

# Attitudes Towards Transport Modes: A Comparison Between the U.S. and China

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# Understanding Transport Mode Choice, Behaviour and Attitudes (1)

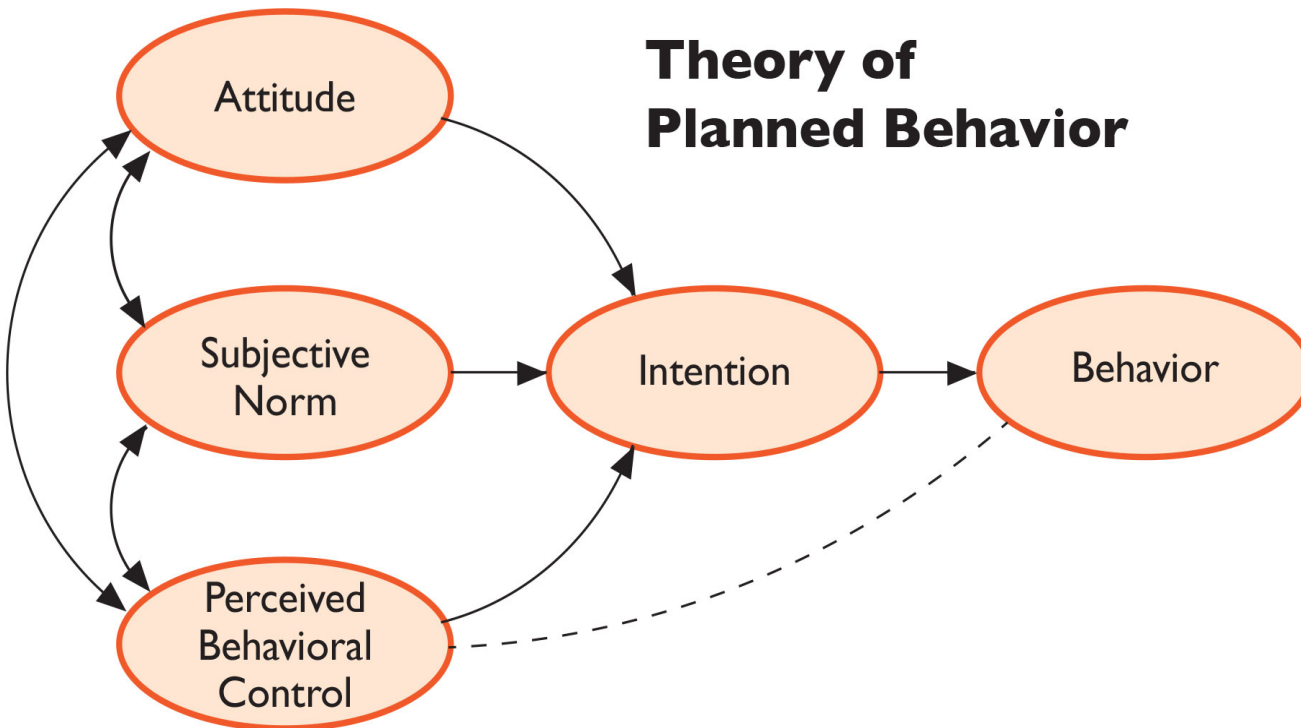


Image by BSGStudio

- To predict an individual's intention to engage in a behaviour at a specific time and place
- Behavioural intentions are influenced by attitudes

## **Understanding Transport Mode Choice, Behaviour and Attitudes (2)**

- Theory of planned behaviour
- Understanding transport attitudes will lead to better transport demand management tools
- Attitudes towards transportation policies can also determine mode choice

## Modal Trends in the U.S.

	1980		1990		2000		2010	
	000	%	000	%	000	%	000	%
Total Workers	96,617	100.00	115,070	100.00	128,279	100.00	136,941	100.00
Drive Alone	62,193	64.37	84,215	73.19	97,102	75.70	104,858	76.57
Carpool	19,065	19.73	15,378	13.36	15,634	12.19	13,266	9.69
Transit	6,008	6.22	5,889	5.12	5,869	4.58	6,769	4.94
Taxicab	167	0.17	179	0.16	200	0.16	151	0.11
Motorcycle	419	0.43	237	0.21	142	0.11	267	0.19
Bicycle	468	0.48	467	0.41	488	0.38	731	0.53
Other	703	0.73	809	0.70	901	0.70	1,178	0.86
Walk (only)	5,413	5.60	4,489	3.90	3,759	2.93	3,797	2.77
Work at Home	2,180	2.26	3,406	2.96	4,184	3.26	5,924	4.33

