

# **E-bikes in China: Status, Challenges & Future**

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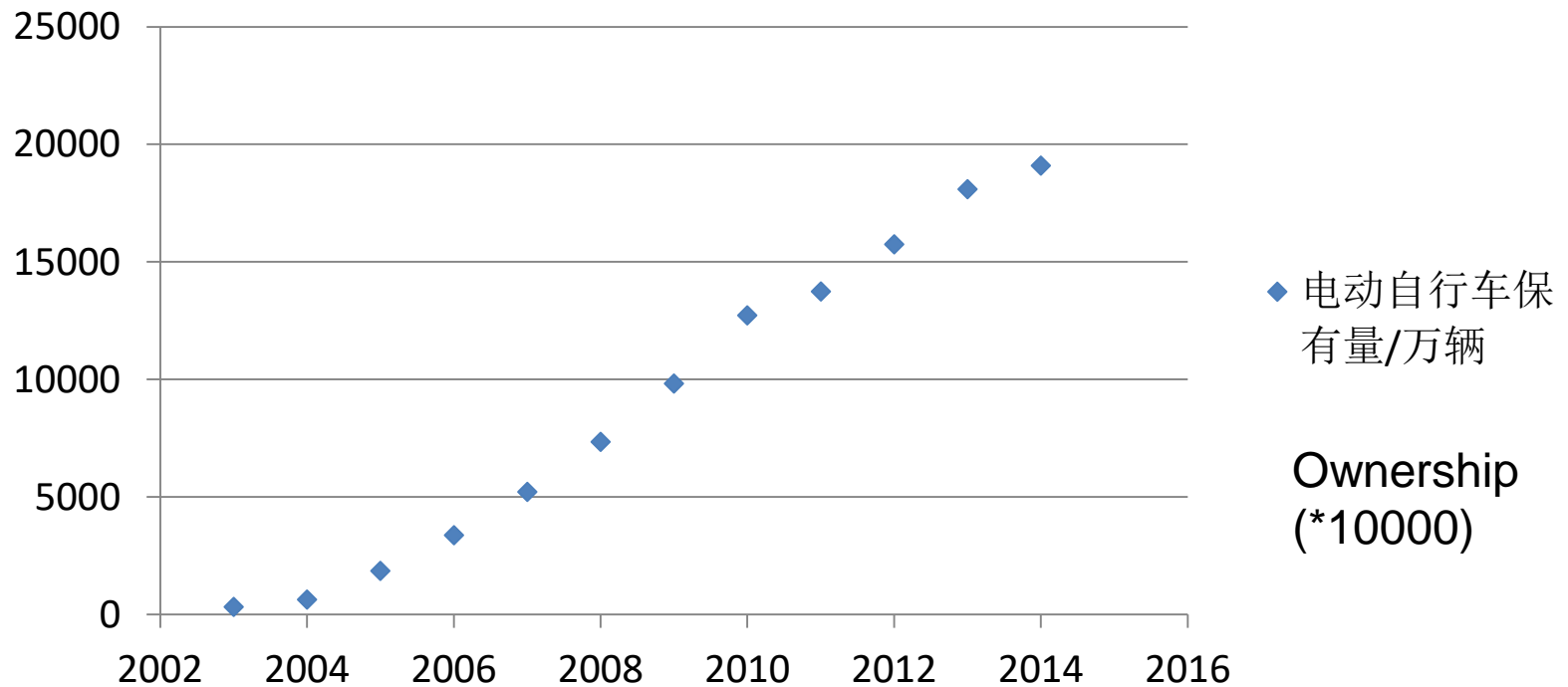
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# Current Status of E-Bikes in China

