安亭·上海国际汽车城
Anting • Shanghai International Automobile City

EV ZONE
SHANGHAI • CHINA

Analysis on the Behavior of Electric Vehicle Users and Features of Potential Clients

Third Forum on Transport Energy-saving Technology and Policy, Beijing

Nov. 21, 2014

人·车·城市的完美融合

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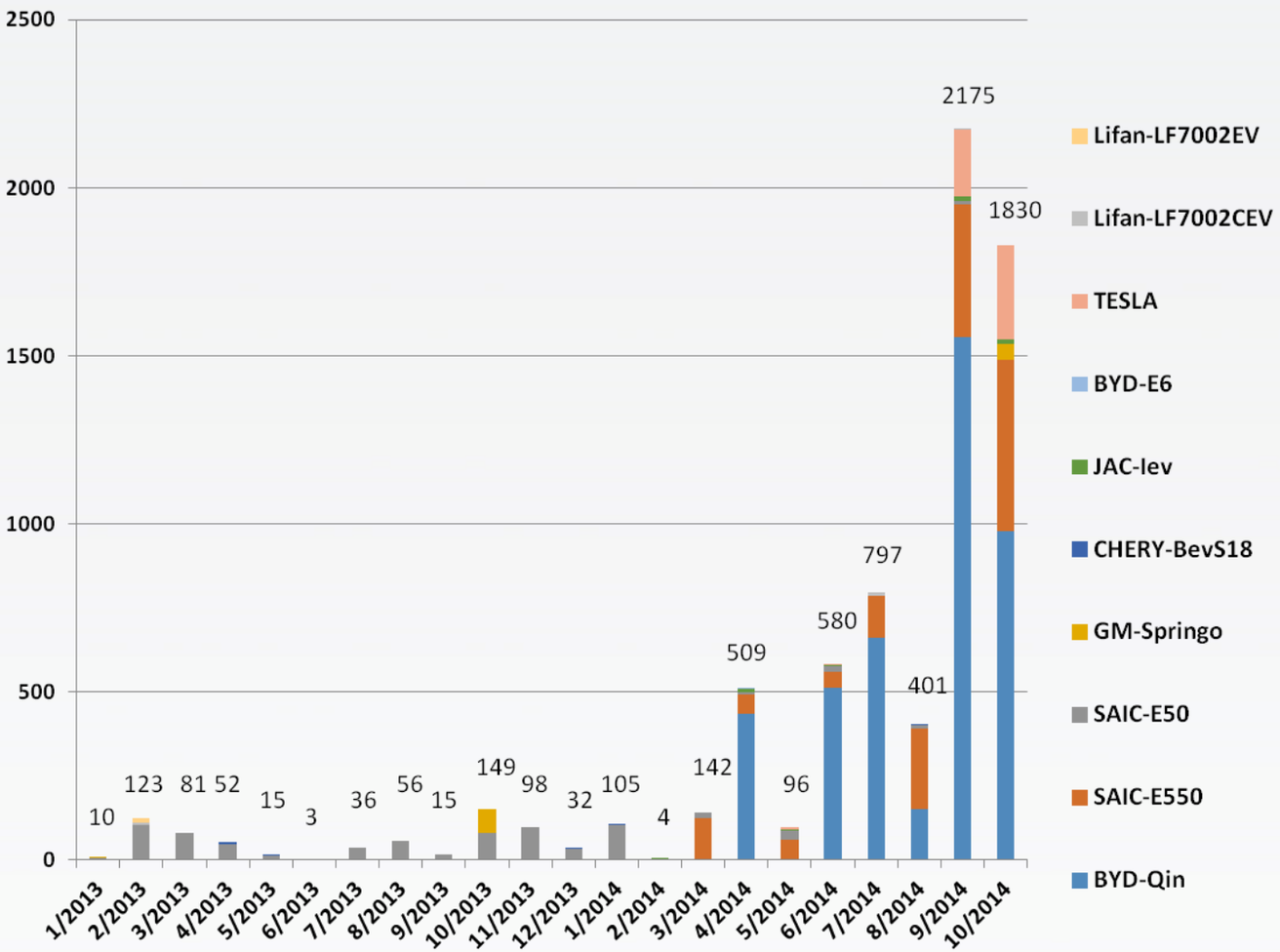
Monthly application for subsidy of electric passenger cars in Shanghai (2013-2014)



Various subsidy policies for the purchase of electric cars in Shanghai in 2014

Vehicle model	BEV			PHEV
Distance per charge	80≤R＜150	150≤R＜250	R≥250	R≥50
Subsidy from the central government	3.325	4.75	5.7	3.325
Subsidy from Shanghai municipal government	4	4	4	3
Subsidy for import vehicles	3,000 free license plates			
EVZONE subsidy	15,000 using subsidy (consumers living and working in Jiading District)			
Other concessions	Free license plate of Shanghai; vehicle purchase tax exempted from Sept. 1, 2013 to Dec. 31, 2017			

Statistics of public charging points in Shanghai

Subject of operation	Shanghai Municipal Electric Power Company, Shanghai Potevio New Energy, Shanghai International Automobile City Co., Ltd., BMW, Telsa		
Administrative districts	Jiading, Minhang, Xuhui, Changning, Zhabei, Hongkou, Baoshan, Yangpu, Huangpu, Pudong, Qingpu		
Spatial points	54	Charging piles	290

EVZONE summary statistics

1. Latest developments of Shanghai electric vehicle demonstration and promotion

Shanghai Electric Vehicle Public Data Collecting, Monitoring and Research Center

◻ Nature

A non-governmental organization initiated by Shanghai International Automobile City Group with the approval of Shanghai Municipal Commission of Economy and Information Technology.

