

Air Pollution Crisis Measure and Traffic Management in Shanghai and Beijing

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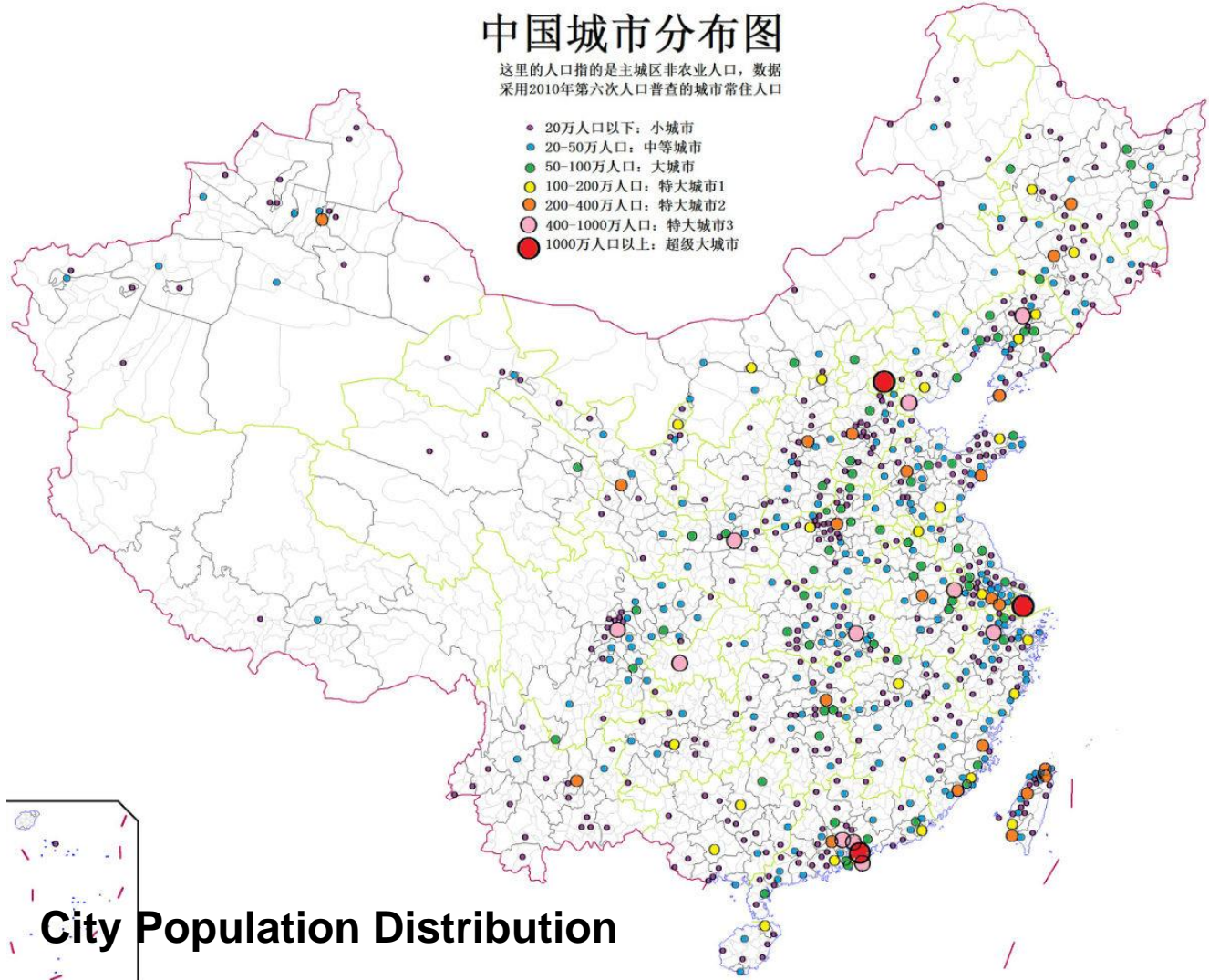
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.1. Introduction

中国城市分布图

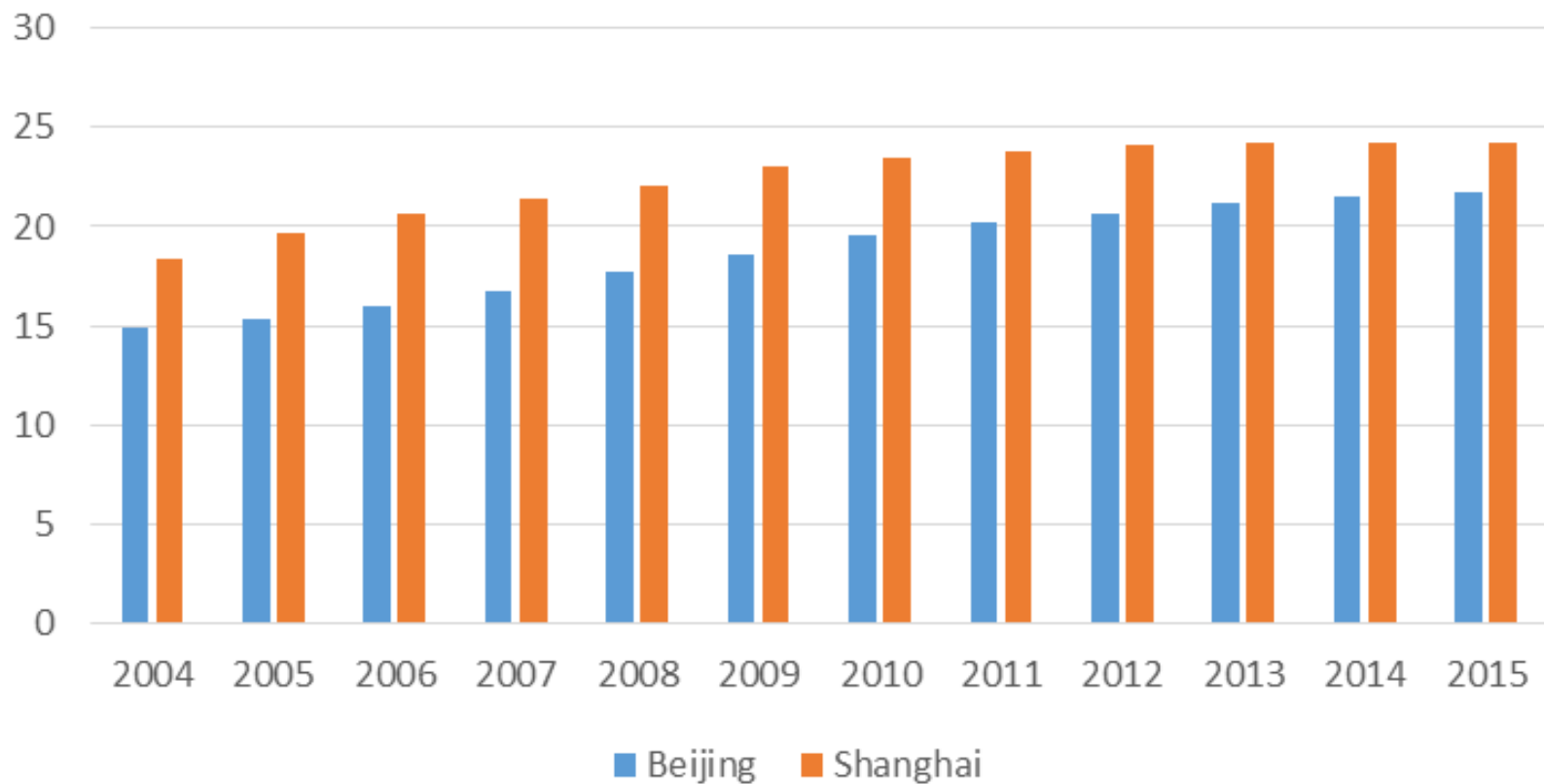
这里的人口指的是主城区非农业人口，数据采用2010年第六次人口普查的城市常住人口

- 20万人口以下：小城市
- 20-50万人口：中等城市
- 50-100万人口：大城市
- 100-200万人口：特大城市1
- 200-400万人口：特大城市2
- 400-1000万人口：特大城市3
- 1000万人口以上：超级大城市



City Population Distribution

Population in Beijing and Shanghai



Shanghai Location & Region

- **Total area of 6,340.5 km²**

Population of around

17 million(2003)

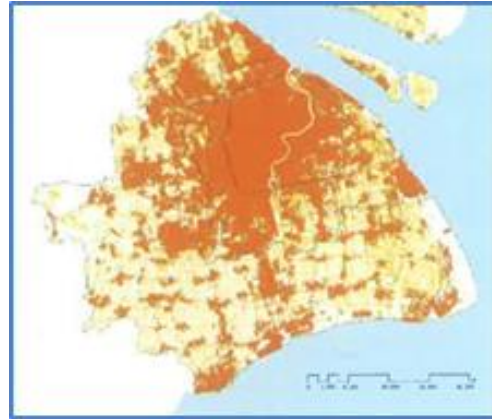
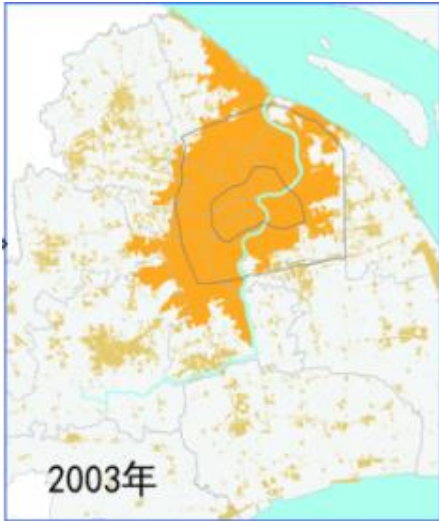
18.6 million(2007)