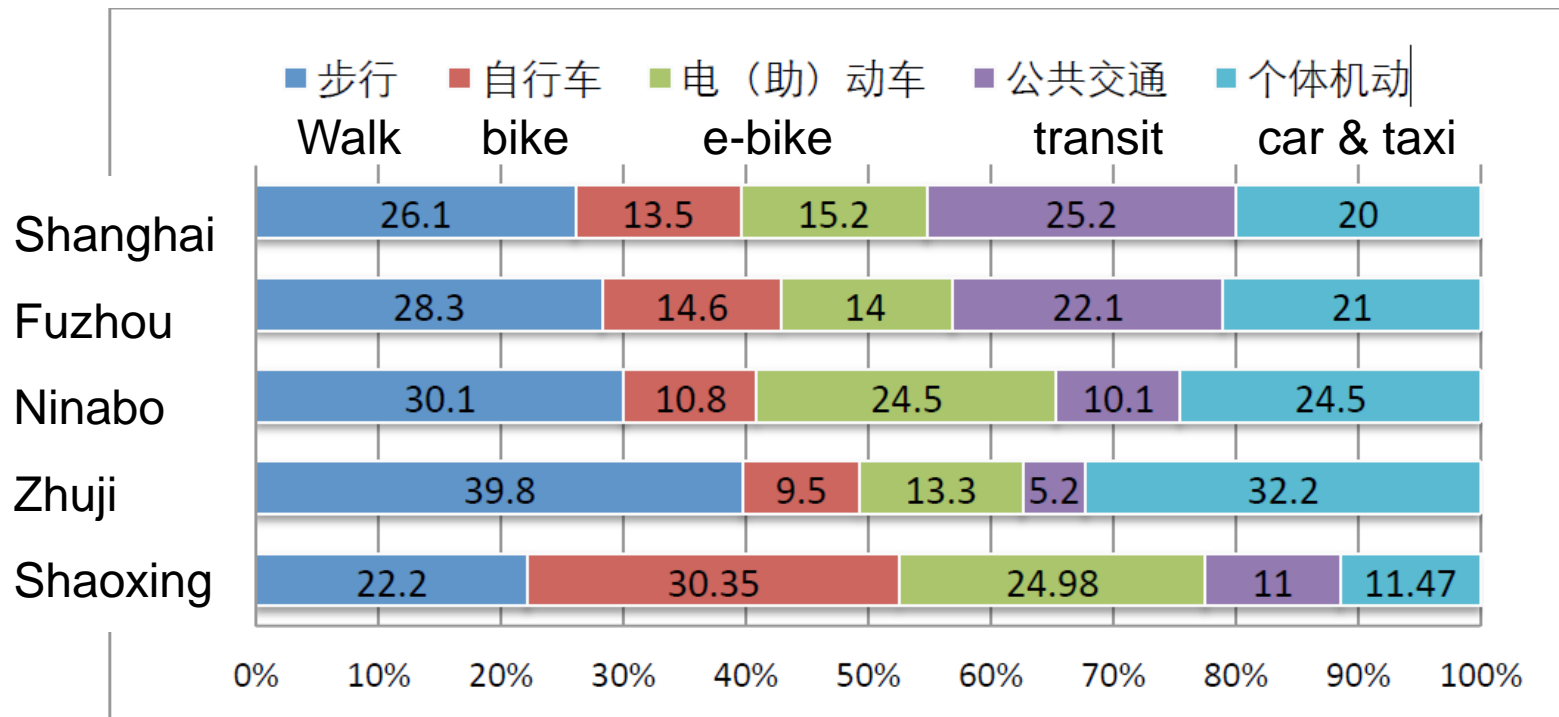
- **Highly Popular, strong growth**
- **Main mode for short and medium distance travel**
- **Significantly Different Attitude & Policy towards E-bike**

# 1. Development in China

Popular in most Chinese Cities. Exceeds 200M nationwide



# E-bike Share by Cities






Data source: Jiangzhjiang University E-bike study, 2013

# What is the definition of E-bikes in China?

符合国家政策规定  
National Standard Compliance



parameters	Bicycles	<b>Regular E-bikes</b>	Motorized E-Bikes
Appearances			
动力功率 Power ( v/w )	—	<b>36/250</b>	48/380
车身净重 Weight ( kg )	22	<b>32</b>	55
最大速度 Max. Speed ( km/h )	10-15	<b>20</b>	45
续航里程 ( km ) Distance for one charge	5-15	<b>40</b>	60-80
最大载重 ( kg ) Max. Load	—	<b>100</b>	250

# Whats on the Roads



# Also on the Road – E-bike for Delivery





## Current status

Lack of National Policy towards E-bikes, difficult for related ROW and management .