◻ Main functions

1) Responsible for collecting essential data about new energy vehicles and charging facilities across Shanghai;

2) Conduct analysis and studies on the behavior of electric vehicle consumers;

3) Launch studies on the battery scrapping and recovery system of electric vehicles.

◻ Annual reports

1) **Report on the Development of New Energy Industry of Shanghai**

2) **Research Report on the Consumer Behavior of New Energy Vehicles and Market Demand**

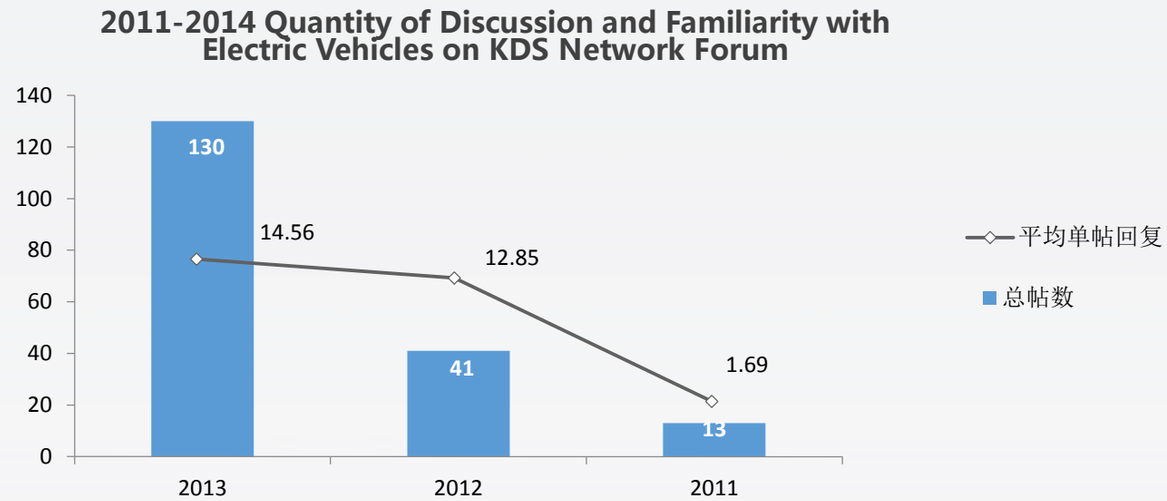
3) **Report on Comparative Study of the Promotion and Application of New Energy Vehicles in and abroad China**

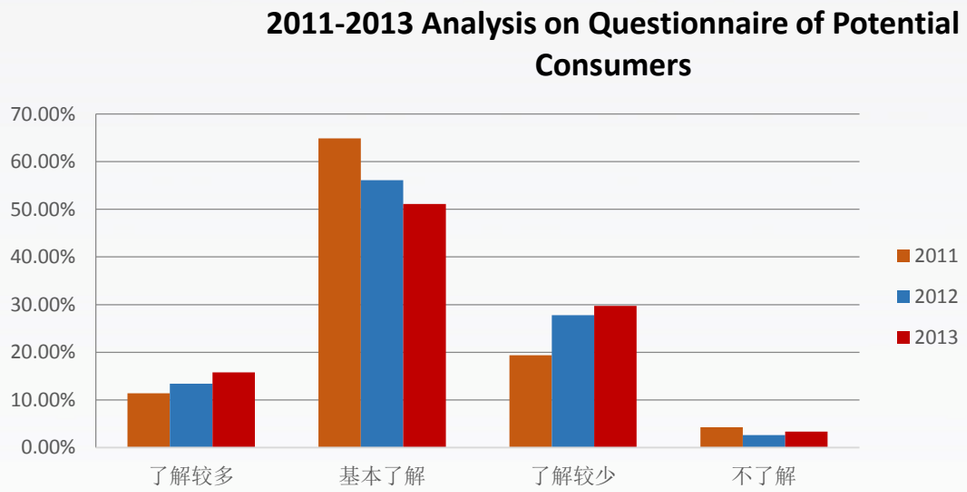
◻ Public charging facility APP

Initiated on Nov. 6, 2014, the app is available for downloading by scanning the two-dimension code on **WWW.EVZONECHINA.COM** and could be downloaded at Apple Store and Android Store within the year.

