is possible to calculate SMHI.

4 Research methodology

Apart from the literature review, it was thought necessary to administer the survey and understand the opinions of citizens residing in tier 2 cities on the proposed shared mobility initiative. This was done to test the acceptability or otherwise for shared mobility. Apart from the administration of survey instruments, telephonic interviews of around 60% of respondents were conducted to get finer insights into suggestions given by them via e-questionnaire.

4.1 Research questions

- Is it feasible to implement the shared mobility concept in developing countries like India?
- Is there enough secondary evidence for the planned initiative?
- Whether citizens of tier 2 cities in India are inclined towards shared mobility?
- What are the hesitations in the minds of respondents which may restrict shared mobility?

4.2 Research administration details

- The sample size of the e-questionnaire survey: 324.
- Cronbach alpha for the reliability of the questionnaire: 0.94.
- The sample size of telephonic interview: 182.

4.3 Hypotheses

The study involved two primary hypotheses as follows:

H01 There is no significant difference between SMRI and SMHI.

It is a normal tendency of respondents to embrace the new and environment-friendly concept readily. But when one moves from concept to activity level, the adoption is not smooth. There are many reservations and doubts. A high level of readiness coupled with a high level of hesitation indicates confusion and inaction. For any initiative to be successful, the readiness for it should be high and the hesitation should be on the lower side.

H02 The SMRI and SMHI are independent of demographic variables.

Demographic variables especially, the gender acts as the control variable and when it comes to shared mobility, the female respondents are expected to have stronger reservations and apprehensions.

4.4 Data collection methods

Primary data collection methods were used to collect the data from citizens of various tier 2 cities. A structured questionnaire and interviews were used to collect the primary data. The responses were measured using a Likert scale, nominal and ordinal scale. Therefore, the data collected was qualitative and quantitative in nature.

Secondary data from online newspapers, various online market studies are collected, surveyed, and analysed by top consulting firms around the world. The source of data collection included many books, magazines, business newspapers, different websites, etc.

4.5 Sample size

The sample size for the research problem was calculated using the following formula:

$$n = \left[Z^2 pq\right] / E^2$$

where

n sample size or number of items in the sample

Z^2 square of the confidence level in standard error units

E^2 square of the maximum allowance for error between true proportion and sample proportion

p estimated proportion of success

q 1 – p, or estimated proportion of failure.

Now putting the required values in the formula:

Z^2 1.96 (as per the table of the area under the normal curve for the given confidence level of 95%)

p 0.5 (most conservative sample size)

q 0.5 (q = 1 – p)

E 0.05 (within 5% of the true value).

$$\begin{aligned} n &= \left[Z^2 pq\right] / E^2 \\ &= \left[(1.96)^2 \times (0.5) \times (0.5)\right] / (0.05)^2 \\ &= 0.9604 / 0.0025 \\ &= 384.16 \end{aligned}$$

Thus, the calculated sample size for the research was 384 units.

5 Validation of the model through literature reinforced with primary data

5.1 Readiness factors

Table 1 Variable-based question, literature review reference and primary data support

Questions based on pull factor, evidences from literature review and reinforcement from primary data in terms of the degree of agreement			
Questions		*References of evidence*	*Degree of agreement as per primary data*
1	Support shared mobility	1 Taumer (2019) 2 Corwin and Pankratz (2017) 3 Machado et al. (2018)	73.14
2	Willingness for shared mobility on a two-wheeler	Ricci (2015)	41.04
3	Willingness for shared mobility on a four-wheeler	Farin et al. (2016)	66.35
4	Willingness for shared mobility on three-wheeler (auto-rikshaw)	Harikumar and Thakur (2019)	54.32
5	Willingness for shared mobility on private bus	NITI Ayog (2018)	60.49
6	Willingness for shared mobility on public transport – bus	Farin et al. (2016)	61.41
7	Willingness for shared mobility on train/metro	Ghate (2016)	68.82
8	Enhancing chances of making new friends	sRide: Carpool, Bikepool (2015)	58.33
9	Feeling of reduced travel time in the company of fellow travellers	No evidence	54.93
10	Reduction of travel time	Shaheen et al. (2018)	41.35
11	Leading to better transport and less traffic congestion	Minett and Pearce (2011)	71.60
12	Leading to a better environment and reduced pollution	Shaheen et al. (2018)	74.04
13	Leading to a reduction in the use of non-renewable resources	NITI Aayog (2018)	72.84
14	Leading to better health of citizens	Kumar and Tripathi (2014)	64.81
15	Leading to a sustainable environment	Maltzman (1987)	73.46

