



Velo-city Global 2016

—— E-bikes – a new industrial revolution for cycling

Development Strategy of Electric Bicycle in China

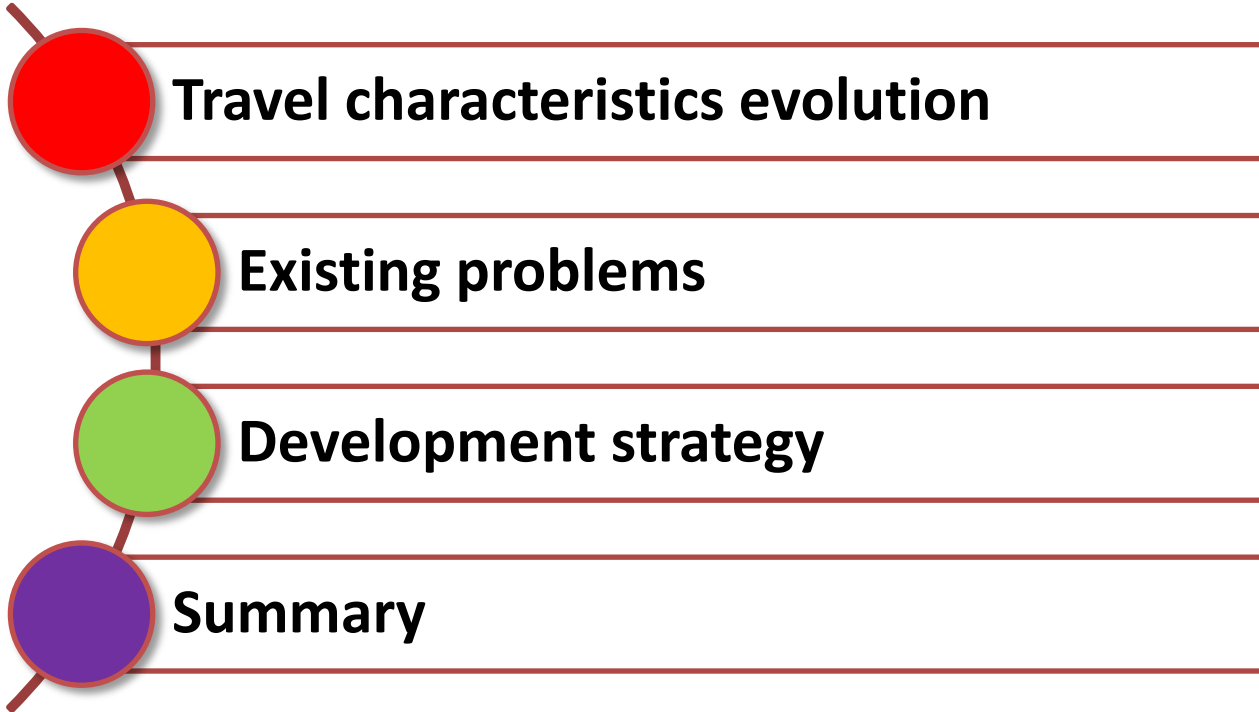
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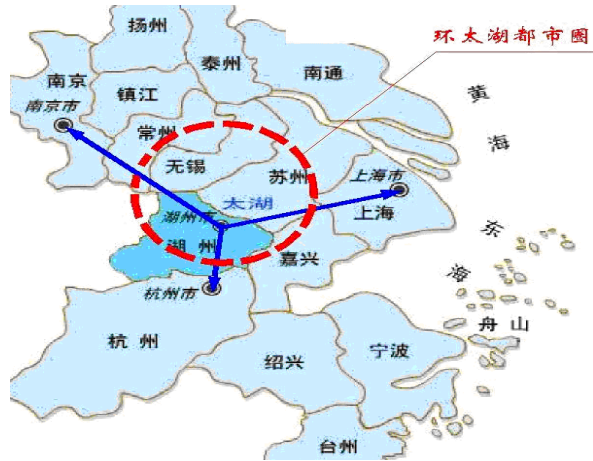


- Travel characteristics evolution**
- Existing problems**
- Development strategy**
- Summary**