2. Cognition analysis of potential electric vehicle consumers

Latest research results of cognition of potential consumers -- Electric vehicles have been part of the public’ s lives and the cultivation of potential consumers is very important.





Source: EVZONE statistical data

2. Cognition analysis of potential electric vehicle consumers

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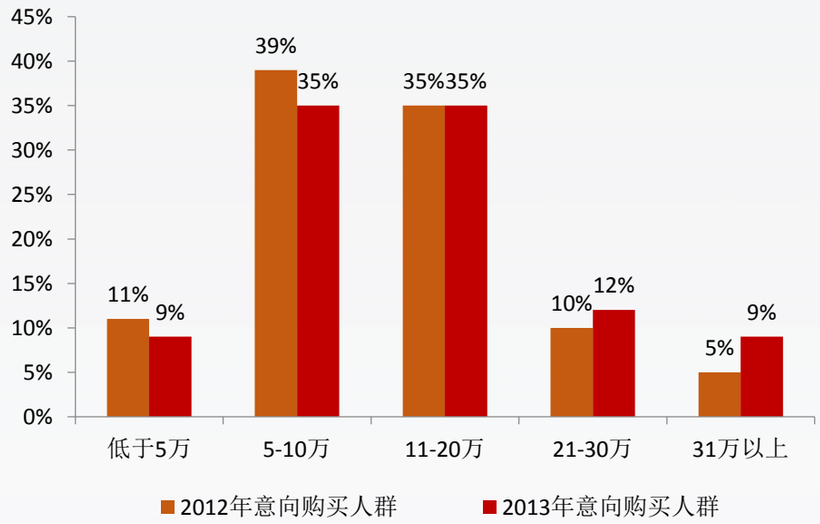
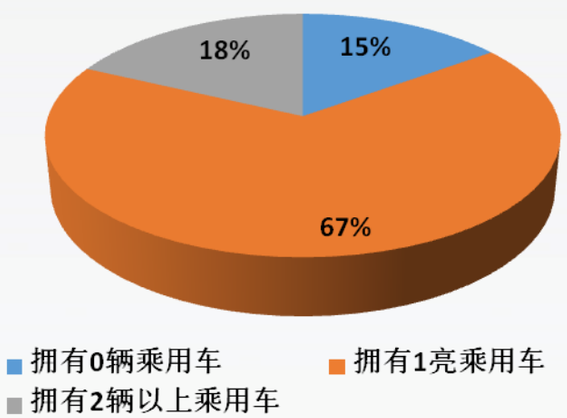
Latest research results of potential consumers – 3 major demographics

1. Single or married person aged between 31 and 40, with university degree and above, whose personal income per year is ranked as high income in Shanghai (pre-tax income is 160,000-200,000 yuan/year • person);
2. Person whose family has more than 1 sedan car, with university degree and above, having independent or semi-independent housing;
3. Single or married person aged between 21 and 30, with college degree and above, whose personal income per year is ranked as medium income to medium-to-high income (pre-tax income is 80,000-10,000 yuan/year • person)

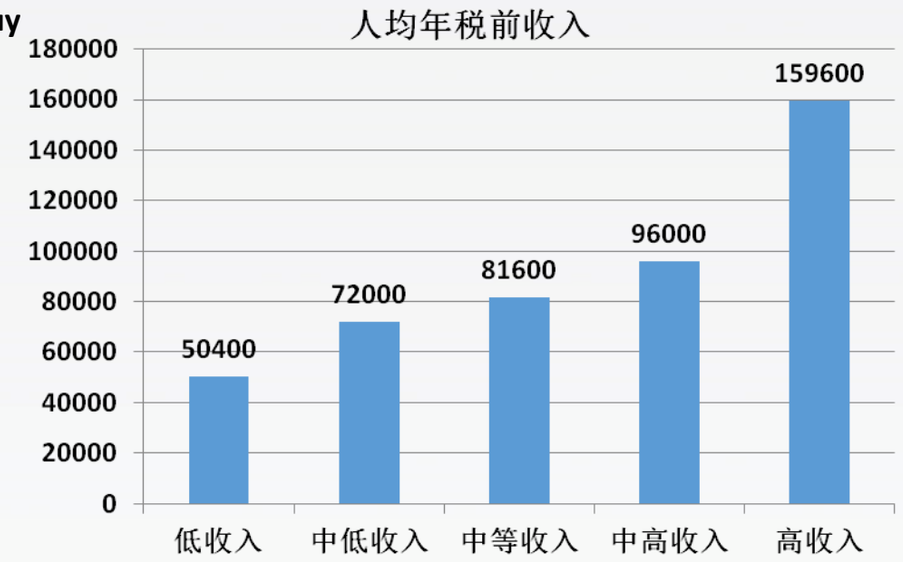
Distribution of personal income per year of those planning to buy electric vehicles within 2 years