25 million(2015)

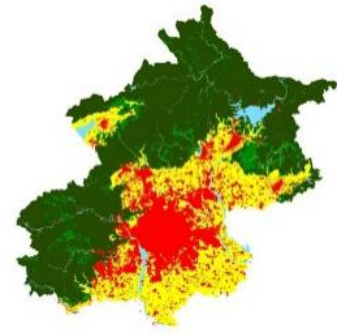
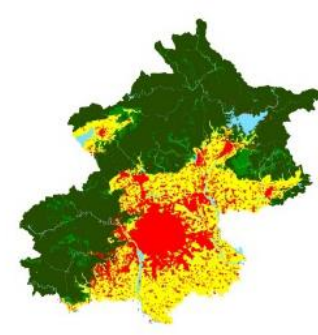
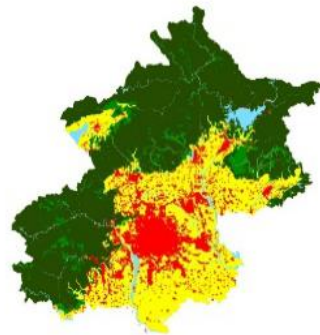
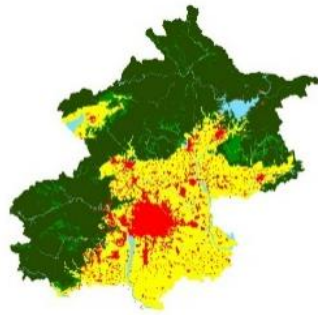
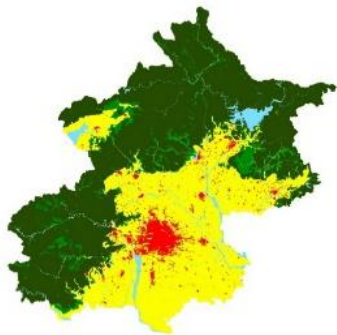


Land Use Change

Shanghai 2013



Beijing 1987- 2014 4.5 times



1987年

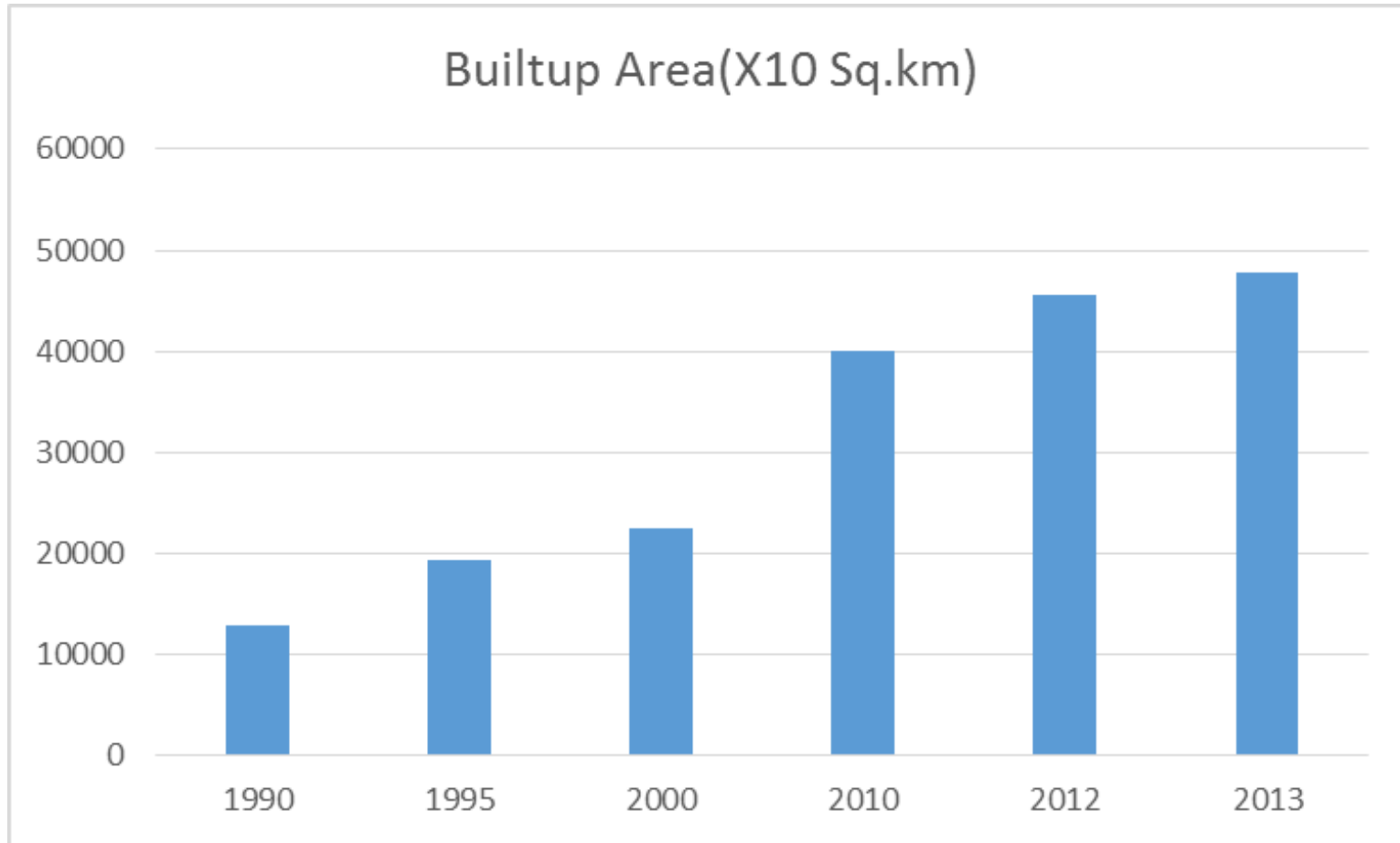
2000年

2005年

2010年

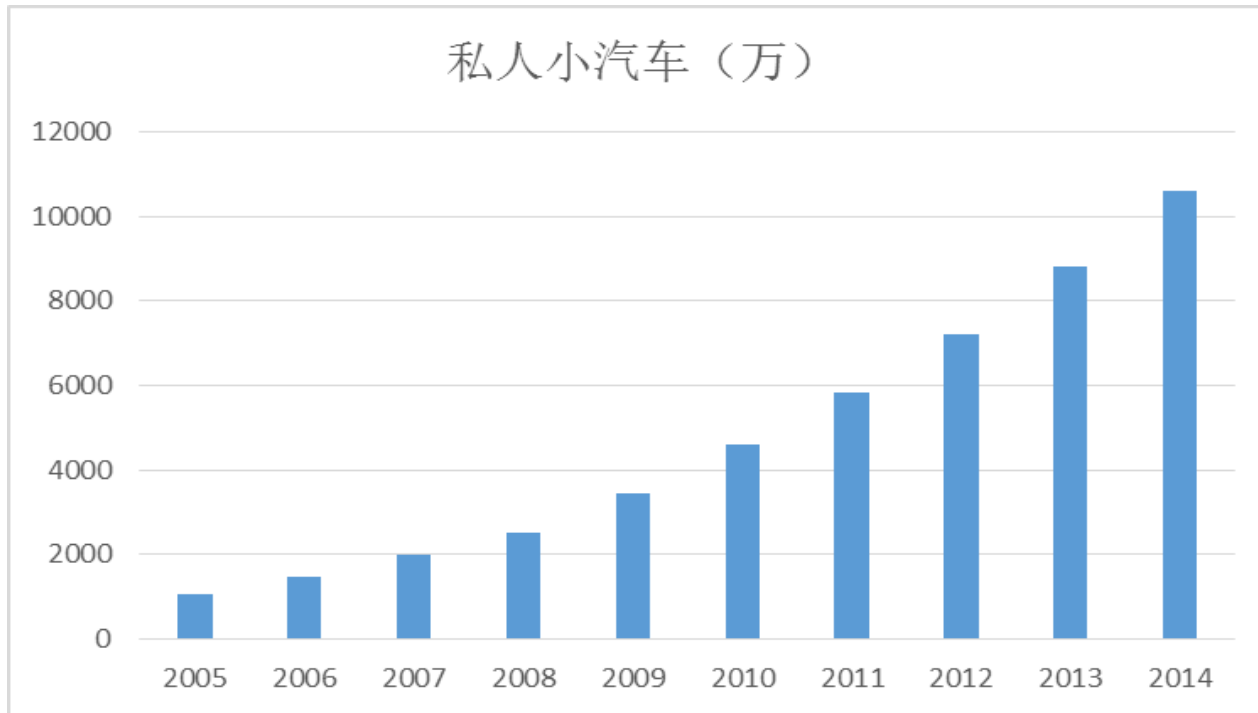
2014年

1990-2000 X 1.74
2000-2010 X 1.78
2010-2013 X 1.19



China is now the number one motorized vehicle producer

Private Motorized Passenger Vehicle 2001-2014)