5.2 Hesitation factors

Table 2 Variable-based question, literature review reference and primary data support

Questions based on push factor and evidences from literature review and reinforcement from primary data in terms of the degree of agreement				
Questions			*References of evidence*	*Degree of agreement as per primary data*
1	Not supporting shared mobility due to security reasons	1 2	*The News Minute* (2015) Counterpoint Research (2019)	69.75
2	Not supporting shared mobility due to privacy reasons	1 2	Nash et al. (2017) Butt et al. (2019)	66.35
3	Not supporting shared mobility as they have to visit different places while returning home	No evidence		60.38
4	Not supporting shared mobility as it is not comfortable for them	MIND-sets Knowledge Center (2017)		50.93
5	Shared vehicles should get a subsidy for parking	Srivastava (2012)		67.59

6 Findings and conclusions

6.1 Profile of respondents

34.9% respondents are of age group 21–30, 27.4% are of age > 51, 19.6% are from age group 41–50, 14.6% respondents are of age group 31–40, and only 2.2% respondents are from age group 11–20.

Figure 3 Age of respondents (see online version for colours)

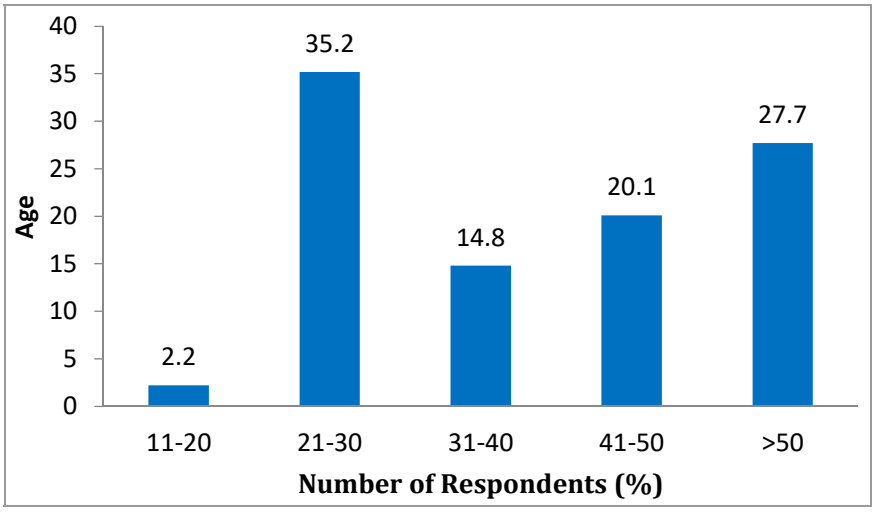
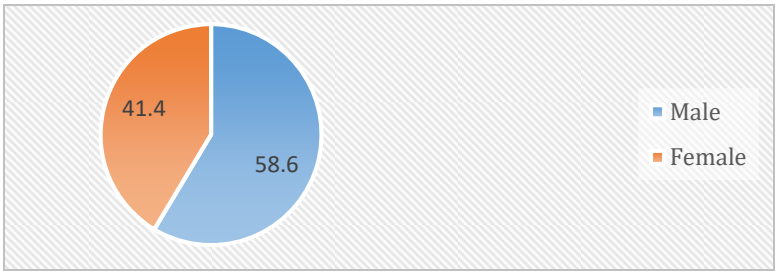


Figure 4 Gender (see online version for colours)



Among all respondents, 58.6% male and 41.4% are female.