Vehicle ownership of families planning to buy electric vehicles in 2013



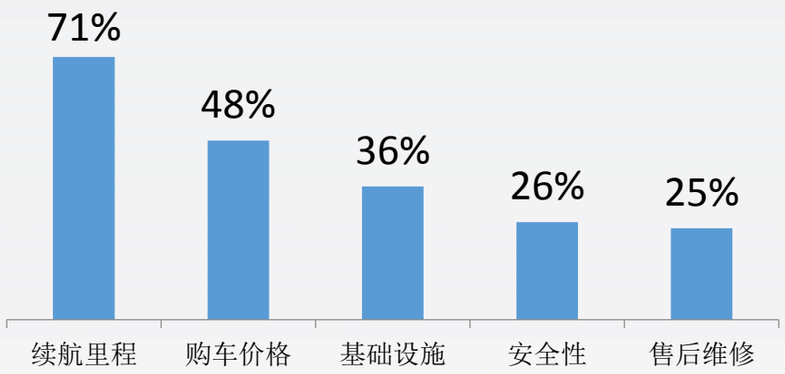
Source: EVZONE statistical data

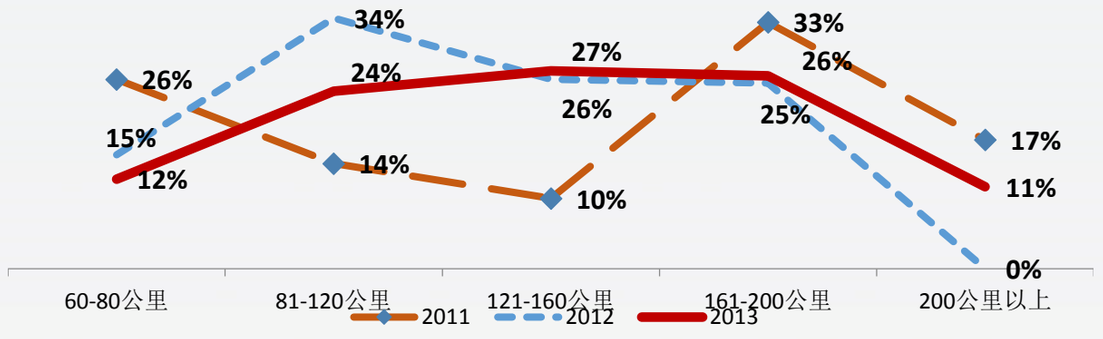


Source: data calculated based on the per capita disposable income of families in 2012 of the Shanghai Municipal Statistics Bureau

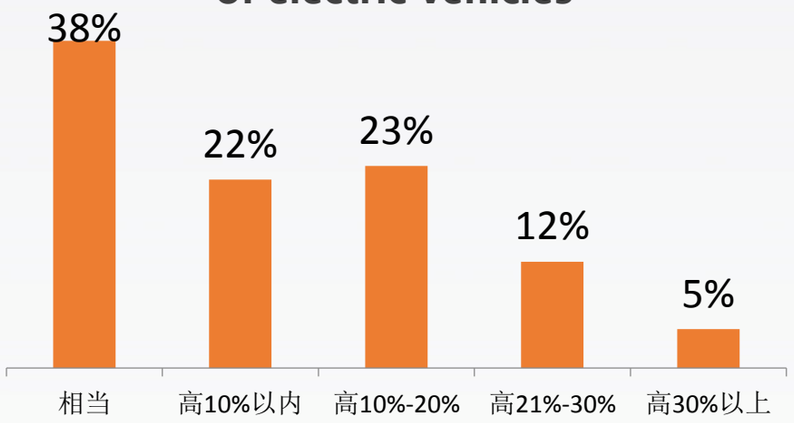
2. Cognition analysis of potential electric vehicle consumers

Latest research results of potential consumers – top 3 concerns and 3 expectations