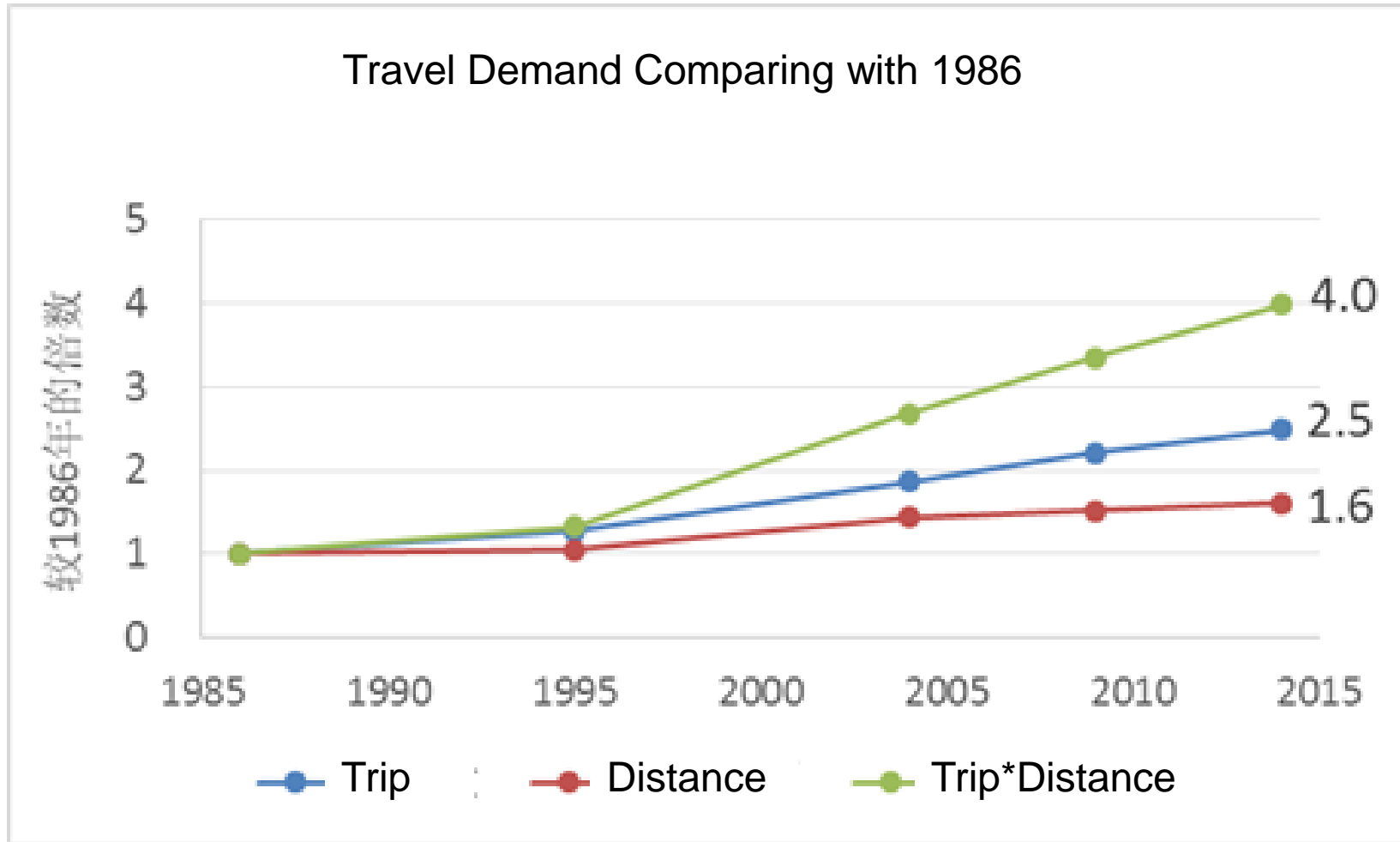


X10 from 2005

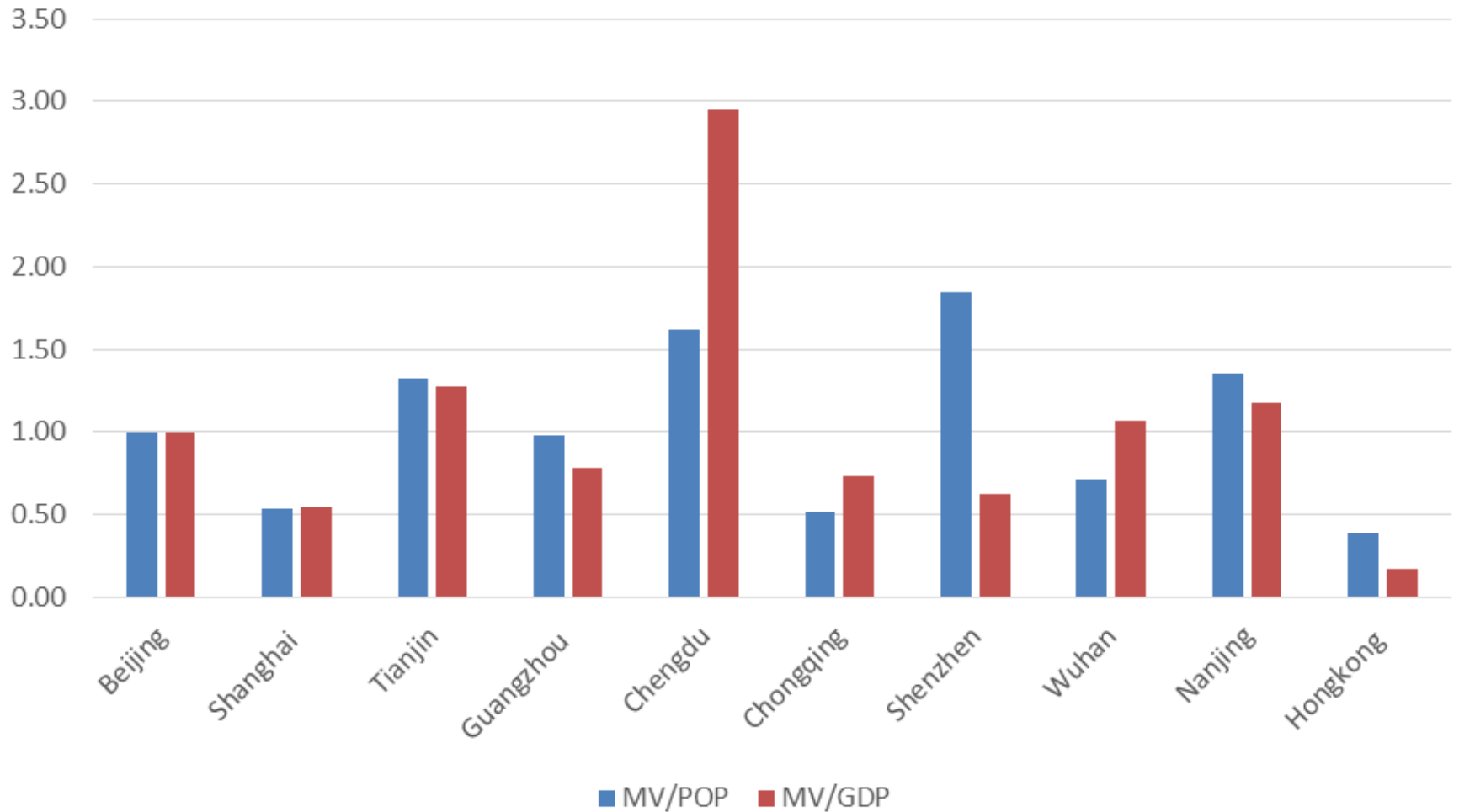
**10 million
more/Year**



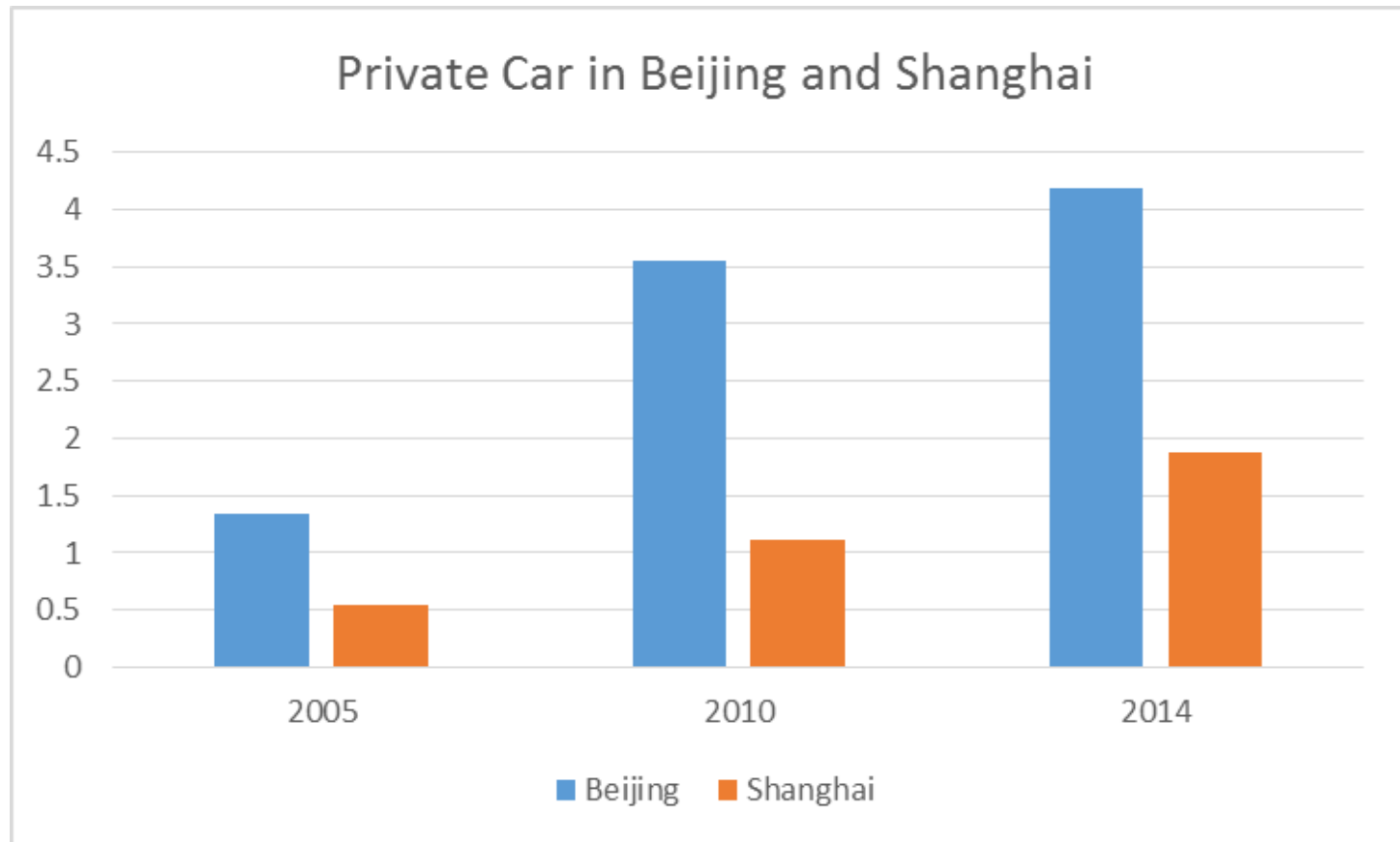
Shanghai Travel Demand Change Comparing with 1986(=1)



Motorized Vehicle/POP,GDP Comparing with Beijing



.2. Control on motorized vehicle license auction



Shanghai Beijing
Population >
GDP >
Car <<< 3 Millions Less

Car Ownership Control Introduced in More and More City

| Measure | City | Year of Begin | Plate Cost |
|-----------------|--------------|---------------|------------|
| Bidding | | | |
| | Shanghai | 1994 | USD12,500 |
| Lottory | | | |
| | Beijing | 2010,12 | |
| | Guiyang | 2011,7 | |
| Bidding+Lottory | | | |
| | Guangzhou | 2012,7 | USD4000 |
| | Tianjin | 2014,1 | USD4500 |
| | Hangzhou | 2014,3 | ? |
| | Shenzhen | 2014,12 | ? |
| Two Car/Family | | | |
| | Shijiazhuang | 2013,6 | |

Higher Parking Fee Policies