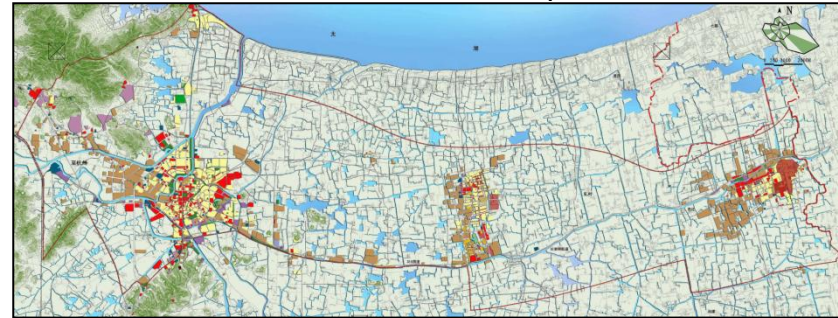
1. Travel characteristics



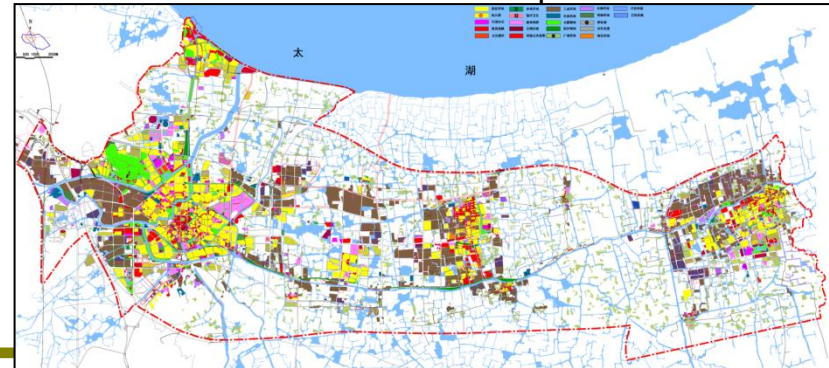
❖ Survey in Huzhou, China



Urban construction map in 2004



Urban construction map in 2011



- ❑ In the north of Zhejiang, to the southwest of Shanghai.
- ❑ Travel diary survey in 2004 and 2011.



1. Travel characteristics – E-bikes

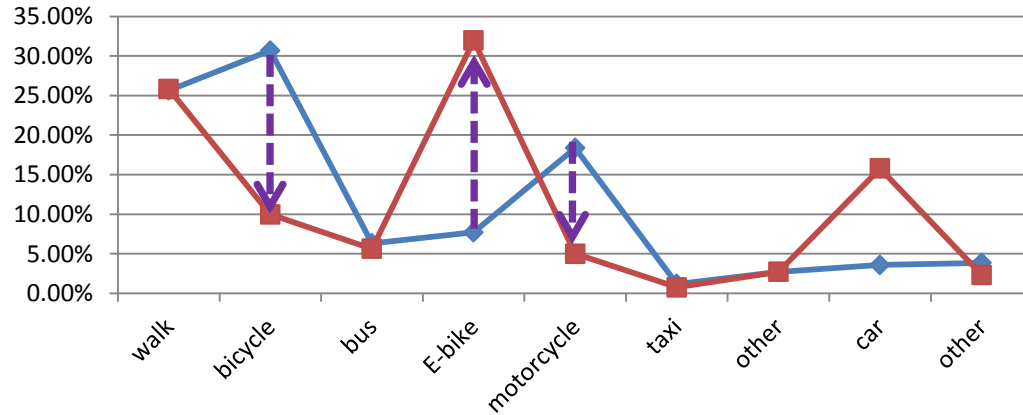


❖ Mode share

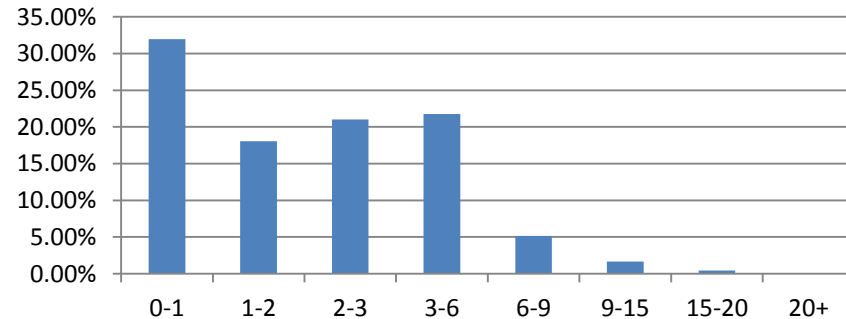
- Increasing dramatically from 7.7% to 32.0%.
- Attracting bicyclists and motorcyclists.