Source: Census, ACS 2010

## Common Reasons for Driving

- Travel time
- Convenience
- Flexibility
- Physical effort
- Desire for personal space
- Travel costs
- Need for control
- Experience of driving
- Perceived uncertainty
- Safety
- Excitement
- Enjoyment

## Types of Transport Users based on Attitudes

### Jensen (1999)

- Passionate drivers
- Everyday drivers
- Leisure time drivers
- Users of the heart
- Users of convenience
- Users of necessity

### Anable (2005)

- Malcontented motorists
- Complacent car addicts
- Die hard drivers
- Aspiring environmentalists
- Car-less crusaders
- Reluctant riders

### Gotz (2003)

- Traditional domestic
- Reckless car fans
- Status oriented automobilists
- Traditional nature lovers
- Ecologically resolute

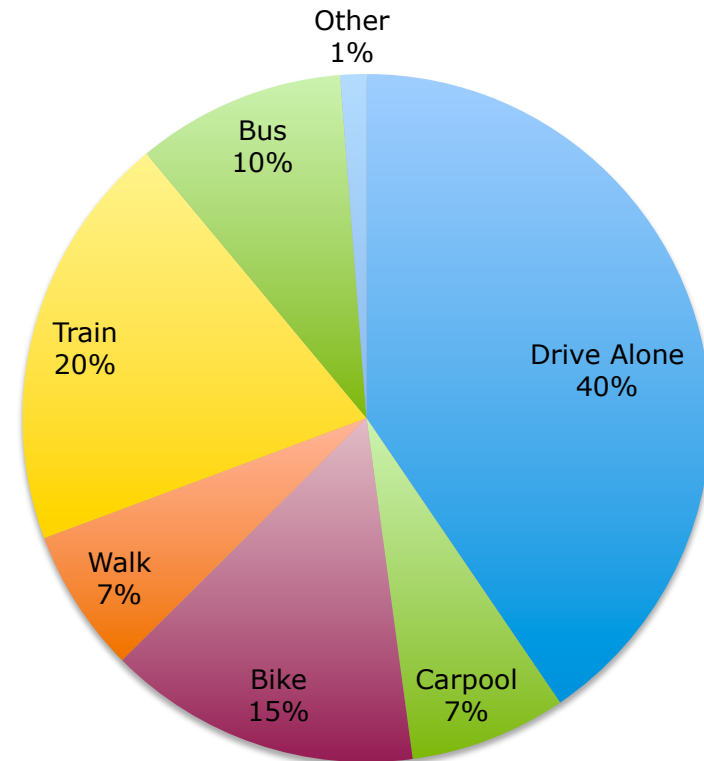
## California Commuter Mode Choice Study

- Explore underlying factors leading to individuals' decisions
- Data collected included attitudes, beliefs and behaviours regarding the quality and price of transport alternatives
- Data reflected travel **constraints, preferences, perceptions, and attitudes** for,
  1. driving alone
  2. carpool or vanpool
  3. motorcycle
  4. bus
  5. train
  6. biking and walking

## Focus Group Participants

- Californian Employees mode choice
- Sample not representative of the U.S. as a whole but provided insights to attitudes towards various modes
- 23 focus groups were conducted with a total of 217 participants
- Focus groups preceded a survey of sample size  $\approx$  4000

### Mode Choice of Participants





## Drive Alone – Most Popular Choice

### Main Reasons:

- Superior comfort of the automobile
- Concerns about safety
- Flexibility – need to be available on short notice for dependents
- Low transit accessibility
- Less costly than alternatives
- Free parking

*The type of attitudes determines driving frequency.*

## Regular Drivers

*"I am **relaxed** in my car. I put on music and I am in my own environment. It is much better than BART, where I have to share the space with so many people and I have to sit on those old seats."*