Parking Fee Management in Shanghai

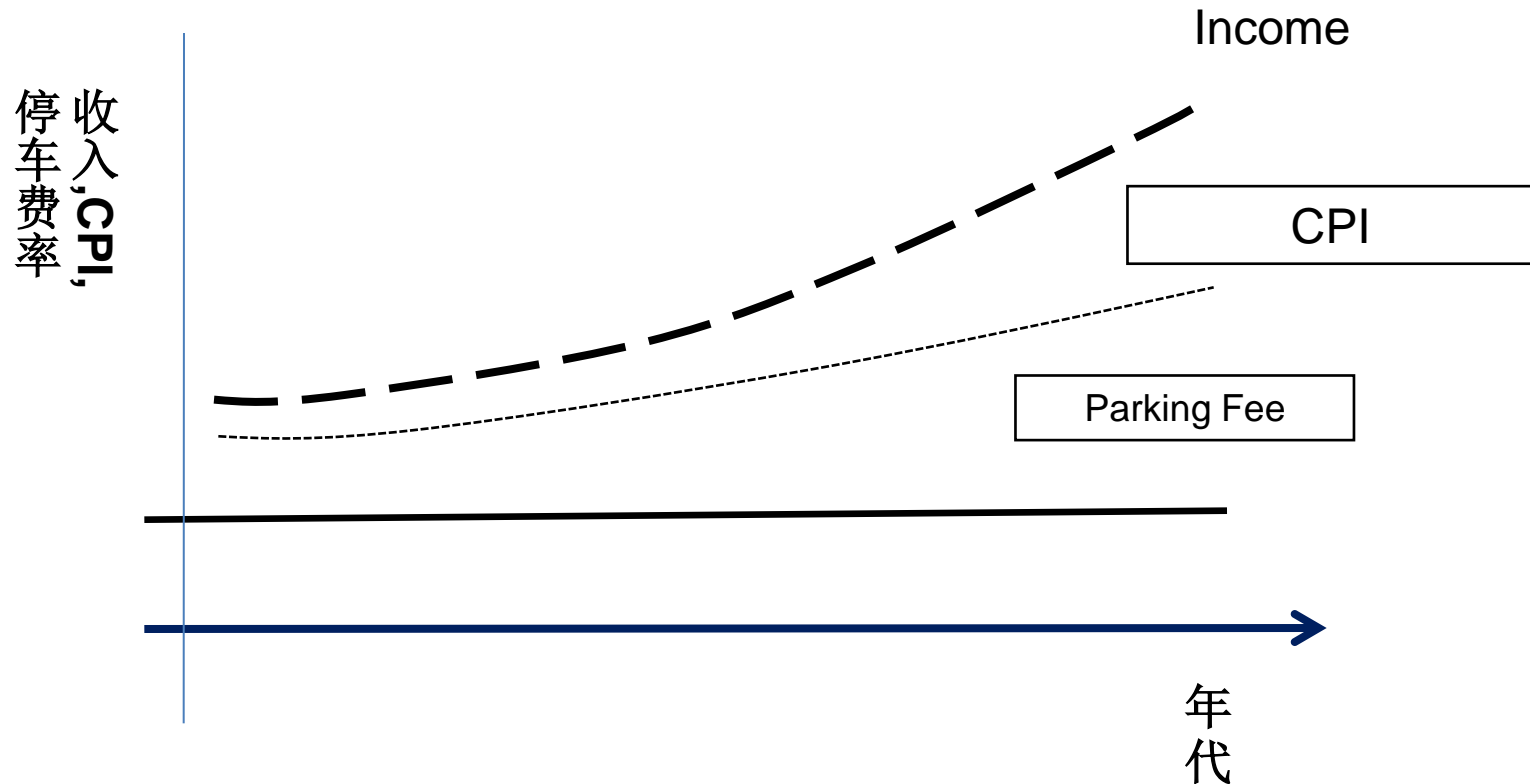
| Area | Daytime | | Night(Yuan) |
|-------------------------------|------------------|-----------------------|-------------|
| | First hour(Yuan) | Extra half hour(Yuan) | |
| Key area in inner city | 15 | 10 | 10 |
| Other area in inner city | 10 | 6 | 8 |
| Area between inner/outer ring | 7 | 4 | 5 |

Parking Space Requirement: from Bottom limits to Upper Limits

Problems:

1. Park fee doesn't increase with the CPI, so the effect of this policy gradually failed.

2. Park fee has no difference between cars with different emission of CO₂, so this policy can't encourage people use the cars with low-carbon emission.



No More Road Extension in History Areas from more road for car to shift the mode of travel



3. Strengthen public transport

Achievement

Extend Bus Service from City to Suburban, 20,000 Bus

High Quality Taxi Service (before)