Figure 5 Respondent's occupation (see online version for colours)

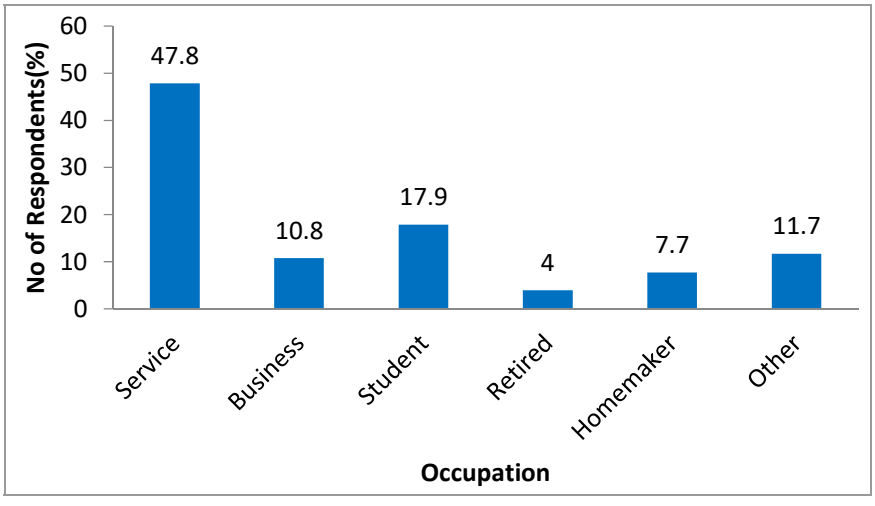
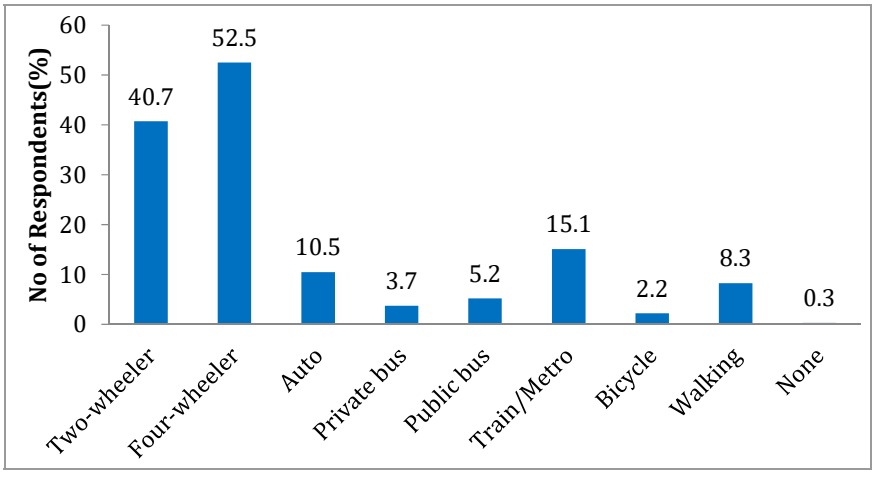


Figure 6 Mode of transport (see online version for colours)

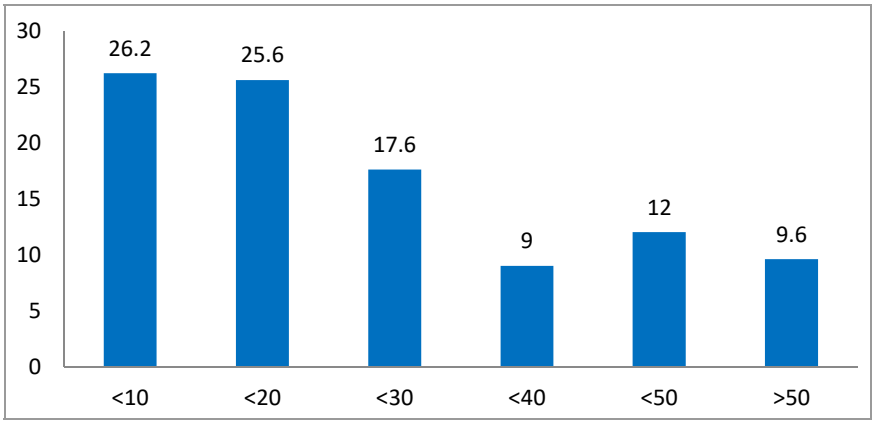


Respondents are from different occupations mostly from service class.