❖ Duration and distance

- **Duration** : increasing from 18min to 19.2min.
- **Long distance travel increases**. The percentage of 3km+ is 29%.



travel distance of E-bikes in 2011 (km)



—◆— Year 2004 —■— Year 2011

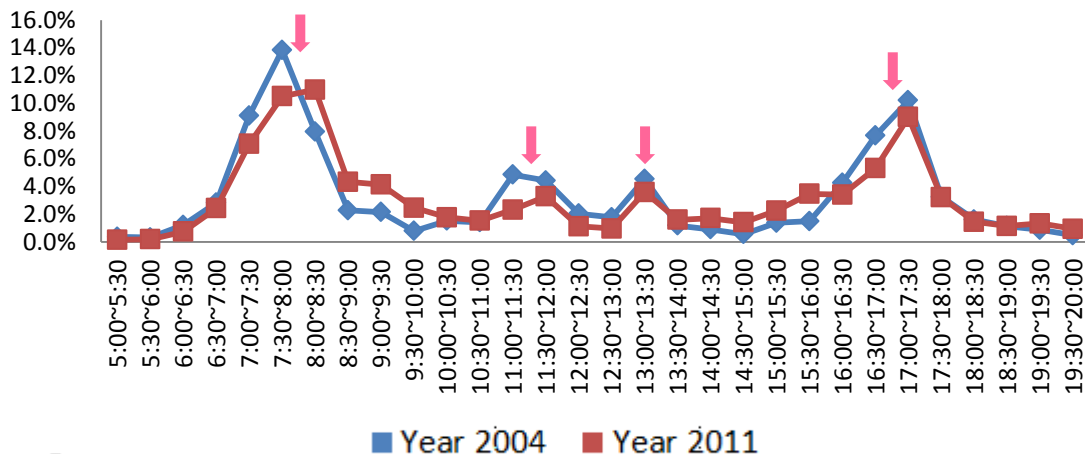


1. Travel characteristics – E-bikes



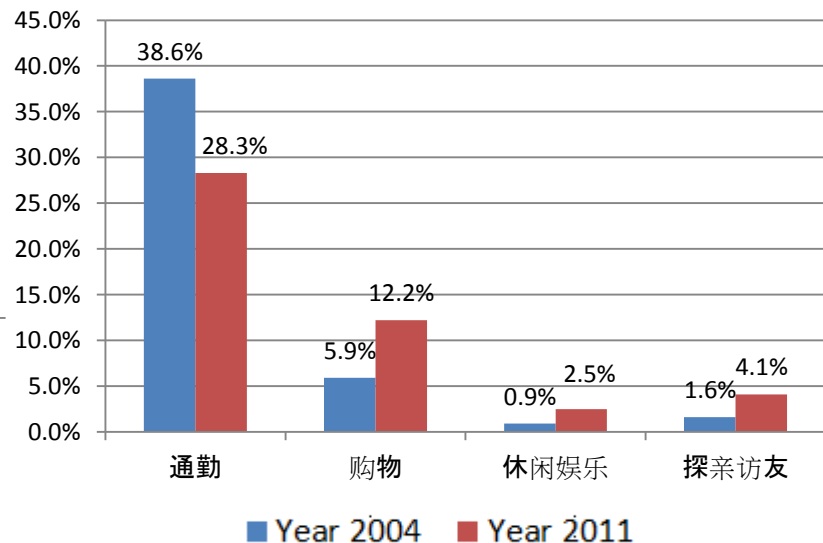
❖ Traffic volume

- Peak volume reduces , however, volume in other hours increases.
- Evolving to **all-day travel**.



❖ Trip purpose

- **Non-commuting travel increases.**
- Satisfying various travel needs.

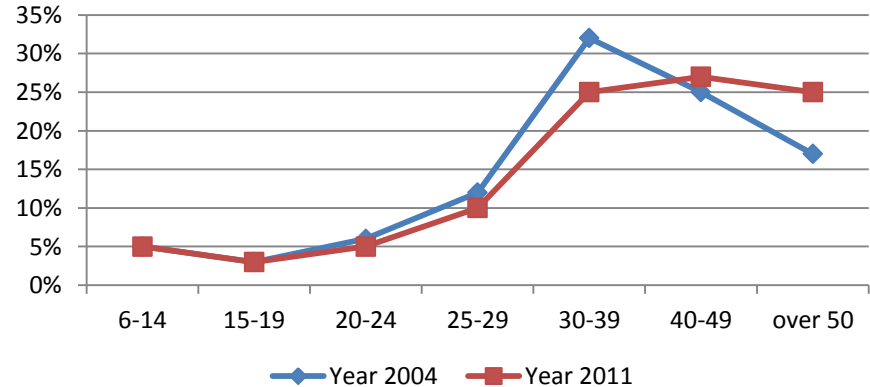
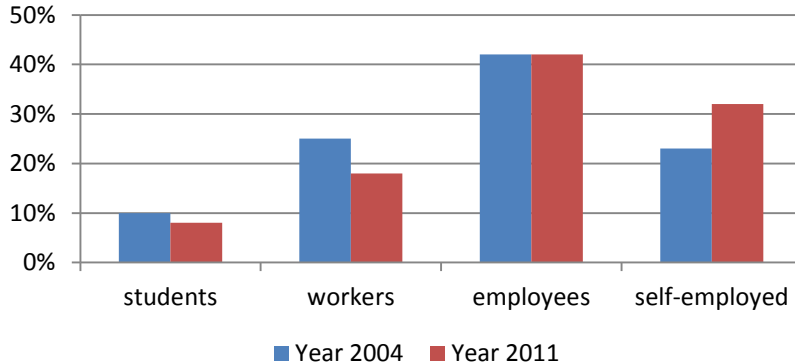
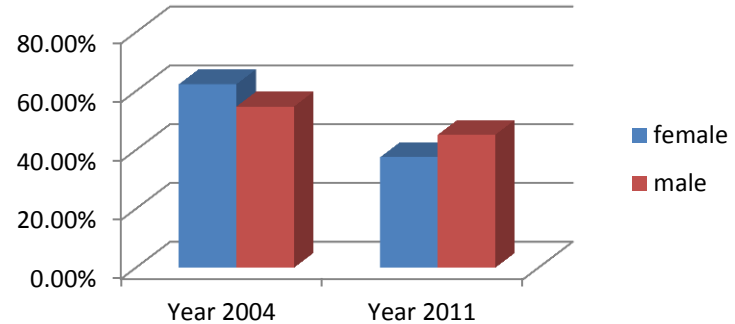