**Large Scale Metro Construction, 14 Metro lines, > 600km
366 Station**

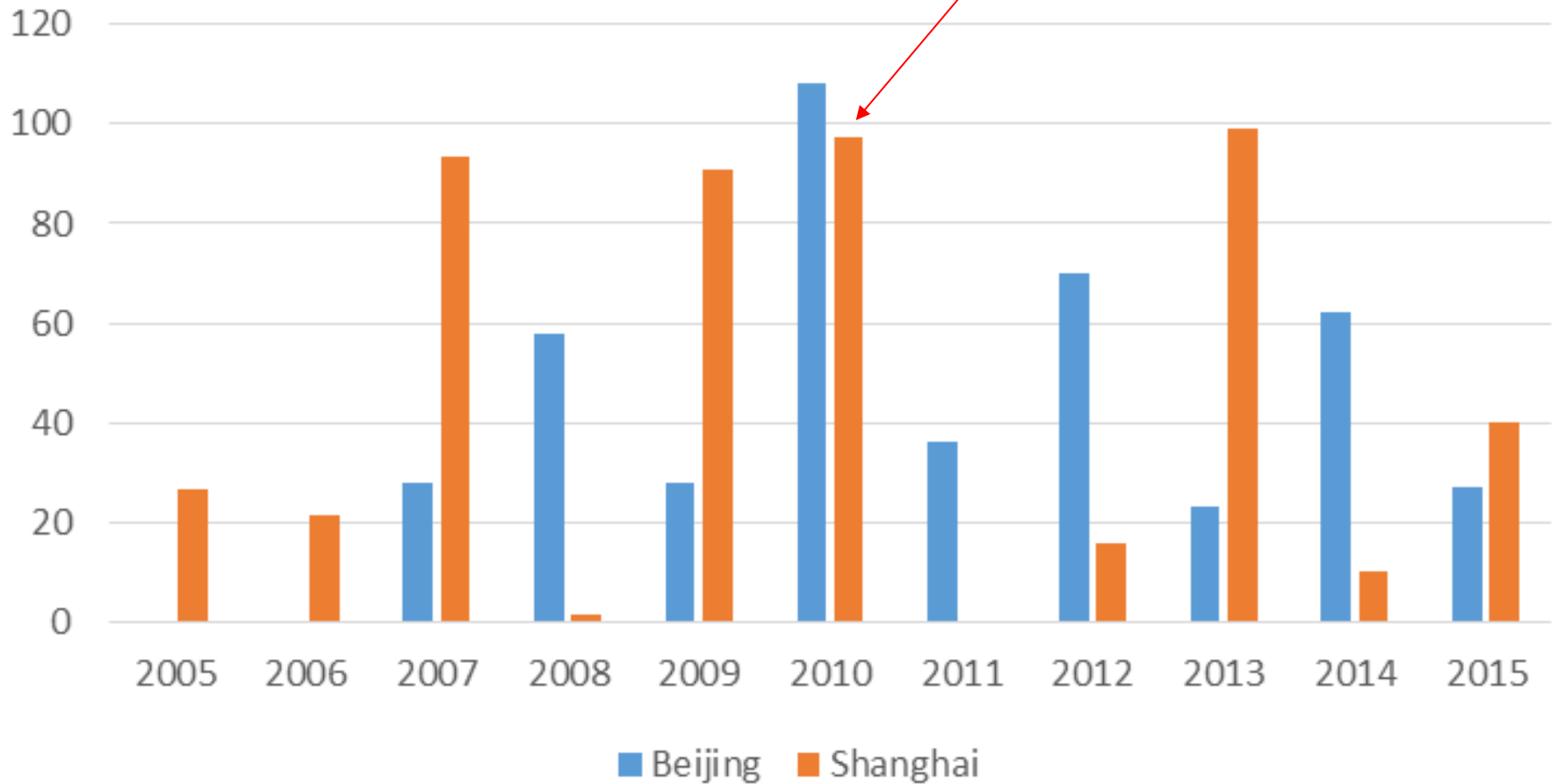
1000km Metro, 1000km Tramway, 500km Suburban railway in Planning

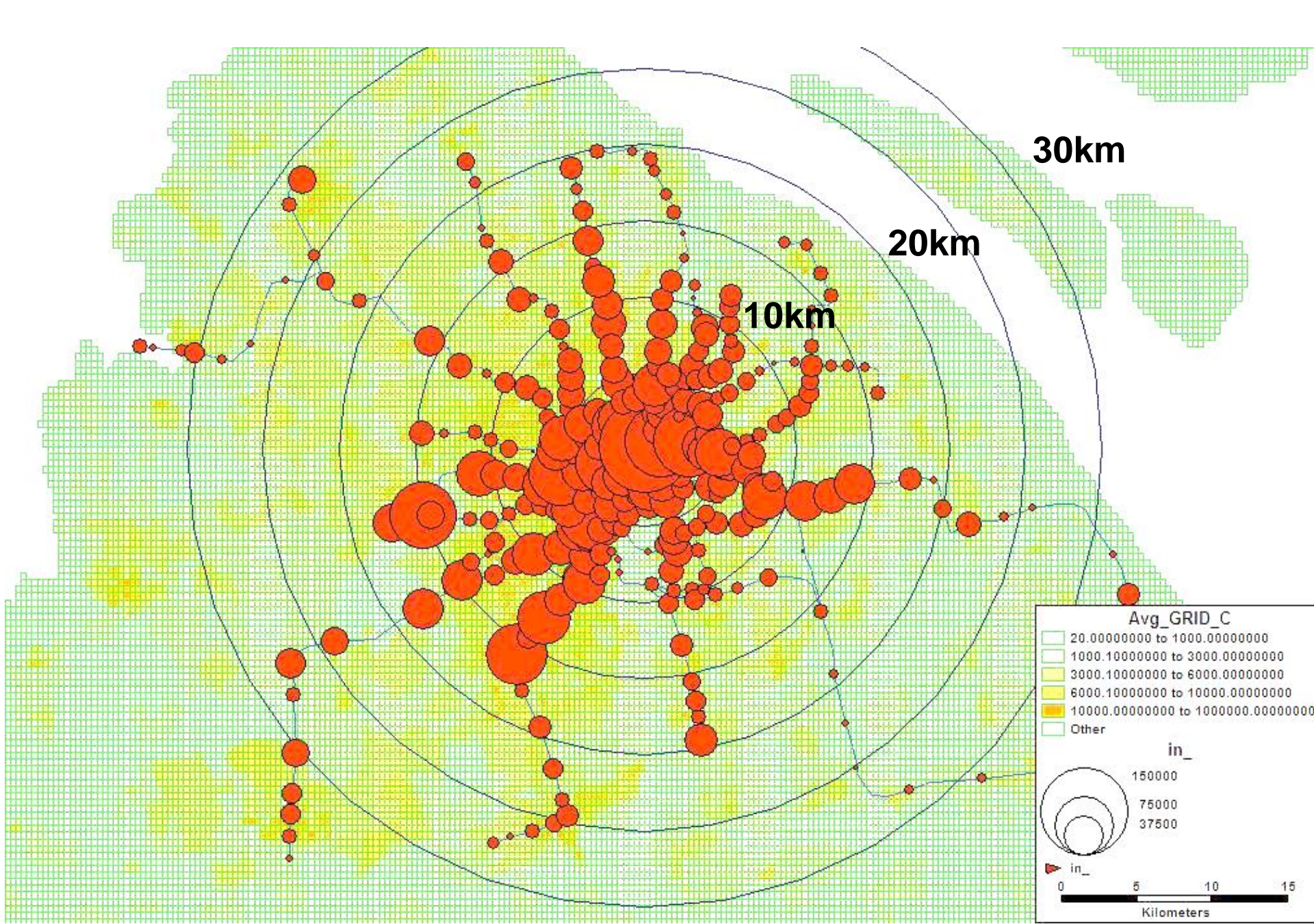
**Ticketing, Relative High in Shanghai, Attractive of Middle Incomer
Too Low in Beijing, Over Crowded**

Metro Increased Each Year

Shanghai EXPO

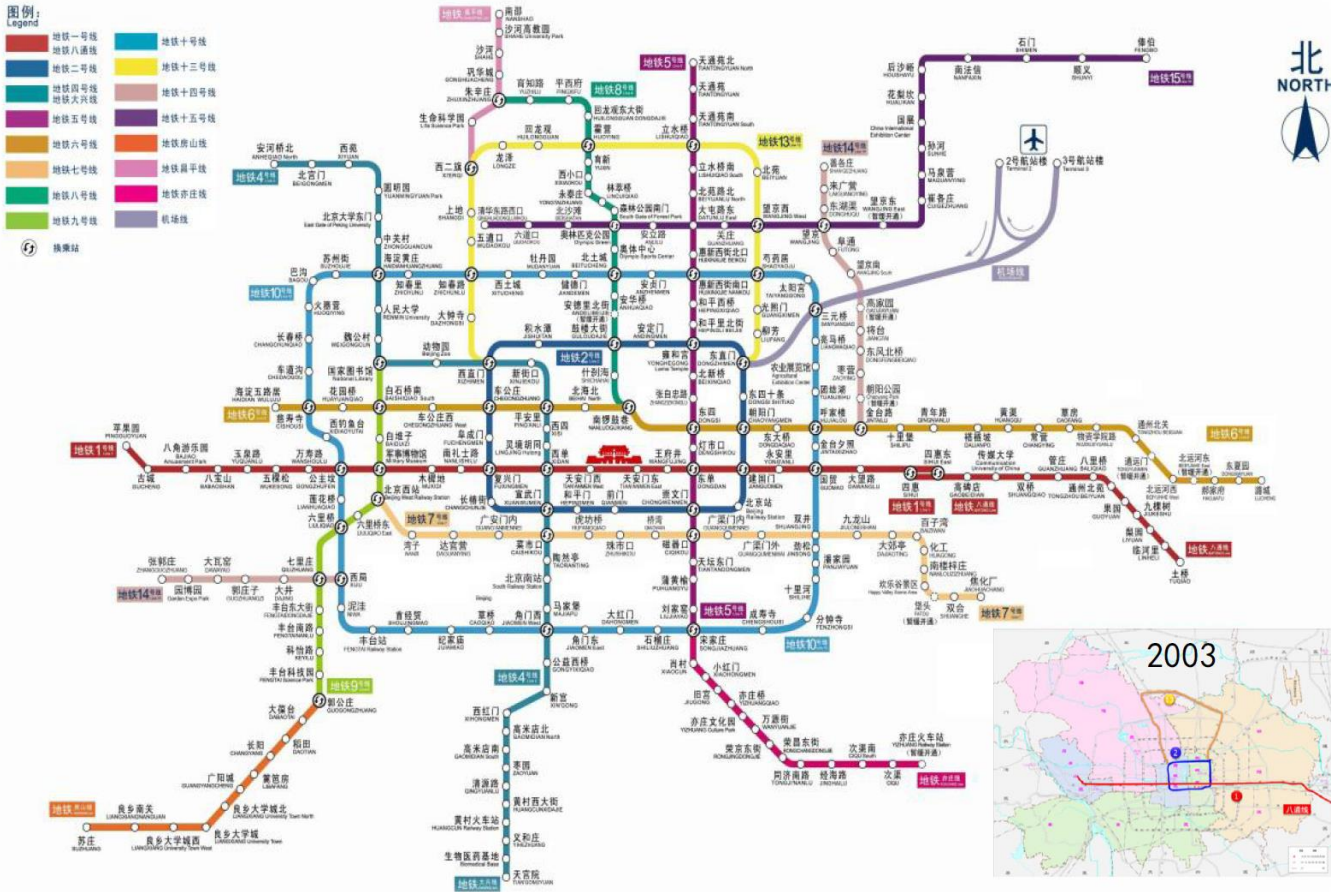
New Length (km, Shanghai Beijing)