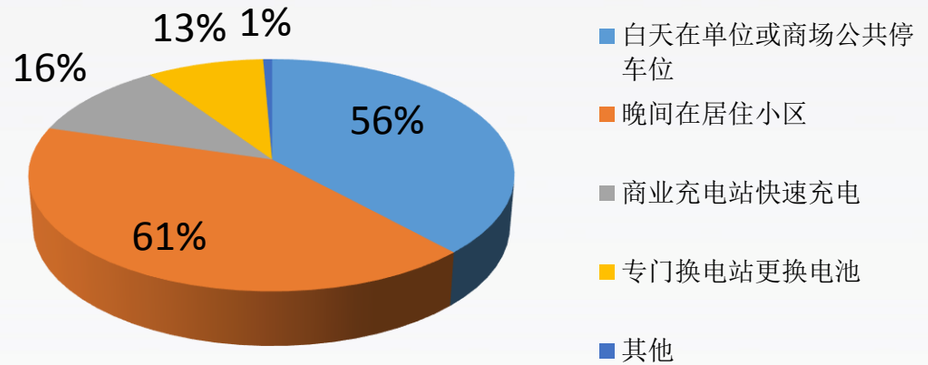




Major concerns of potential consumers over the purchase of electric vehicles



Expected service life of potential consumers



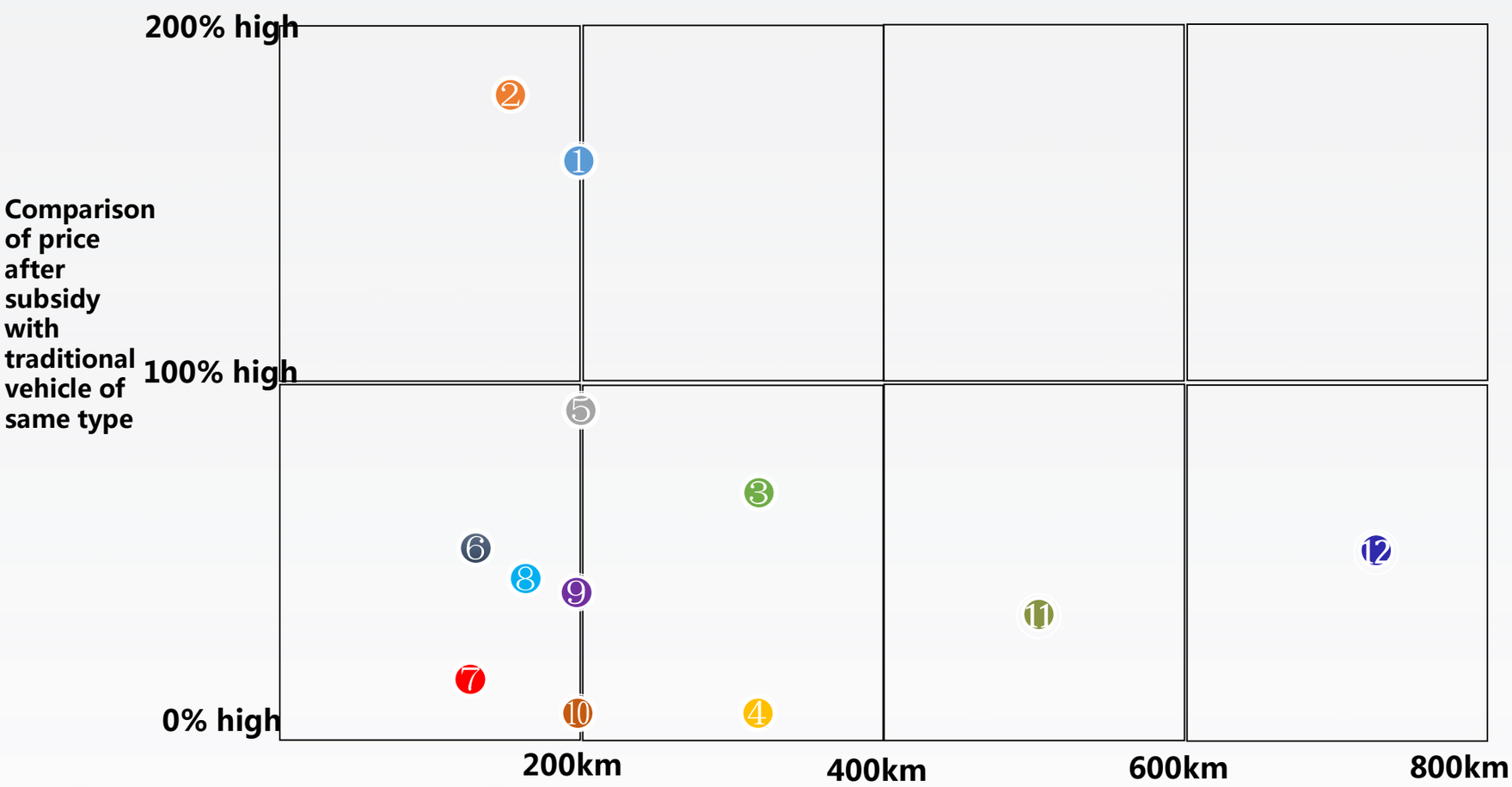
Expected sales price of potential consumers

Expected charging places of potential consumers

Source: EVZONE statistical data

2. Cognition analysis of potential electric vehicle consumers

Latest research results of potential consumers
– quadrantal diagram of mileage-price ratio



1. GM Springo VS Sal
2. Zhongke Lifan 602EV VS Lifan 602
3. BYD E6 VS BYD M6
4. DENZA VS Audi A4L (medium-to-low configuration)
5. BAIC E150EV VS BAIC E150
6. Volvo C30EV VS Volvo C30
7. Zinoro VS BMW X1
8. Venucia VS TIIDA
9. Chery EQ VS Chery QQ
10. JAC iev3 VS JAC Heyue
11. Roewe 550 plug-in VS Roewe 550
12. BYD-Qin VS BYD Surui