Manufactures and city management dont take standards seriously

	Paddles	Max Design Speed (km/h)	Weight (kg)	Power (w)	Voltage (v)
《通用技术条件》 2015 Draft of (not approved) General Standard 2015	must	<b>25</b>	55	400	48
《通用技术条件》 1999 General Standard 1999	must	<b>20</b>	40	240	48

## Significant Differences in Local Policy

### Supporting Cities

License Registration, ROW priority  
not strictly complied

### Discouraged Cities

fully or partially forbidden  
Can't implement well due to needs

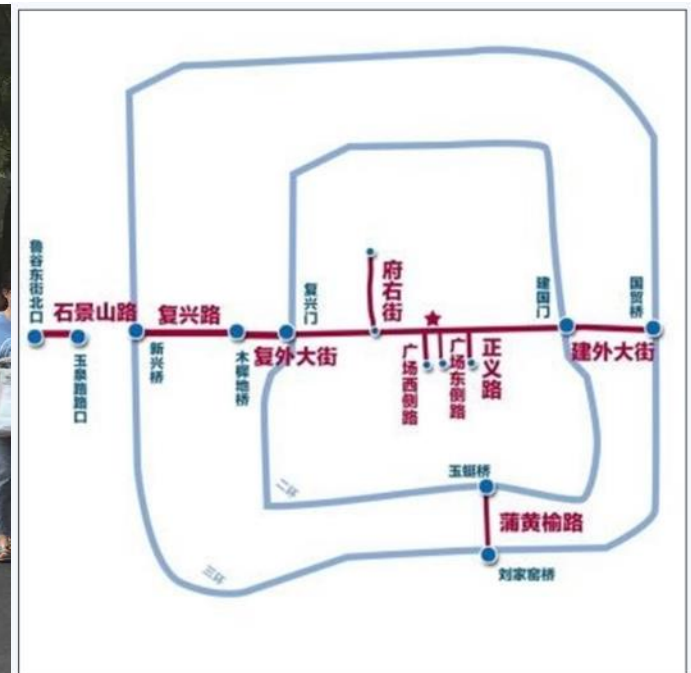
**Many has unclear policies**



A few representative cities, not for all

## Significant Difference in Local Policies

**Beijing: from April 11, 2016, E-bikes are forbidden in 10 streets**



**北京市对电动自行车的禁行规定，对全国各城市具有较强的影响力。  
This has great national impacts**

# Advantages of E-bikes in China



## Clear User Advantage of E-bike :

- 1) As cities becomes bigger, E-bikes covers medium distances**
- 2) Easy last kilometer for transit**
- 3) Speedy and door to door**
- 4) More energy efficient and no pollution on roads**
- 5) Avoid congestion**
- 6) Easy to ride**
- 7) Low prices that fits for lower income populations**

**People need e-bikes and hope to keep it, especially in small-mid size cities with lower average income, inconvenient transit, mode share of e-bikes are high**

**E-bike mode share are high in south China;  
E-bike replaced 50% - 90% of man-powered bikes**



# Challenges

- 3.1 Unclear Mode and Function Definition
- 3.2 Safety Concerns

## 3.1 Unclear Mode and Function Definitions

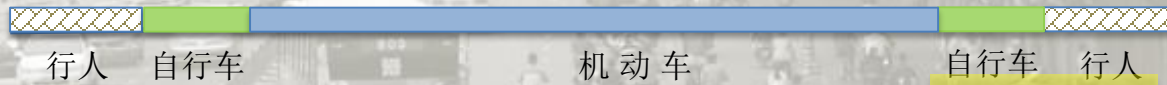
- 1) Are E-bikes considered non-motorized transport given its size and actual speed? (max 60KM/Hour)
- 2) Will E-bikes take place of public transit in smaller cities?
- 3) Will E-bike riders eventually become car drivers?