Beijing Metro

北京市2015年轨道交通线路图

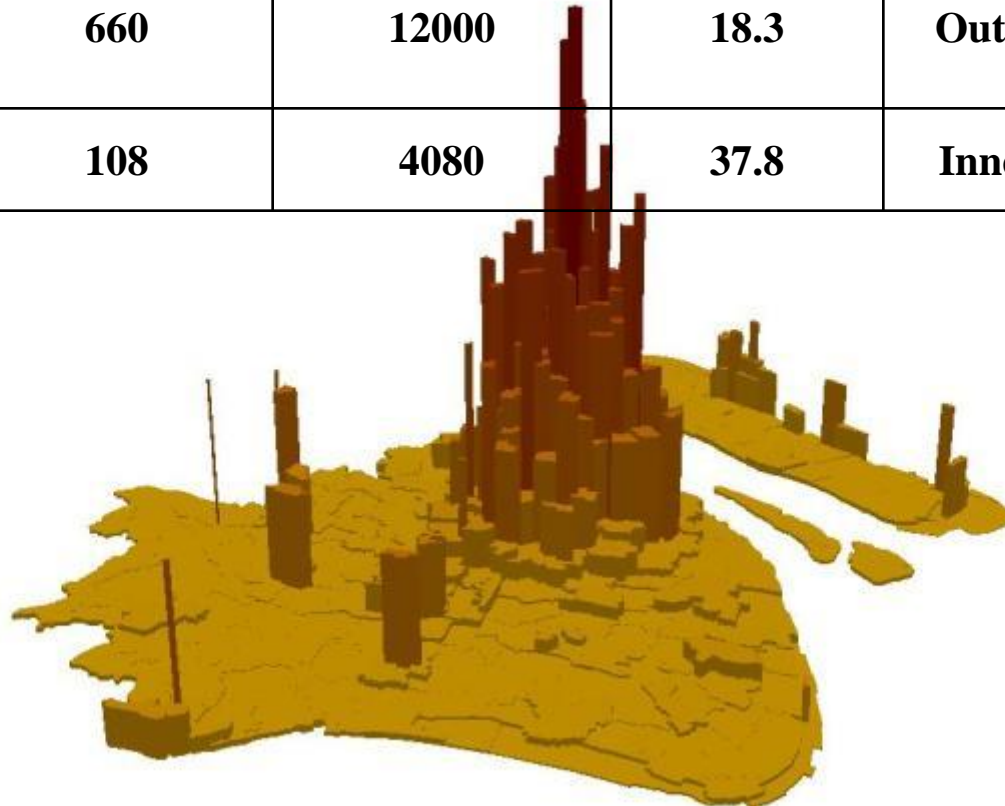


Beijing Metro
 18 Lines, 554
 km

Bus 876
 Lines, 23287
 Bus

4. Land Use Control Density Control

| | Area(Km ²) | Population(10 ³) | Density(10 ³ Person /Km ²) | Area |
|--------------|------------------------|------------------------------|---|------------|
| City Wide | 6340 | 24500 | 3.9 | City Wide |
| Central City | 660 | 12000 | 18.3 | Outer Ring |
| City Core | 108 | 4080 | 37.8 | Inner Ring |



Emphasize the idea of **neighborhood unit**, strictly regulate to provide residential area with all kinds of public service facilities



| | Residential District | |
|---------------------------|----------------------|-----------|
| | Building Area | Land Area |
| Total | 1668-3293 | 2172-5559 |
| | 2228-4213 | 2762-6329 |
| Education | 600-1200 | 1000-2400 |
| Hospital | 78-198 | 138-378 |
| | 178-398 | 298-548 |
| Culture and Entertainment | 125-245 | 225-645 |
| Commercial | 708-910 | 600-940 |
| Community Service | 59-464 | 76-668 |
| Financial | 20-30 | 25-50 |
| | 60-80 | |
| Infrastructure | 40-150 | 70-360 |
| | 460-820 | 500-960 |
| Administration | 46-96 | 37-72 |

High Density/Mix in Station Area



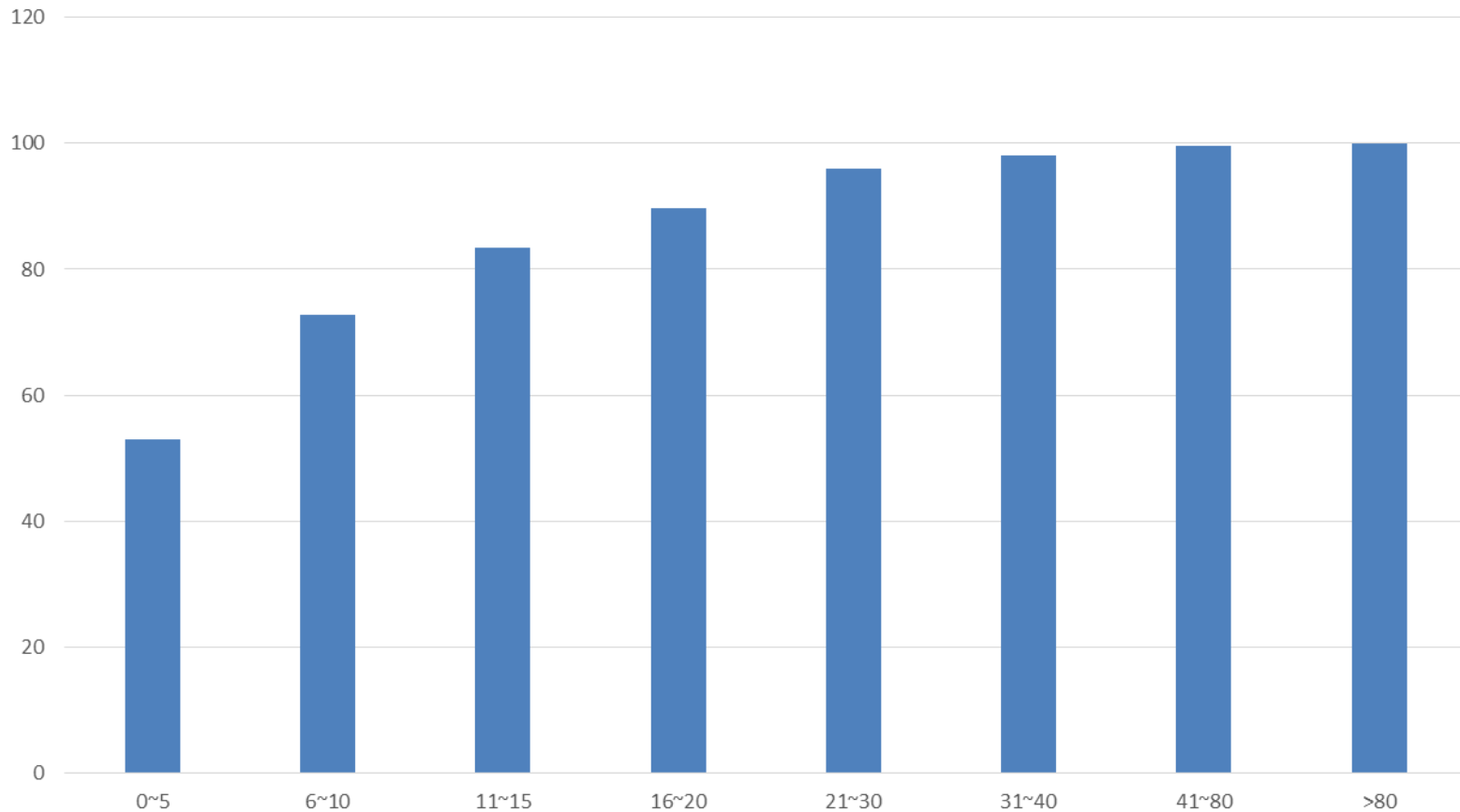
**Office Building mixed with shopping center,
Higher rent, less car dependent**