3. Analytical research results of electric vehicle data

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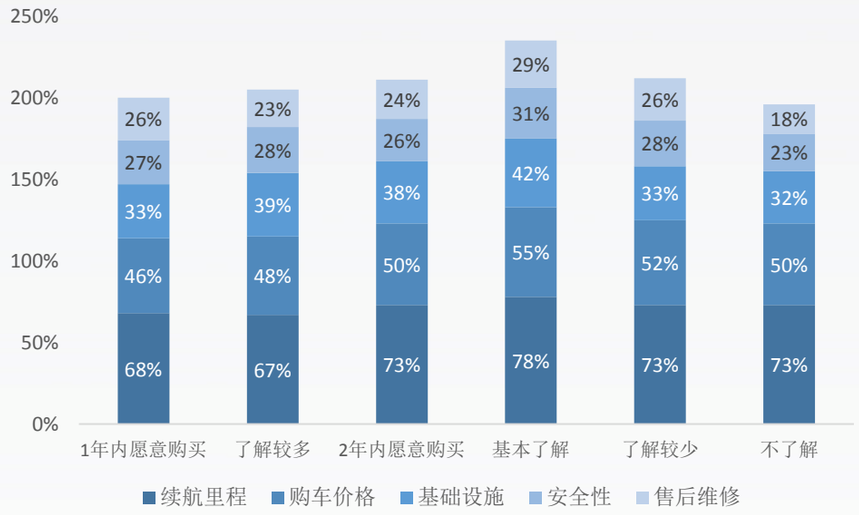
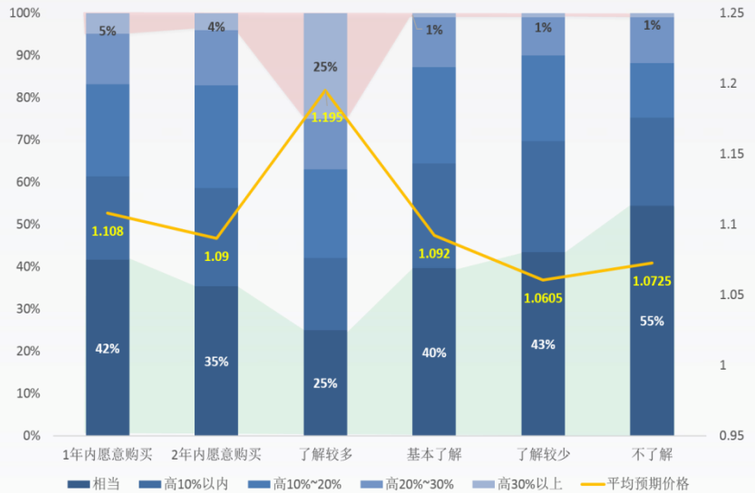
Latest research results of recognition of potential consumers -- different behaviors of consumer groups at different stages

1. **From "having no understanding of" to "basically understanding" electric vehicles, the proportion of potential consumers with concern is on the rise; from "basically understanding" to "willing to buy within 1 year" electric vehicles, the proportion of potential consumers with concern is on the decrease.**
2. **When potential consumers don't make a decision on purchase, the more they understand electric vehicles, the more they are willing to pay more to accept electric vehicles. Once they have the intention of buying electric vehicles, they hope the price of electric vehicles aren't too much higher than that of traditional vehicles of same type.**
3. **Intentional purchasers are relatively rational consumers. So they don't have too high expectation on the distance per charge and their real daily travel distance is longer. The lower the ratio of "expected distance per charge" to "real daily travel distance" is, the more likely for them to be the intentional purchasers. As such, the economical efficiency of electric vehicles could be fully demonstrated.**

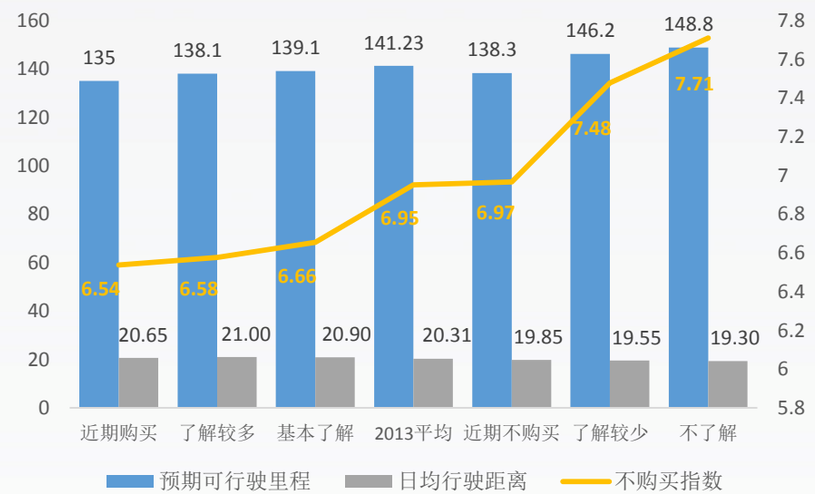
Changes in items consumers are concerned at different stages