A total of 324 responses are received from 51 cities in India. Responses received from Andhra Pradesh, Chandigarh, Chhattisgarh, Delhi, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamilnadu, Telangana, Uttar Pradesh, Uttarakhand and West Bengal.

Most of the respondents are using four-wheeler and two-wheeler as their regular transport.

Figure 7 Average milage per day (see online version for colours)



Most of the respondents' average mileages are less than 10 to 30 km.

6.2 Hypotheses testing and analysis

H01, i.e., there is no significant difference between SMRI and SMHI is required to be put forward as the respondents have a natural bias towards socially/environmentally useful initiatives and there is a natural tendency to accept them in principle. The real intentions are revealed when we check on what might stop them from embracing such a novel initiative. The paired t-test with equal variances assumed was used using MS-Excel. The p-value emerged is 0 (i.e., < 0.5) and the null hypothesis cannot be accepted.

This means that the perceived hesitation is not going to influence the readiness much and the respondents are ready for shared mobility.

Table 3 Results of chi-square test using demographic variables

Null hypothesis	*Statement*	*P-value*	*Accept/reject*
H021	The SMRI is independent of gender	.755362	Accepted
H022	The SMRI is independent of daily distance travelled	.121399	Accepted
H023	The SMRI is independent of occupation	.396899	Accepted
H024	The SMRI is independent of age	.573890	Accepted

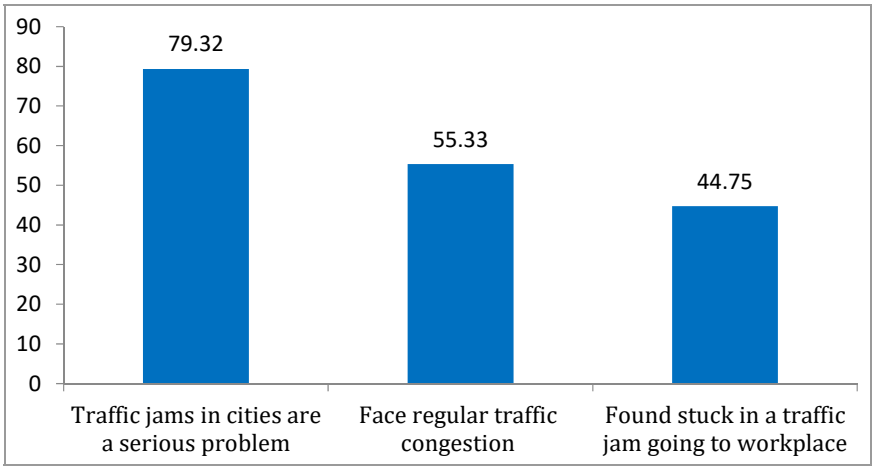
H02, i.e., the SMRI and SMHI are independent of demographic variables and are required to be put forward as it is very necessary to know the demographic profile of respondents who are likely to be accepting the shared mobility initiative need to be

checked for designing suitable campaigns for implementing the initiative. Majorly, four sub-hypotheses cannot be put forward and tested using chi-square statistic.

6.3 *Traffic jam related findings*

79.32% respondents thought that traffic jams in cities are a serious problem, while 20.67% respondents do not think it is a serious problem, maybe they never get stuck in traffic jams and are also unaware of traffic jam scenarios in many cities.