Beijing Low Density Around Station, Destination is far away from Station

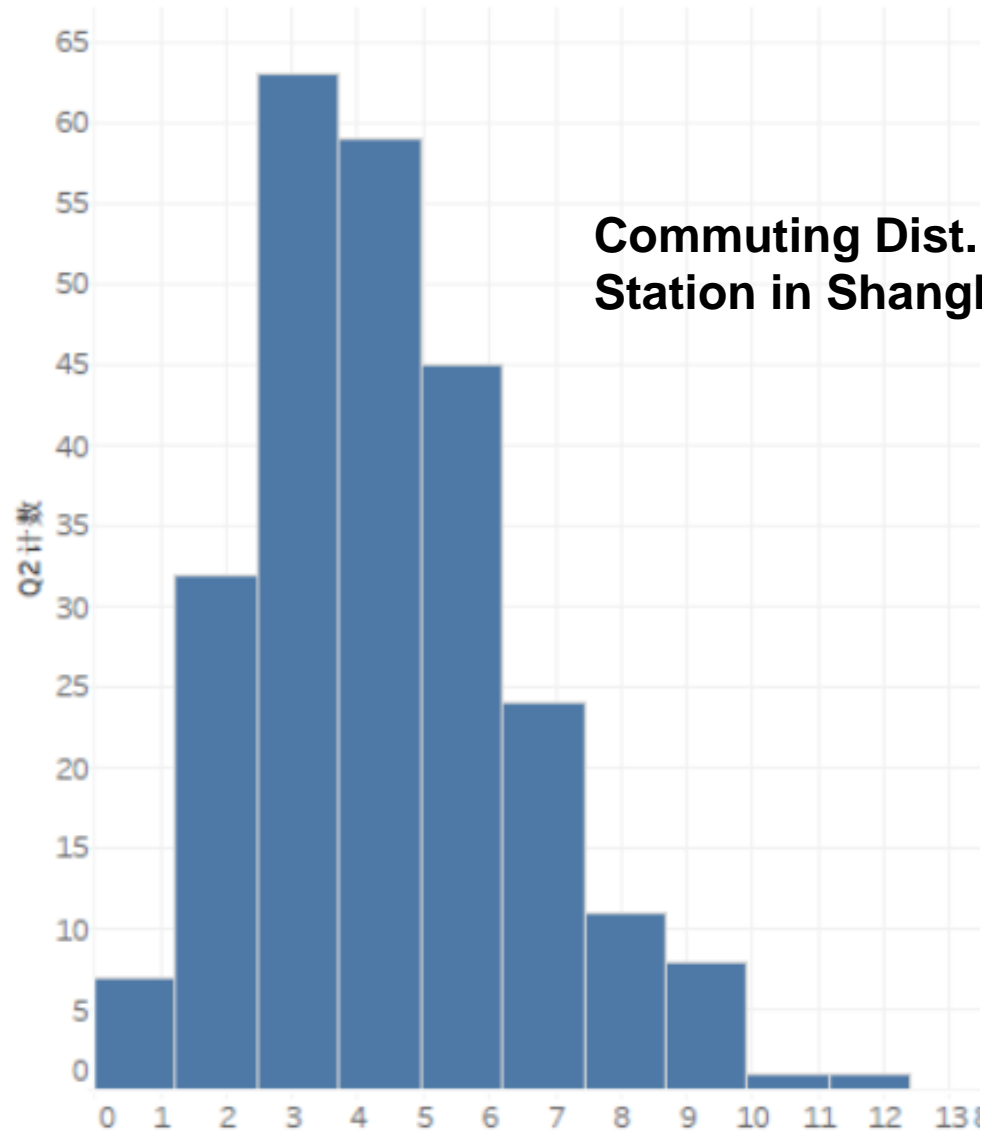
5. Multi-mode urban transport system---Bike, E-bike