Consumers' estimation of price at different stages



Law of users about mileage at different stages



3. Analytical research results of electric vehicle data

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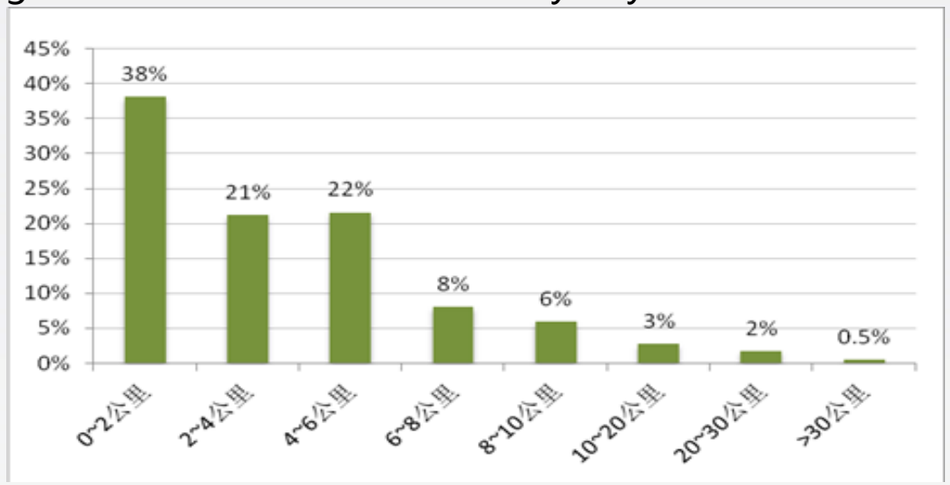
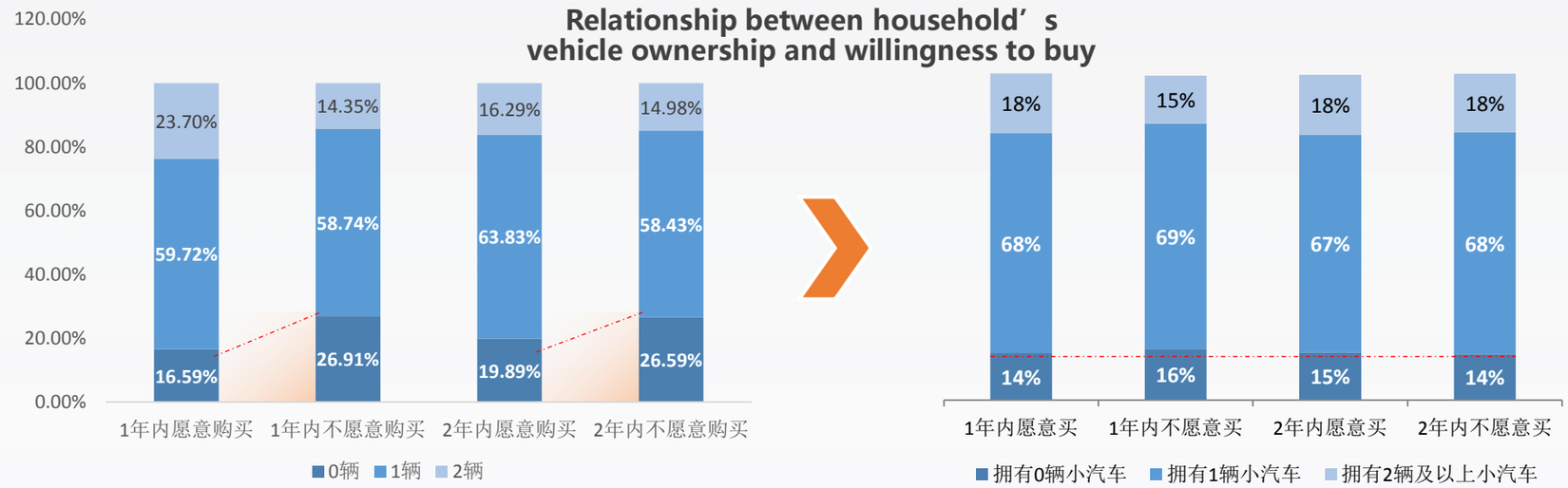
Latest research results of recognition of potential consumers – no obvious relationship between whether a family has passenger vehicle and whether a family buys electric vehicle



Users' real daily travel distance on average is 4.13km

Source: statistical data of consumers of 86 PEVs monitored by EVZONE



The changes in expected schedule between 2012 and 2013 might be related to the introduction of Roewe 550 Plug in and BYD-Qin. This type of vehicles could partially replace the first vehicle of households.

Based on the same speculation, the 2013 questionnaire analysis showed that there is no clear difference between whether a household owns vehicle and whether a household buys electric vehicle.

