

Are transport users willing to share?

— Stated preferences study on shared mobility in Shanghai

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Introduction



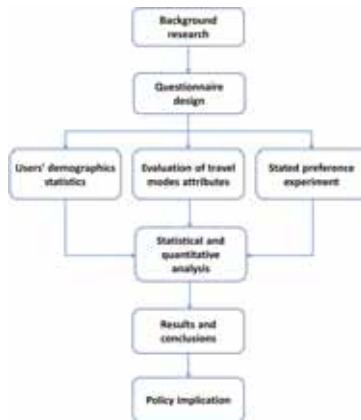
- The rapid growth of private cars has led to traffic congestion, road accidents, excessive occupation of public space, air pollution and other problems
- The existing public transport (PT) system usually fails to provide a high enough level of service in terms of flexibility, comfort and availability, compared with private cars
- Even with expansion and promotion, PT continues to lose market share to private cars
- Shared mobility (SM) is a possible solution to overcome inefficiency of conventional PT and private cars in terms of occupancy rates and vehicle usage
- **It is necessary to understand the factors that drive travelers to make certain choices and have willingness to use new transport alternatives**

Aim

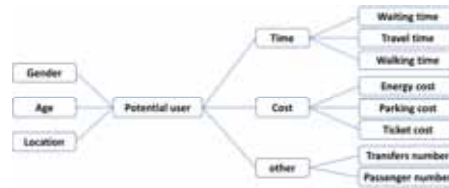
1. Investigating the preferences of the potential users in relation to the two proposed shared modes in Shanghai
2. Identifying and quantifying the most important attributes of the new modes and social-demographic characteristics of the users influencing mode choice
3. Studying the source of shared mobility users, whether they are from private car users or other users

Methodology

1. Research framework



2. Influencing factors



3. Two kinds of shared mobility proposed

Mode	Booking	Access time	Max. Waiting time	Max. total time loss	Vehicle type
Shared	Real time	Door-to-door	3 minutes, up to 10 minutes	Driver time + waiting time, from 7 minutes, up to 15 minutes	Minimum of 8 seats rearranged for 4 seats, with easy entry/exit
Taxi	30 minutes in advance	From door, at points designated in real time	Tolerance of 10 minutes from preferred boarding time	Minimum linear speed from origin to destination	Minibuses with 8 and 10 seats. No standing places

4. Survey structure and deployment

- Respondent's information: age, residential location
- Stated preferences

Respondents were required to make a choice in four stated preferences experiments in which four type of modes were available to perform the same trip. The modes were grouped into private car modes (car), PT, non-motorized alternatives (walking or cycling) and a SM alternative. Orthogonal design was used to generate the scenarios of user choice

- Attitude towards SM attributes

Respondents were asked to compare the attributes of existing travel modes and shared modes, and to evaluate the importance of the attributes that affected their choice

5. Data

Questionnaire survey was conducted through the Internet in Shanghai in August 2019. A total of 129 valid questionnaires were collected

Results and Conclusions

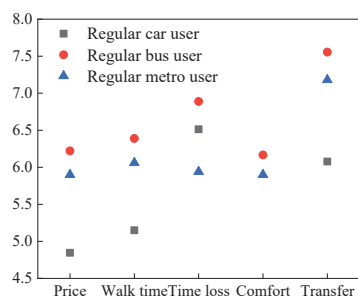


Fig.1 Attitudes towards the attributes of transport services

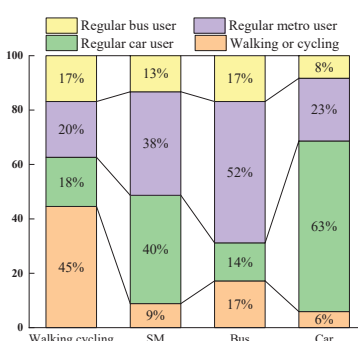


Fig.2 Sources of potential users in the scenarios

Table Discrete choice model calibration results

Parameter	
Access time, PT	0
Access time, SM	-0.102
Travel cost, car	0.138
Travel cost, PT	-0.341 *
Travel cost, SM	0.087
Lost time, PT	-0.085
Lost time, SM	-0.289 *
Number of transfers, PT	-0.215 **
Number of passengers, Shared Taxi	0.025
Waiting time, PT	-0.028
Waiting time, SM	-0.018 *
Living far from the city center, SM	-0.096 *
Living close to the city center, SM	0
Living in the city center, SM	-0.011 *
Being below 25 years old, SM	-0.025
Being 26-35 years old, SM	0.607 *
Being 36-45 years old, SM	0.438
Being 46-55 years old, SM	0

- Number of Transfers was found to be the most important attribute in our study and followed by time loss including access time and detour time
- Only regular bus users are willing to pay more for Shared mobility while car users are the least willing to pay for SM
- 40% of potential SM users come from car users, while more than half come from public transportation in our study
- People who live in and far from city center seem to be more likely to choose SM

Policy Implications

This study found that 40% of potential SM users are private car users, which indicates that there is a great potential to reduce the number of private car users in Shanghai. However, many public transport users also choose to use SM, which can lead to increased traffic congestions. Therefore, to avoid the side effects of SM, the government should:

1. reduce the travel cost of public transportation, improve the facilities of buses and subways, and ensure that regular public travel users can keep their original travel modes
2. Improve the quality of sidewalks and bicycle lanes to provide better service for non-motorized travel users
3. raise parking fees in cities and implement congestion charge policies to raise the cost of private car travel
4. work with SM companies or individuals to develop appropriate measures to reduce the number of transfers

Reference

Petrik O, Martínez L M, Furtado F, et al. Are transport users willing to share? Focus groups and stated preferences study on shared mobility in Auckland, NZ, Dublin, IR, and Helsinki, FI[R]. 2018.