*"I only drive because I don't want to be around people that early in the morning."*

*"My schedule is completely affected by my son's schedule. I have to drop off my son in Alameda before driving to work and will pick him up after work every day."*

*"My kids also live here so I use the car after work to visit them."*

## Safety Issues

- Driving is perceived to be a safer mode than other modes
- For public transport and walking, the perception of safety is associated with the environment around train stations and bus stops, the time of travel, as well as the fear of crime

*"I drive for **security** and **safety** reasons. I arrive very early and go to the recreational sports facility at night."*

*"I don't want to stay on campus late at night, waiting for a bus."*

## Occasional Drivers

- Weather conditions and seasons trigger changes in driving trips
- Cold, rainy weather is a deterrent to the use of public transportation
- Some participants are more reluctant to use public transport when it gets dark earlier in the winter and would drive more than in the summer

*"I drive when it rains, when I just want to get into my car and get home to **feel protected.**"*

*"Sometimes I have to drive because of the rain. I usually bike."*

## Carpool

- Most drivers are not open to the idea of offering rides to other employees
- Citing time commitment, loss of flexibility and stress
- A general dislike of carpooling even for participants who have never carpooled before

*"I wouldn't carpool. Just because of the time commitment of it, **loss of independence, stress** about being late to pick someone or stress about being picked up."*

*"I will be happy to drive someone else to work but if I have to stay later for that person, that will get on my nerves eventually."*

## Public Transport – Bus and Train

### **Main Reasons:**

- Environmental benefits
- Cost
- Less mileage on their vehicles
- The stress of driving

## Public Transport – Quotes

*"I think about the environment and I know I am putting **poison** out when I drive so that influences me to use public transportation as often as possible."*

*"I have always avoided driving. **Emotionally** I can't handle peak hours."*

*"I need to take both the bus and BART to get to campus. Driving is more **relaxed** but I use transit because it's cheaper."*

*"In the past I have taken the bus for a while when my wife and I only had one car. It took too much time and it **wasn't practical** because it only ran twice an hour so I had to get up earlier."*

## Public Transport – Negative Experience

- Regular drivers find it risky to use public transport
- Uncertainty of the reliability of trains or buses
- Extra travel time associated with public transport
- Attitudes formed by personal negative experience with transit services or influenced by someone else's negative experience

*"Caltrain is pretty reliable and incredible but when it's broken it's really broken and it annoys you so much. I don't know why but it takes away all the 90 percent or 95 percent times it was reliable."*

*"The bus was just kind of a negative experience. Loud people, arguments, bus and bus station are pretty nasty."*



## Walking and Biking

- Walking as a form of exercise for a selected group of employees
- Biking perceived to be dangerous for non-bikers
- Inadequate biking facilities for secure storage and for shower or changing cited as key barriers for potential bikers

*"I would be willing to bike if there were a secure place to park my bike, either a locker or an indoor facility."*

*"I have tried taking my bike but I am concerned about the safety. I know at least three people who have gotten injured in car accidents with bikes."*

# China – Modal Trends (2010/2011)

## BEIJING<sup>1</sup>

Population: 11.7 million  
Land area: 1,368 km<sup>2</sup>

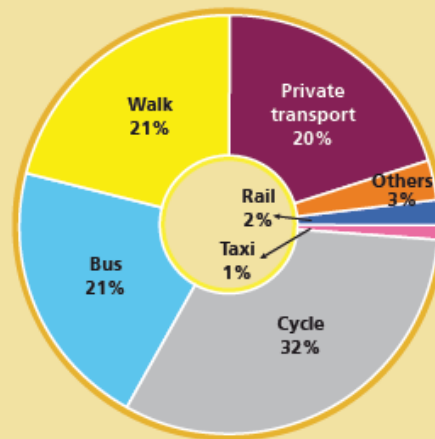
### Mode share

Based on the number of journeys by main mode of transport. It includes all modes for all purposes. Mass transit constitutes 23% of all journeys.