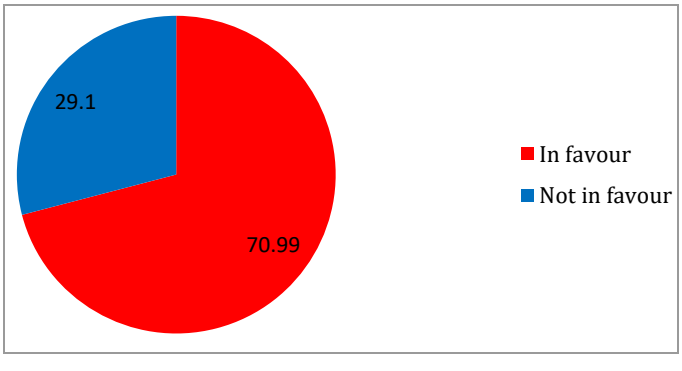
Figure 8 Traffic jam related findings (see online version for colours)



55.33% of respondents face regular traffic congestion while 41.66% of respondents do not face traffic congestion during travelling.

44.75 of the respondents were found stuck in a traffic jam and faced regular traffic jams during their way to the workplace. While 55.25% of respondents did not face traffic jams during their way to the workplace.

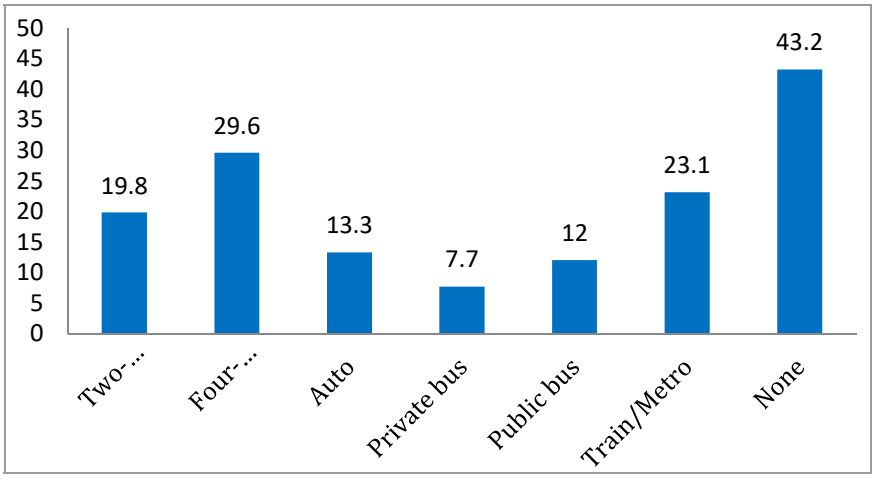
Figure 9 Shared mobility is a good solution to traffic congestion (see online version for colours)



When asked, shared mobility is a good solution to the traffic congestion problem, most of the respondents found to be in favour of shared mobility, as a solution to traffic problems while few of the respondents are not in favour of shared mobility as a solution to the

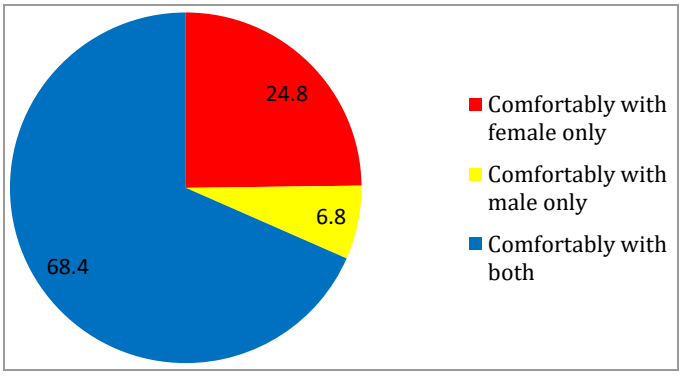
traffic congestion. We can say that people are ready to share the vehicle to overcome the problem of traffic congestion.

Figure 10 Already using shared mobility on (see online version for colours)



Most of them are ready for sharing two-wheelers, auto, bus and metro. But they are most likely to share a four-wheeler, while the percentage of sharing on buses and auto is comparatively low. It was found that many respondents are already sharing vehicles.