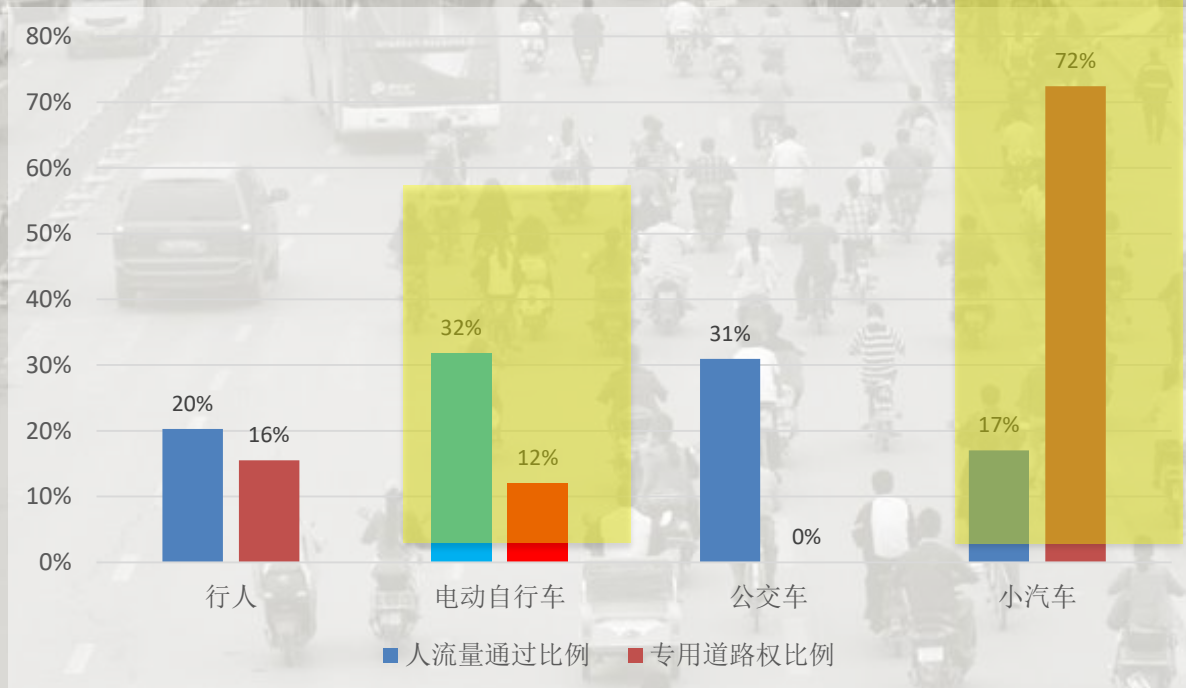
In Kunming, E-bikes are twice the volumes of cars, but only uses 1/6 of right of way

In Kunming it provides 21% mode shares in commuting, with transit as 23.5%  
E-bikes is 91% of total bikes

横断面路权分布



流量VS路权



# 电动自行车权益得不到保障：路权、停车、失窃 No Guarantees for E-bike rights

## Right of way

- Narrow bike lanes results in e-bikes in car lanes
- E-bikes and bikes speed difference result in accidents
- Roadside parking cause e-bike accidents
- Intersection capacity cannot handle large amount of E-bikes
- Conflicts with buses at station areas
- Helmet wearing is not enforces
- Quite and speedy e-bikes endangers pedestrians



# E-bike Related Accidents



Wrong-way Driving Accidents



# E –bike functions

Function in cities

- city size and transit service level
- if transit level of services are low, E-bike shares tend to be high