### Data Sources:

Beijing Yearbook 2011  
Beijing Transport Report 2005 (in Chinese only, 2005 北京市交通发展年度报告)

Figure 4: Mode Share in Beijing



1. For Beijing, this includes the traditional urban area, which is only part of the area administered by the Beijing Municipality.

2. For Guangzhou, this includes the central districts (i.e. Liwan, Yuexiu, Haizhu, Tianhe, Baiyun, Huangpu) only, which is only part of the area administered by the Guangzhou Municipality.

4. For Shanghai, this includes the traditional urban area and the Pudong New District, which is only part of the area administered by the Shanghai Municipality.

## GUANGZHOU<sup>2</sup>

Population: 6.3 million  
Land area: 1,166 km<sup>2</sup>

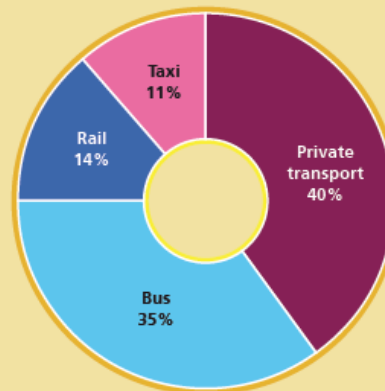
### Mode share

Based on the number of journeys by main mode of transport. It includes **only motorised modes** for all purposes. Mass transit constitutes 49% of motorised journeys.

### Data Sources:

Guangzhou Yearbook 2010  
Guangzhou Urban Transport Report 2010 (in Chinese only, 2010 年广州市城市交通运行报告)

Figure 10: Mode Share in Guangzhou



## SHANGHAI<sup>4</sup>

Population: 16.4 million  
Land area: 2,141 km<sup>2</sup>

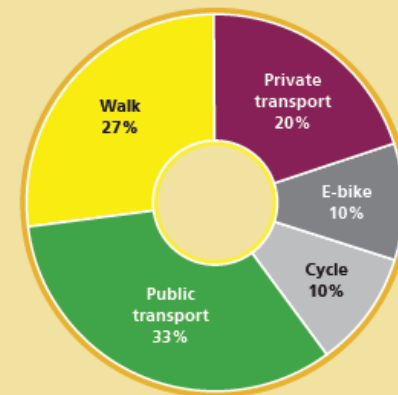
### Mode share

Based on the number of journeys by main mode of transport. It includes all modes for all purposes. Mass transit constitutes 33% of all journeys.

### Data Sources:

Shanghai Yearbook 2011  
Shanghai Construction and Transport Commission 2009 (data provided directly)