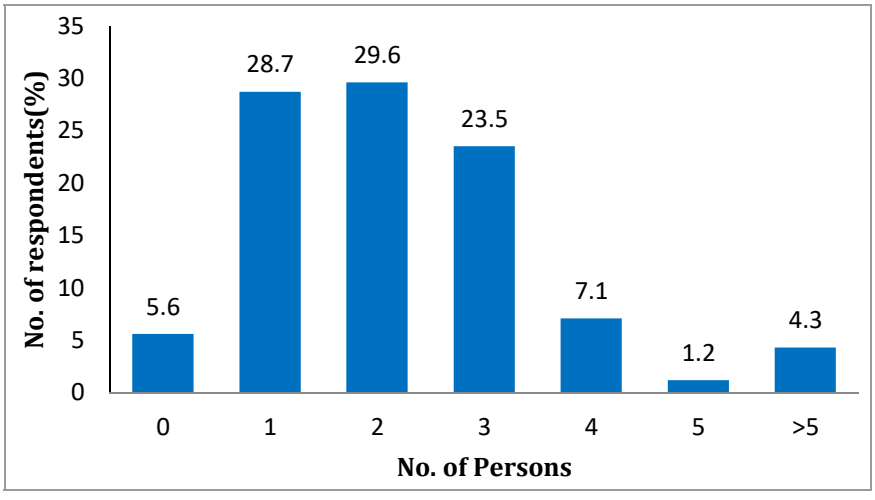
Figure 11 Sharing vehicle comfortably with (see online version for colours)



It was found that most of the respondents can share vehicles comfortably with males and females both.

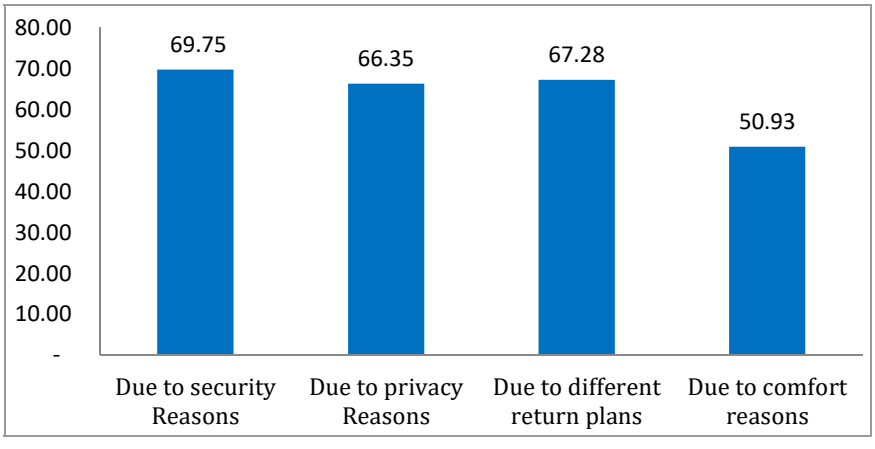
It was observed from responses that there are more chances to make new friends while sharing. According to the survey, shared mobility will lead to reduced travel time, better transportation and reduced traffic congestion. It was also found that people are well aware of the impact of traffic congestion, and according to them also, shared mobility is a good option for a better environment, better health of the citizen, reduction in pollution, and reduction in the use of non-renewable resources.

Figure 12 Can share vehicle with person (see online version for colours)



People are ready to share the vehicle with 1, 2, or 3 people. It was observed from responses that most of the respondents wanted to share the vehicle with 1 to 3 people.

Figure 13 Reasons for not supporting shared mobility (see online version for colours)