E-bikes to cars

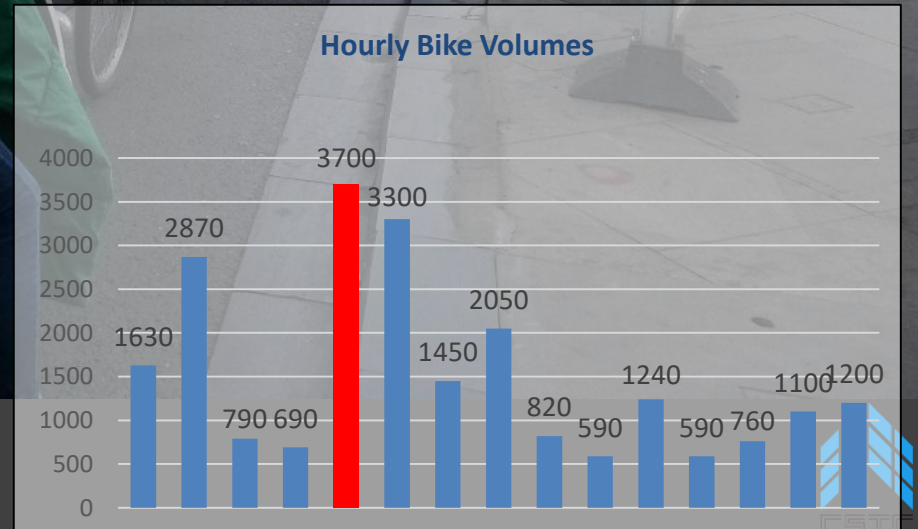
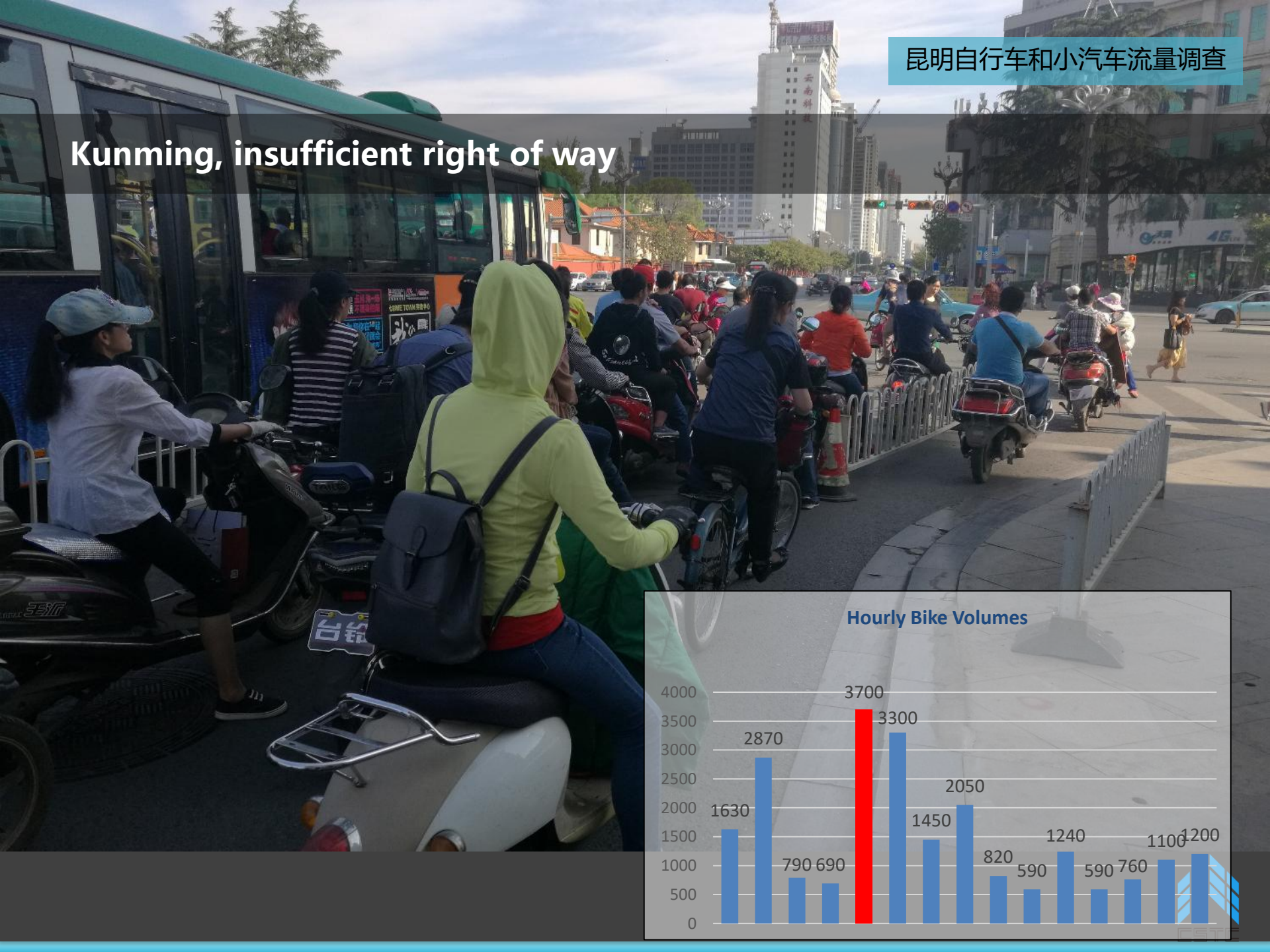
- congestion levels and city management
- More congestion, more e-bikes