Figure 22: Mode Share in Shanghai

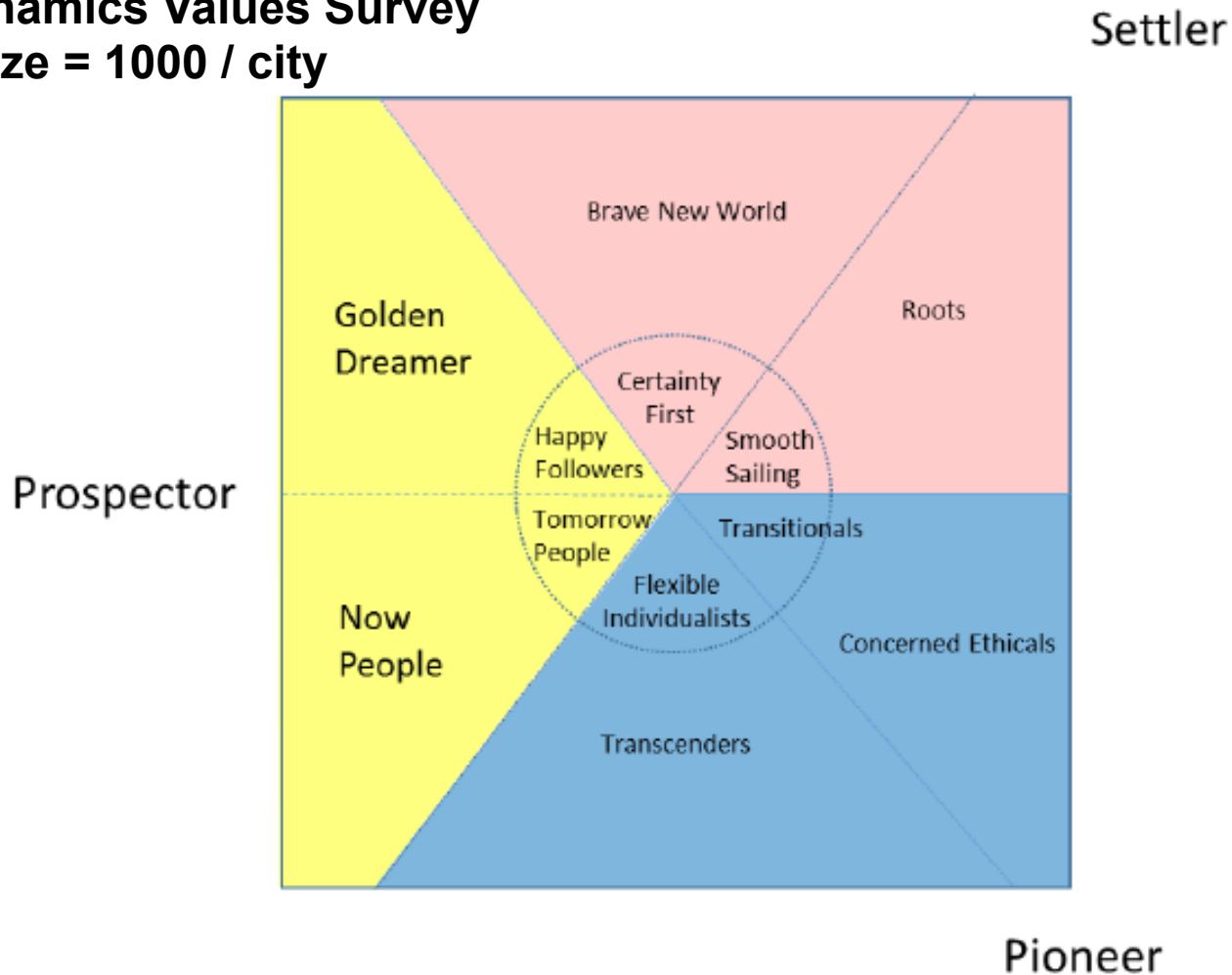


## **Chinese Car Desire 'Echoes 1950's USA' (FIA Foundation, 2015) (1)**

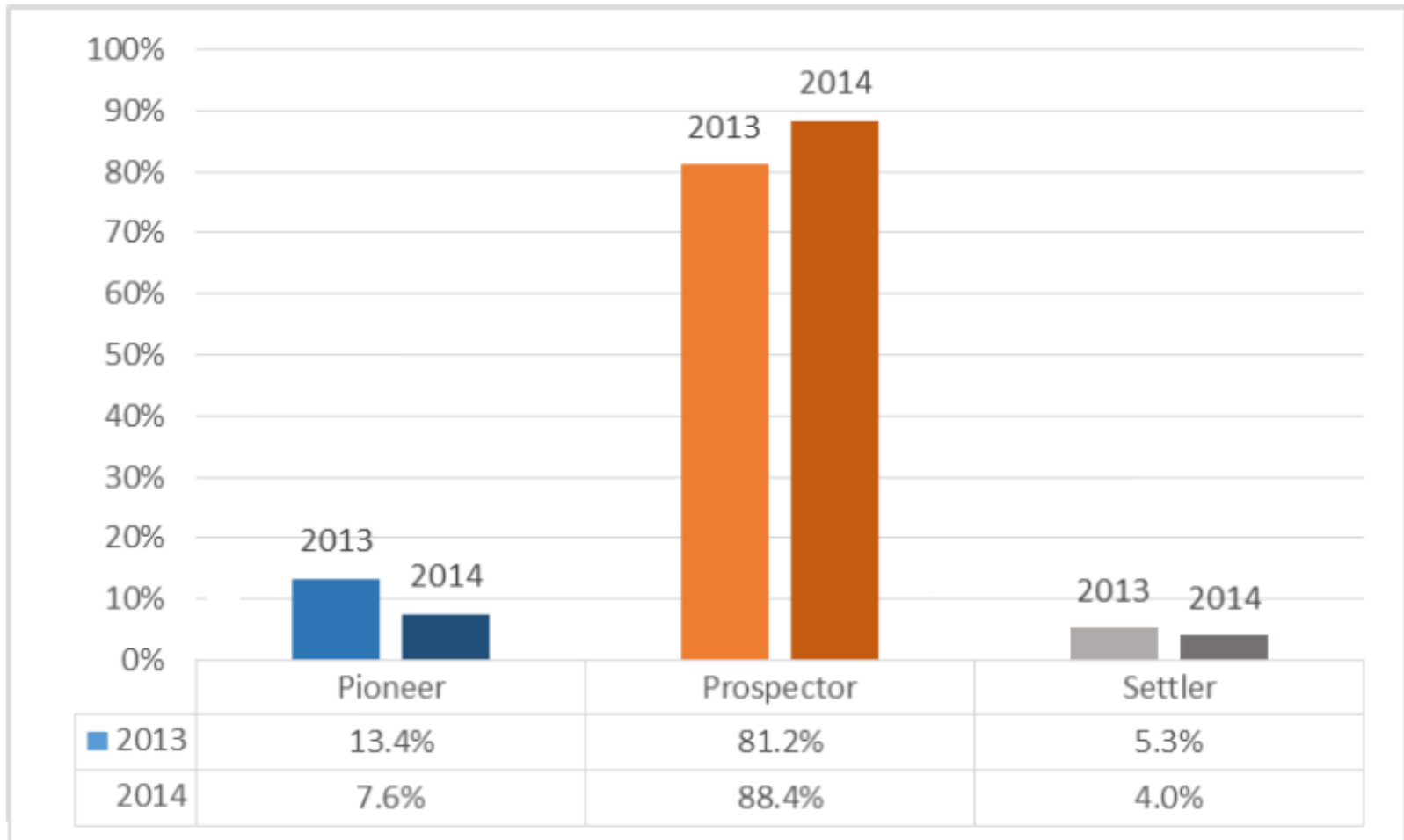
- A different range of values than currently observed elsewhere
- Cars are seen as “dream machines”
- Car use and ownership is high in Chinese cities but people still use a mix of transport types
- Economic factors affect car ownership choices
- Recognition of transport environmental issues but still want to own cars
- Government’s responsibility to reduce pollution and congestion