Accum.%, Commuting Dist. Beijing



Commuting Distance in Beijing 2015

出行距离分布



Commuting Dist. 500 m around Metro Station in Shanghai

Bicycle Infrastructure in Shanghai



Beijing Riding Bike is Difficulty or Dangers

Public Bike around Station Area in Periphery Area



Shanghai Bike Parking replace Car Parking

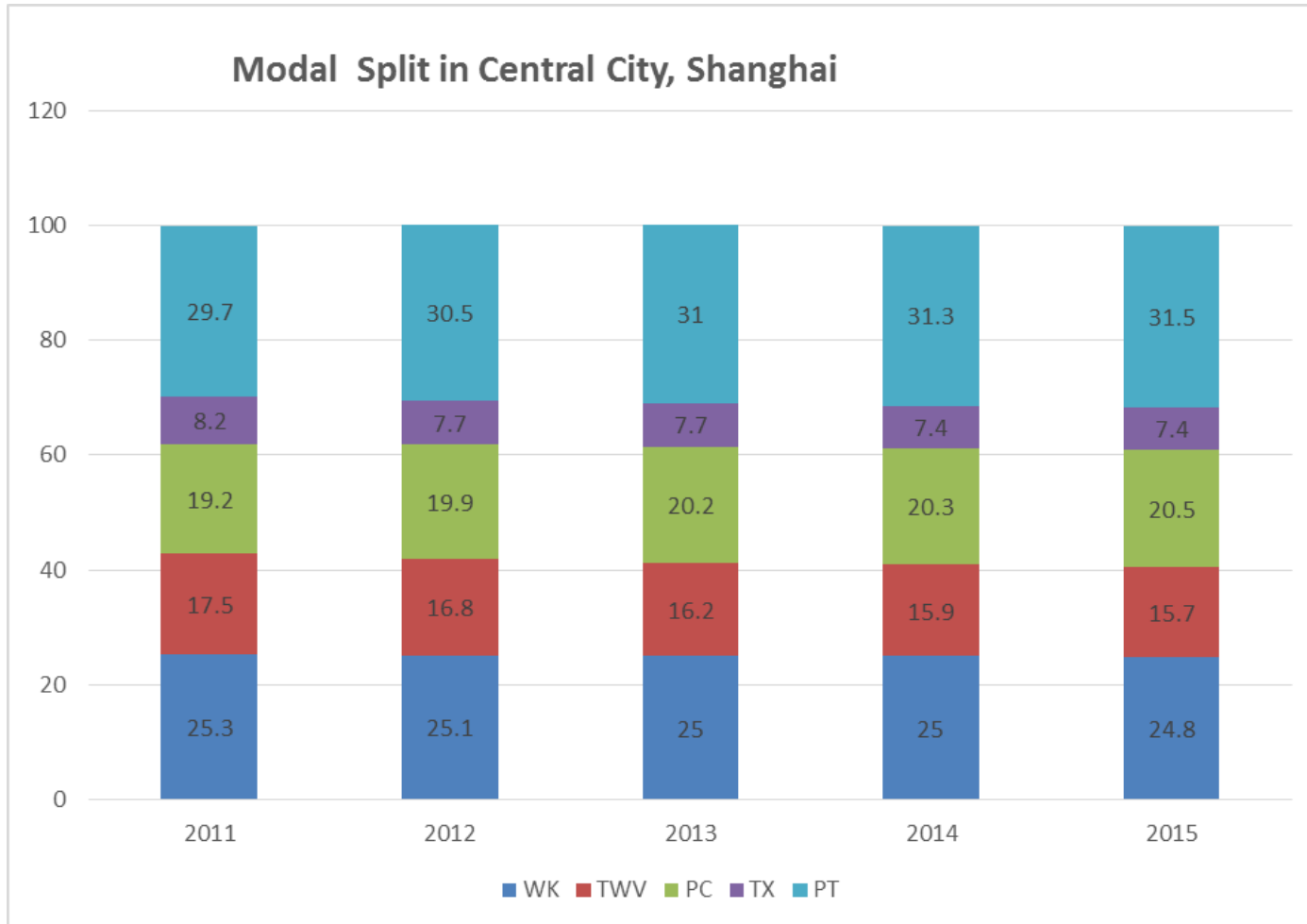




有限公司1店



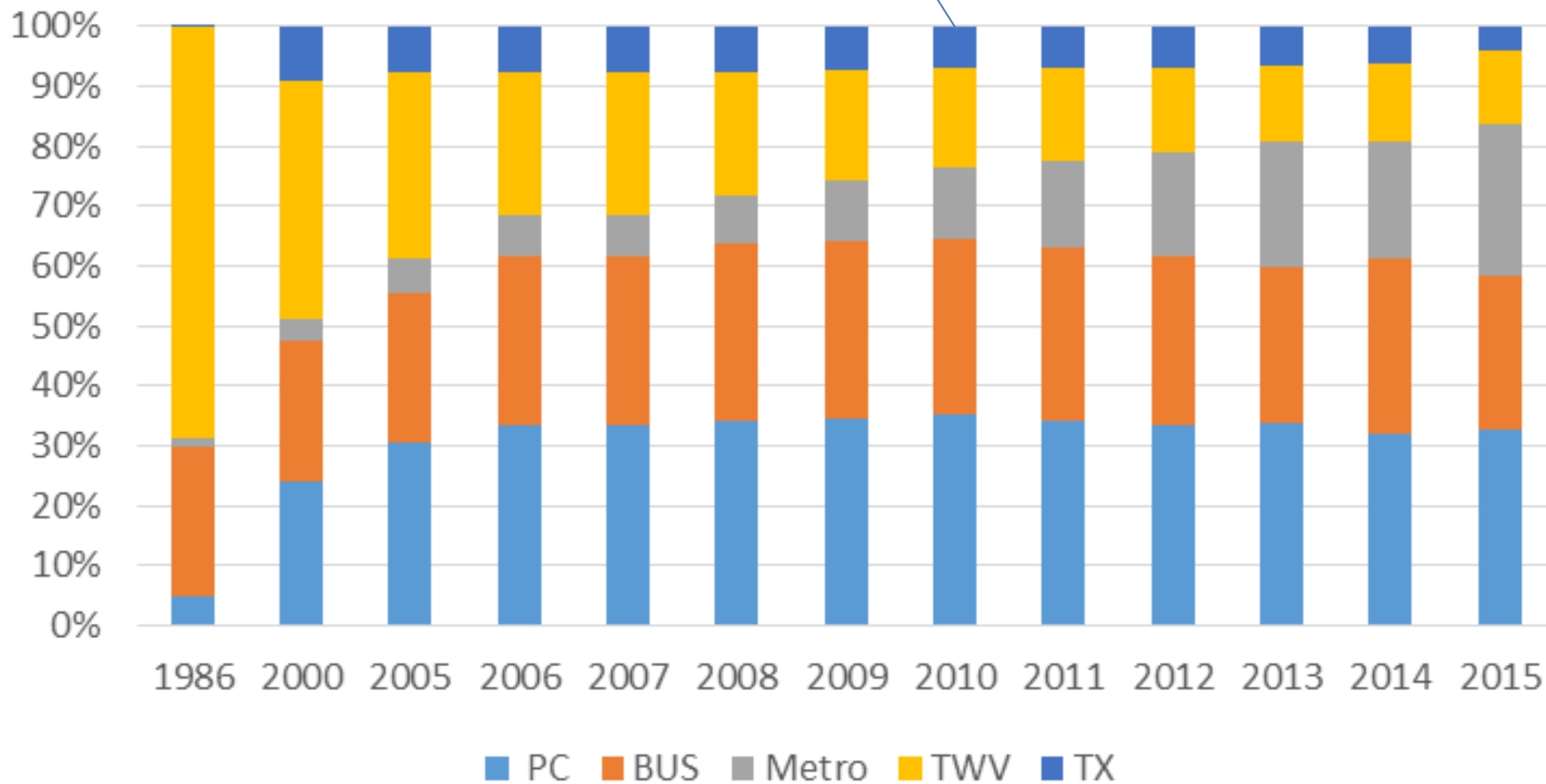
6. Modal Split



Declare to Improve Bike

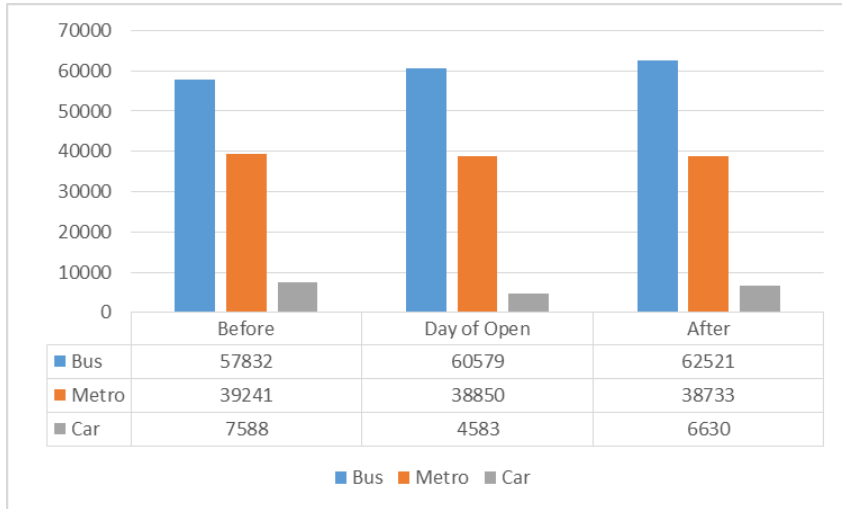


Commuting Modal Split in Beijing



Beijing Shift More Road Space for Public Transport

Passenger Volume Change B/A the Bus Lane on Jingtong Expressway(Evening Peak)



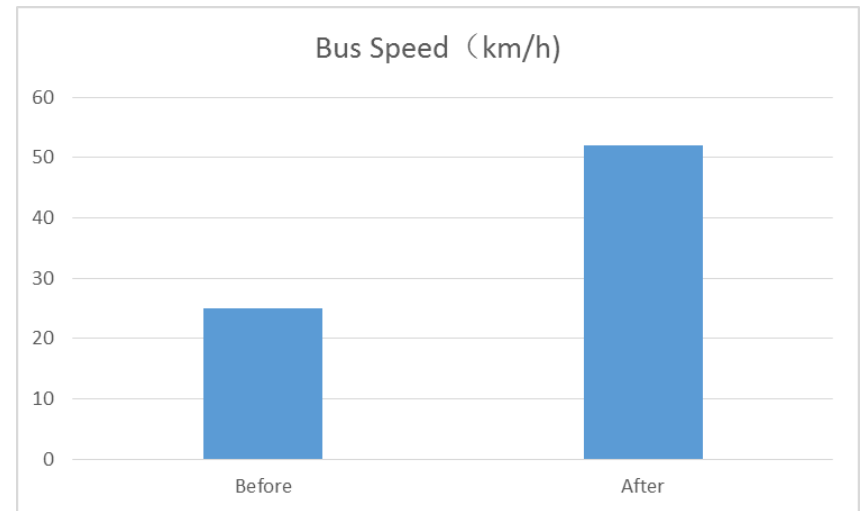
Before



After

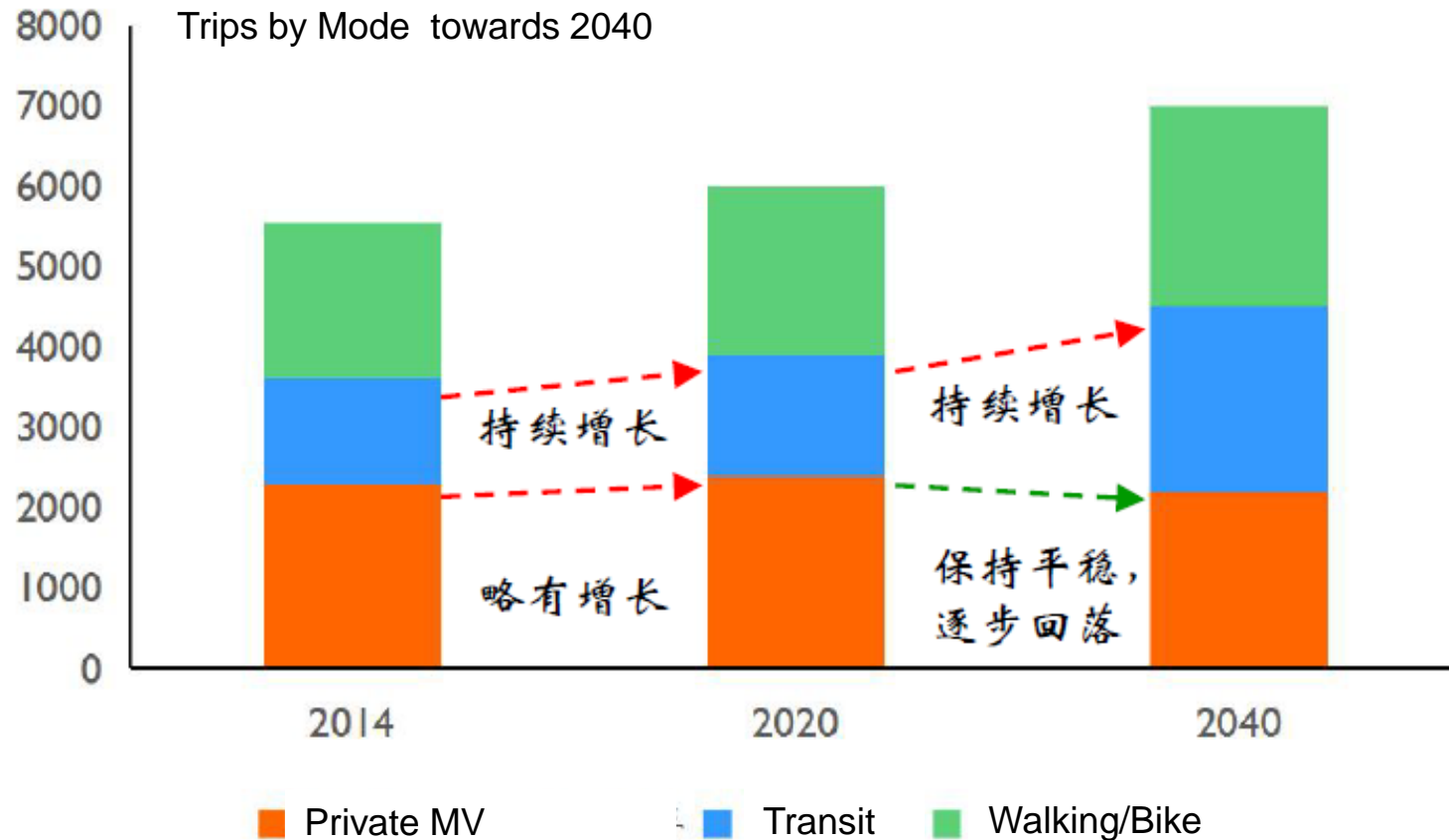


Bus Speed Change



Shanghai in the Future

Shanghai More Public Transport and WTV/Walking, Less Car





Pudong Less Constrain, But more Car Dependence

8. Comments.

**Do it Early and Quickly, Fast Development
also High Opportunity to Change**

Integration of Land Use and Transport/Integrated Approach

Accept Challenge, Constrains—Consensus, Cross Border

Importance of 3S Vehicle for Mobility, Quality of Life, Envior.

Small Size

Slow Speed

Short Range

Thanks!