City Types	Citi size	Transit share	E-bike share	Ownership e-bike/cars	E-bike function	Reprehensi ve Cities
<b>E-bike lead</b>	Medium -small	< 15%	> 25%	> 1	Basic tool	Ningbo, Haikou
<b>E-bike &amp; Transit lead</b>	Huge-medium	15-25%	15%-25%	/	As important as public transit	Shanghai, Kunming
<b>E-bike supplement</b>	Huge	> 25%	< 15%	< 1	As supplement of public transit	Beijing, Shenyang

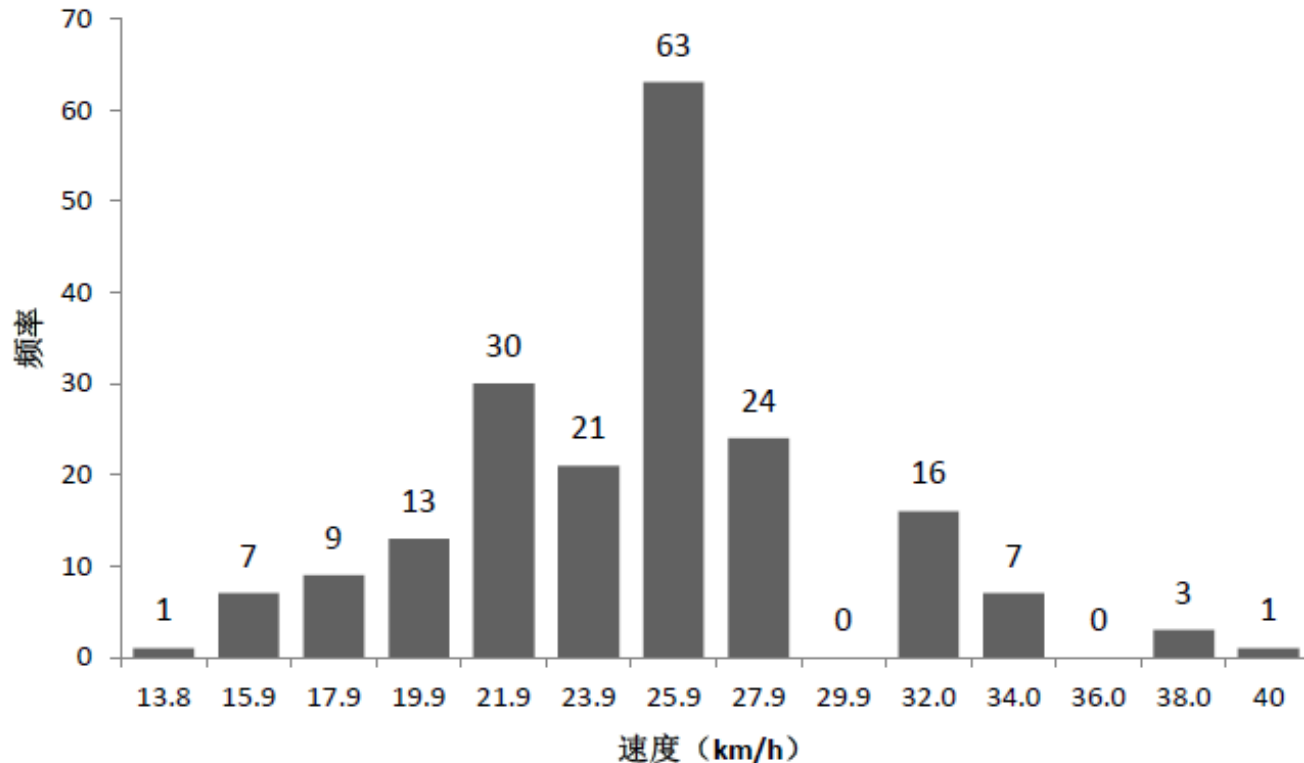
## 3.2 Safety Issues – Difficult to overcome

- E-bike safety concerns (speedy, wrong direction riding)  
↓
- Sources: lack of registration (legal issues)  
↓
- Lack of registration: no unified management among departments (institutional)

# Kunming, insufficient right of way



## Average speed 24km/h (standard 20)



Speed surveys in Hangzhou

- 95% are over speed than 20 km/h, which is national standard in 99
- 20km/h is hard to be accepted. Professors and association call for increase to 25 km/h for people need.