# Chinese Car Desire 'Echoes 1950's USA' (FIA Foundation, 2015) (2)

Cultural Dynamics Values Survey  
– Sample Size = 1000 / city



## Chinese Car Desire 'Echoes 1950's USA' (FIA Foundation, 2015) (3)

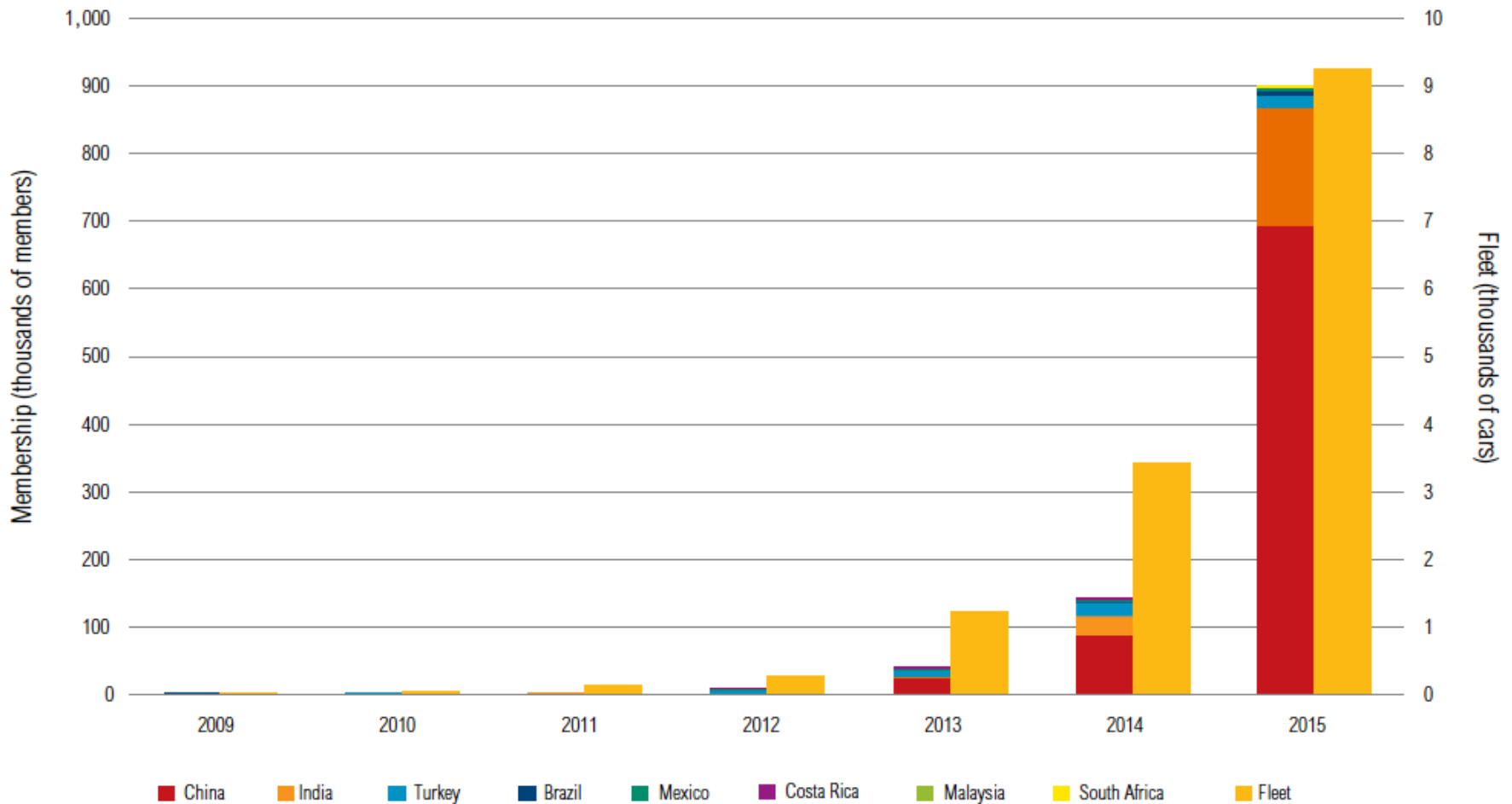


## Automobile Ownership (Shaheen and Martin, 2010)

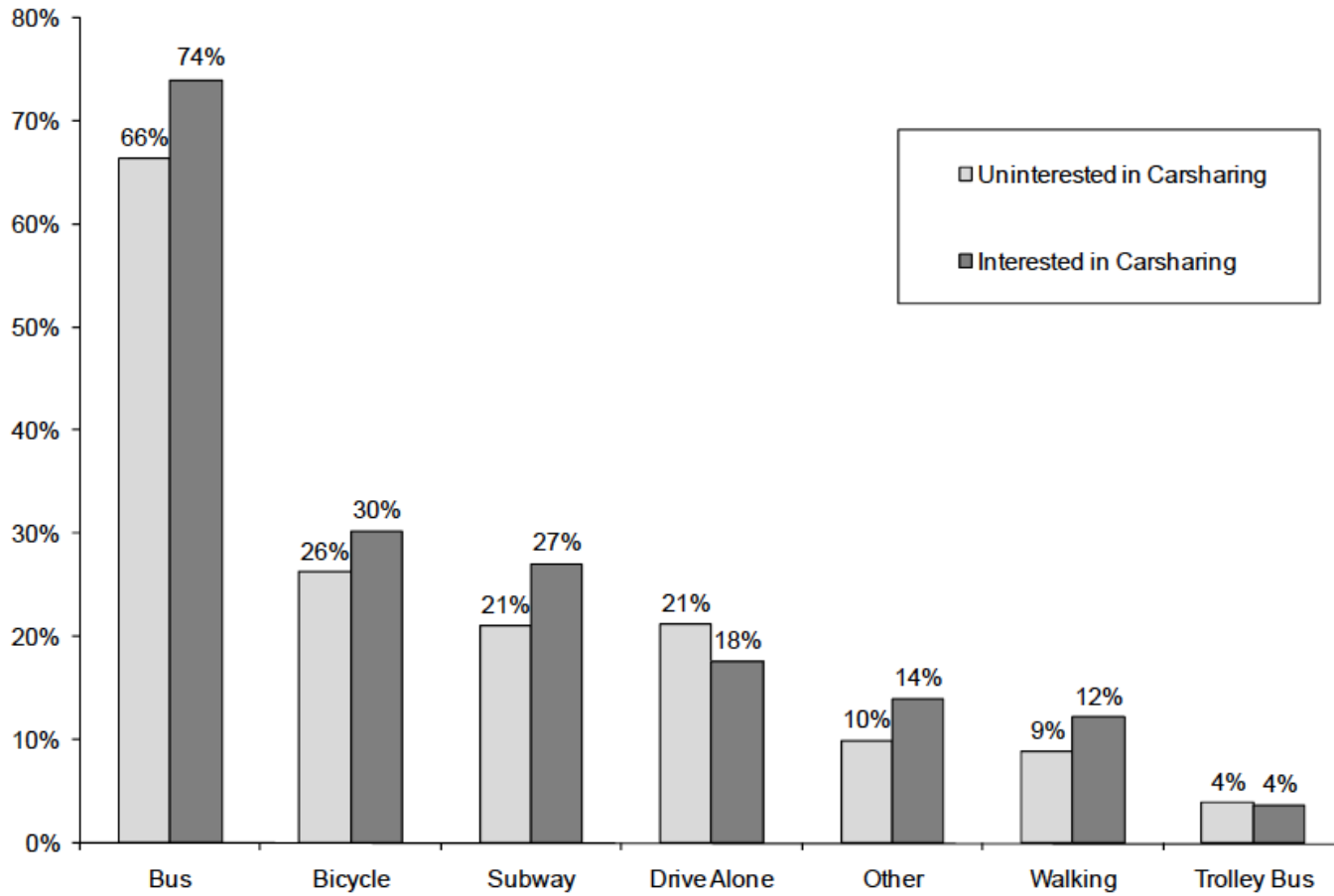
<b>Auto Ownership Advantages (n = 840)</b>	<b>%</b>	<b>Auto Ownerships Disadvantages (n = 840)</b>	<b>%</b>	<b>Auto Purchase Deterrents (n = 490)</b>	<b>%</b>
Travel convenience	70%	Parking problems	46%	Buying a car is expensive	50%
Increases comfort of travel	35%	Environmental pollution	34%	Public transit is convenient	26%
Increases mobility and scope of activity	17%	High cost	31%	Parking is difficult	25%
Symbol of social status	11%	Financial pressure	16%	Walking or biking is convenient	13%
Makes travel safer	4%	Unsafe	8%	Driving is not safe	10%
Other	1%	Other	2%	Other reasons	5%
				Driving stress	5%

Most of the positive and negative aspects of automobile ownership are similar to U.S. studies.

# Growth of Carsharing Members and Fleet (WRI, 2015)



## Carsharing Demand in Beijing, China (Shaheen and Martin, 2010)



Each percentage indicates the proportion of subgroup respondents that reported a particular mode.



## Carsharing in Hangzhou, China (WRI, 2015)

- 7 focus-group sessions with 48 participants
- 48 percent of participants would consider delaying or forgoing car purchase plans if carsharing were conveniently available
- Target groups are well-educated, mostly carless, middle income, young to middle-aged, urban residents – **Similar to user groups observed in mature markets**

*"Cultural desire for car ownership might not be so closely linked to actually owning a car."*

## Transport Policy Insights

- Mode choice is a reflection of a complex decision making process, particularly for commuters with options
- Little changes in infrastructure and/or work schedule flexibility could make huge differences in behaviour
- Different policies that are targeted at specific user groups will be more effective than implementing one generic program
- Chinese users have a different set of values, travel constraints, alternatives, and preferences that will shape distinctive trends
- Carshare tend to be more well-accepted in Chinese than U.S. cities

# Thank You

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