6.4 Findings related to the reasons for not opting shared mobility

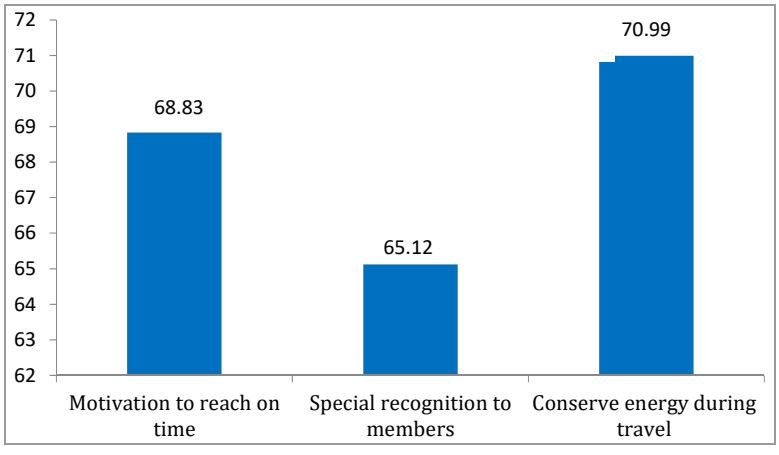
When asked about probable reasons for not opting for shared mobility, we found that there is a great fear of security and privacy among people. 69.75% of respondents opt that probable reason for not sharing a vehicle is due to security, and 27.47% respondents disagree to the above reason. 66.35% cannot share a vehicle due to privacy reasons while 30.86% respondents disagree to it. Among many reasons, one could be that people have to visit different places while returning to home. 67.28% of respondents may visit different places while returning home so they cannot share a vehicle, while 29.94% of respondents disagree with the statement. Many of them do not want to come out of their

comfort zone for sharing. 50.93% of respondents will not support shared mobility, as it is not comfortable for them, and 46.29% of respondents disagree with the said reason.

6.5 Findings related to expectation from employer/HoI

People also have expectations from the employer/HoI. According to the employer/HoI should take efforts to enhance shared mobility by members. According to 68.83% of respondent's employer/Ho, should support shared mobility, so that their organisation's members can reach to work on time. According to 65.12% of respondents, they should give special recognition to members to motivate them to share a vehicle while 33.95% of respondents disagree with the above statement. 70.99% of respondents said that employers should support shared mobility so that their members can conserve energy during travel and work efficiently while 28.09% of respondents disagree with it.

Figure 14 Expectation from employer/HoI (see online version for colours)



6.6 Findings related to expectation from government

The respondents showed their interest that the government should make good policies so that shared mobility can be enhanced in India. Most of the people thought that government should incentivise the employer for opting shared mobility for their employees.

According to the survey, 52.78% of respondents think that the government should make policy compulsory for employers having more than 20 employees in the organisation, while 45.99% of respondents are against it. 59.88% of respondents wanted the government to motivate employers by providing monetary incentives which could be a reduction in income tax, land benefits, or subsidy in electricity or solar panels, etc. But 33.49% of respondents disagree with this. When people were asked about the government policy for charging a fine for not following shared mobility policy, only 32.10% respondents agreed to this while 66.36% of respondents are against charging a fine for not following the shared mobility policy.

Figure 15 Expectation from government (see online version for colours)

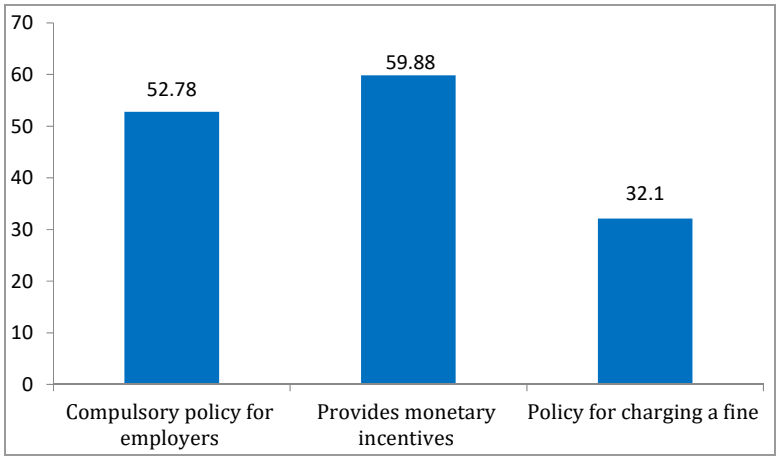
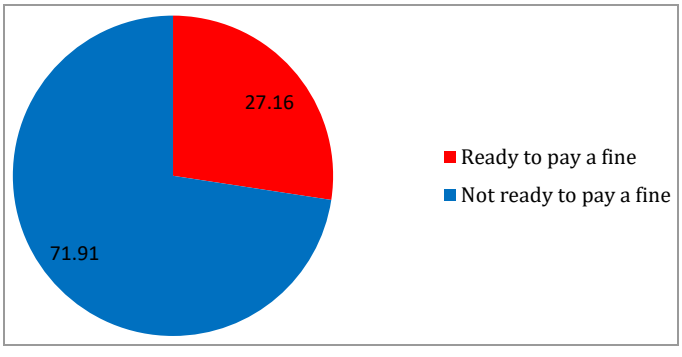