# National Recorded E-bike Related Accidents





## **Lack of registration (Legal issue)**

- (1) Different city apply quite different policies
- (2) Hard to register since e-bikes are illegal based on national code, and local manufactory protection for government economic income.

## **Different attitudes among departments (institutional)**

- (1) E-bike management authority belong to province level government.
- (2) National ministries cant regulate strongly for now.

## E-bike Parking Issue

- **More parking space for e-bikes**
- **Low ratio land reserved for bike parking around stations, residential & office buildings.**
- **Normally e-bike parking on side walks**



## Stolen Bikes

- 1 e-bike stolen in each 0.8 km<sup>2</sup> each day, BJ
- stolen belongs to parking without guards at residential buildings
- E-bike insurance is not well implemented. Although peoples call for it, only 2% riders purchased it in Wuhan for the first 2 months.



# E-bikes development recommendations: what can we do?

## Policy, Legal, Technique & Pilots

# Recommendations

E-bike will exist for long in China, can not illuminate, ignore, suggestions as below:

## **4.1 Time for ministries work together to make national policy.**

- Collect data on safety and speed to make new adaptable & acceptable national code;
- ROW provision technique & legalization;
- Push the registration policy & authority duties ;
- Push professional standard punishment

# 电动自行车发展建议 Recommendations

## 4.2 加强规范管理，从生产、销售、注册、使用等各个环节着手；

**Strengthen the management for production, sale, registration, using;**

- 规范电动车生产，杜绝违规车的产生和销售；

Regulate production & sale for over standard e-bikes;

- 落实电动自行车保险和理赔业务链；

Develop the insurance link for e-bike;

- 加强电动自行车行驶违章处罚力度，促进行车安全性提升。

- Strengthen the punishment for illegal ridding based on registration and promote traffic safety improvement

## 电动自行车发展建议 Recommendations

### 4.3 Promote national technical code & standard for road design:

- provide ROW
- Intersections improvement for bikes safety and capacity;
- Improve bus station design to avoid conflicts & accident;
- Improve planning code to keep enough space for bike parking

# Bike, e-bike separated design

CASES

## PILOT PROJECT

— Henan Road  
From arterial to boulevard







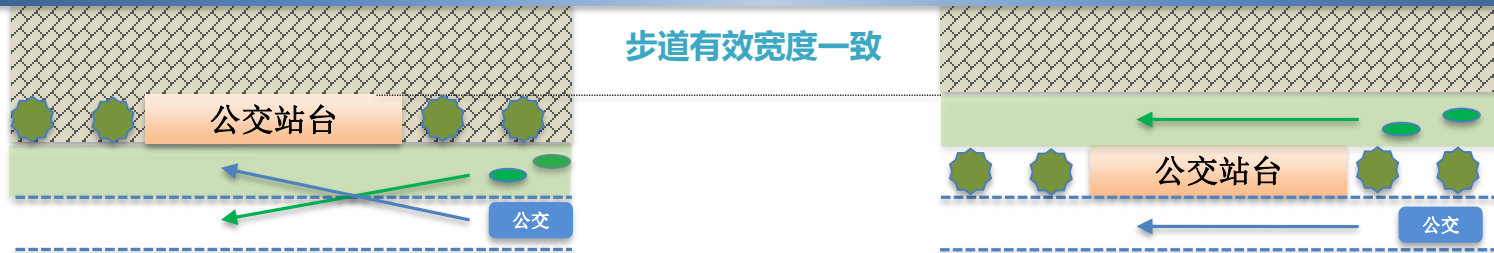
Shades for Riders

## Intersection priority



自行车候灯区示意图

## Bus stop improvement to avoid conflict between buses & bikes



# Priority Signal and Spaces



Intersection priority

Intersection Priority

赤坎区康顺路和百园路交叉口

# Study the Actions for E- rental Bikes Under Fast Development of Dock-less Rental Bikes



Thanks for resources by:



## 我国电动自行车交通运行特性及环境 影响分析报告

中国城市公共交通协会  
杭州市城乡建设委员会  
浙江大学  
2013.4.25

## 《城市步行和自行车交通系统规划标准》 前期研究

专题五：电动自行车专题研究

清华大学交通研究所  
2016年5月



# Thanks!

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