1. Travel characteristics – Users



❖ Socio-economics

- **Gender** : female dominates , but the percentage is decreasing.
- **Occupation** : Commuters to all levels of the society.
- **Age** : young people to all ages.



1. Travel characteristics – Users



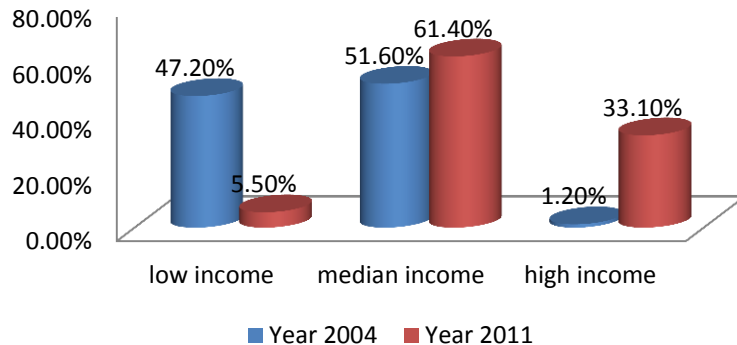
❖ Socio-economics

■ **Income** : median and high income group grows large.

❖ Freight transport

■ **Express service** : E-bikes have become the dominant means of transport of express delivery.

■ 50-100 items per person per E-bike.



Summary

- ◆ **Diversified travel** : all-day、 long distance、 non-commuting travel
- ◆ **Users completely covered** : all social classes, different ages, different income groups, different occupations etc.



2. Existing problems



❖ Traffic order and efficiency

- Good mobility, high driving randomness, quick start at intersections.
- Affect the traffic order, lower the efficiency



❖ Traffic safety

- Fast speed, users' weak safety awareness.
- 1334 E-bikes traffic accidents, causing 231 deaths, making up 33% of the whole fatalities. (Hangzhou 2014)



2.Existing problems

❖ Standard is not applicable (lag behind)

- Current standard “General specification of electric bike” : maximum vehicle weight is 40kg, maximum speed is 20km/h.
- 99% of E-bikes do not meet the standards
- Qualified products are not competitive.

❖ Traffic management policy

- E-bikes have advantage over public transit on mobility, cost and flexibility. **They compete with public transit on long distance travel.**
- In most cities, electric bicycles are administrated as non-motorized means of transportation. **They compete with slow traffic on short distance travel.**
- Enormous quantity makes it difficult to be licensed.



3. Development strategy



❖ National level

- **New standard:** Regulate the maximum speed, total weight and safety performance.
- **Non-qualified E-bikes should be strictly regulated.**

❖ Big cities

- E-bikes compete with slow traffic on short distance travel and public transit on long distance travel.
- To be **restricted or strictly regulated** based on consideration of intensive development.
- Make E-bikes licensed.



3. Development strategy

❖ Small cities

- Helpful in increasing travel mobility and flexibility.
- **Allowed to use** on the condition that the growth rate is under control.

❖ Supporting measures

- Create good environment for cycling and improve service level of public transit.
- Improve the safety awareness of drivers.
- Regulate the recycling and disposal of used batteries.





Thank you !

Summary: We propose differentiated E-bikes development strategies in big cities and small cities. The primary objective is to make the city sustainable and to improve residents' mobility.

Acknowledgements: Part data in the report refers to Wechat pubic account "China's Urban Transportation Development Forum"