Figure 16 Charging fime for not following shared mobility (see online version for colours)



Very few people are in favour of charging fine for not following shared mobility. This shows that they are not ready to pay fine for not sharing a vehicle. When respondents were asked whether they are ready to pay a fine for not sharing a vehicle, 71.91% of respondents are not ready for it, while only 27.16% of respondents are ready to pay a fine against not sharing a vehicle.

6.7 Findings from telephonic interview

As a part of data collection through a telephonic interview, the opinion of respondents was asked. Following is the summary of key perspective gathered:

- There is a debate between the forceful and optional implementation of shared mobility. The respondents wanting it optional, are in majority (> 60%).
- There are concerns about safety, especially from female respondents.
- A majority wants to go for it, due to its green impact.
- Educational institutions, IT firms, and government offices are expected to be role models.

- Those who are opposing it, want public transport to improve and they consider it, as a government responsibility.

6.8 Objective-wise findings

The SMRI is made up of three components and the individual component indices are mentioned in Table 4. The component scores are arrived at using Likert scale questions. Assuming maximum score of 5 per question, the degree of agreement is calculated. Using a combination of such questions, component indices are calculated. SMRI was calculated and found 74%. This shows that people are ready for shared mobility. They are aware of its advantages and are ready to contribute to a sustainable environment. The willingness component has highest influence on the readiness.

Table 4 Results of regression analysis using SMRI and SMHI components

SMRI push components	*Component index*	*Regression coefficient*
Willingness to support shared mobility	0.69	0.49
Shared mobility as feel good factor	0.69	0.2
Shared mobility as antecedent to sustainable environment	0.78	0.33
SMHI pull component	*Component index*	*Regression coefficient*
Hesitation due to privacy and security	0.74	0.4
Hesitation due to comfort and convenience issues	0.7	0.4
Expressed desire for extrinsic motivation	0.76	0.2

SMHI was calculated and was found 72%. This shows that even if people are ready for shared mobility, they have great fear about privacy and security, especially for females. Privacy, security and convenience components have the highest influence on the hesitation.

The readiness for shared mobility using two-wheelers is low and the cause of concern as the number of two-wheelers in tier two cities is highest.

The proposed model shows that shared mobility will be possible only if the initiative is implemented by taking care of the security and privacy of people. This means that behavioural change needs to be targeted first.

7 Limitations and future scope

a Research is mainly focused on only tier 2 cities.

b Respondent's responses can be biased.

c Most of the data is collected from vehicle owners and not from the travellers of auto, buses and trains.

The Covid-19 pandemic makes a deep mark on the global mobility market. The required lockdowns have reduced public mobility, particularly in urban areas. As a precautionary measure, the individuals and businesses have restricted travel to only critical needs. In

these situations, as everyone must maintain social distancing, people will not opt for shared mobility, instead, everyone prefers their own vehicle. In this scenario, there is scope of new research, by getting respondents view on shared mobility after COVID-19.

8 Concluding remarks

Going by the results of the hypotheses testing, the people are influenced with idea but are not fully prepared to implement it and are not ok with forceful implementation. It can be concluded that the government will have to concentrate more on the pull factors as push factors are expected to create a descent in the minds of respondents. There is an expectation from the government to create the necessary public transport system and the same may require heavy time and investments. This simply means that the government and NGOs need to work on behavioural change leading to sensitivity towards environment and productivity. The colleges, IT companies, and government organisations need to make a beginning in this regard. The concerns about security and privacy are not to be underrated. Unless the initiative takes the form of movement, the deadlock of traffic-related challenges will be hard to resolve. The SMRI and SMHI can be used to monitor the change of tide in this regard.

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