Source: EVZONE statistical data

3. Research on behaviors of real electric vehicle consumers

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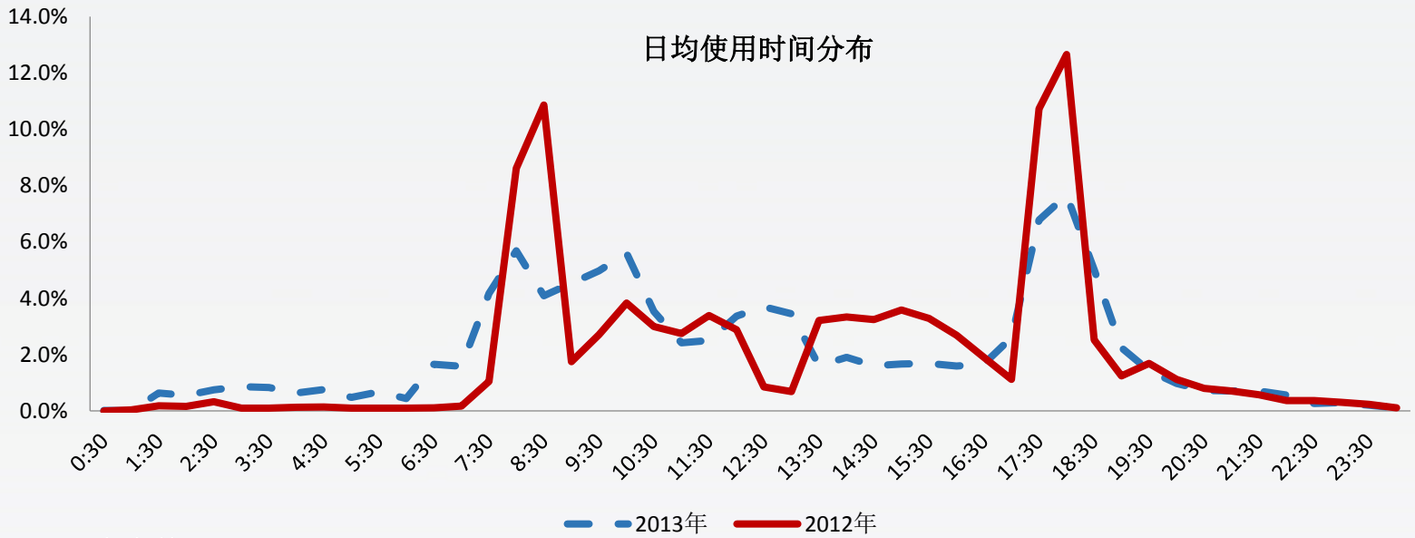
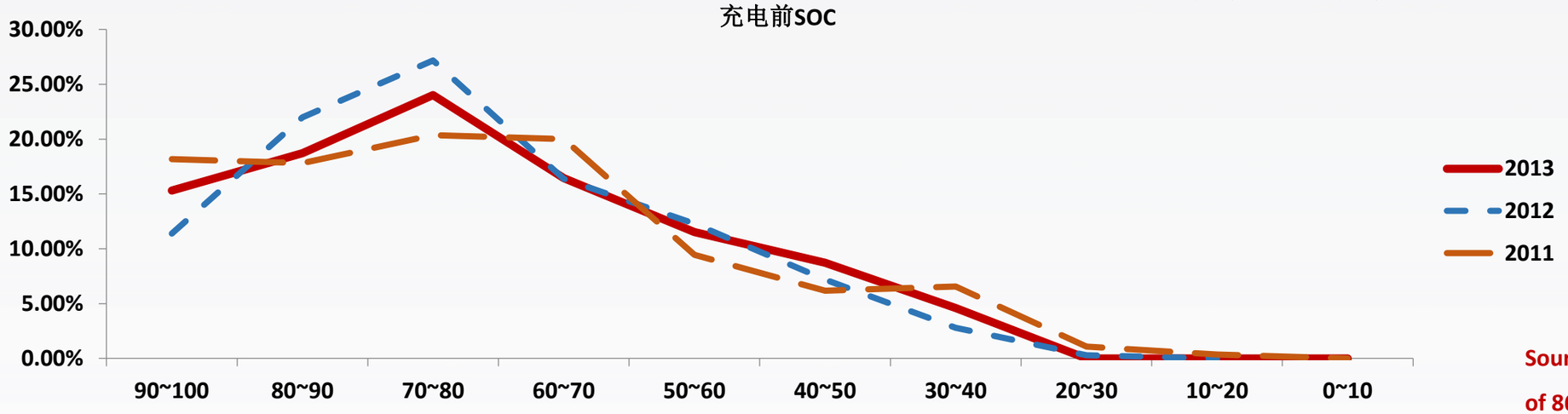
Latest research results of real consumers' usage – the time of consumers using electric vehicles in reality is increasing, but SOC before charge still stands at about 70%.

Compared to the data of 2012, we can find that consumers not only use electric vehicles during morning and evening peak, but also use electric vehicles in the noon, showing another minor rush hour.

This means consumers start to build confidence in mileage and they could use vehicles for several times in a day.

But "electricity protection" still remains out there and shows a tendency of extending to 70%.





Source: statistics of consumers' usage of 86 PEVs monitored by EVZONE

3. Analytical research results of electric vehicle data

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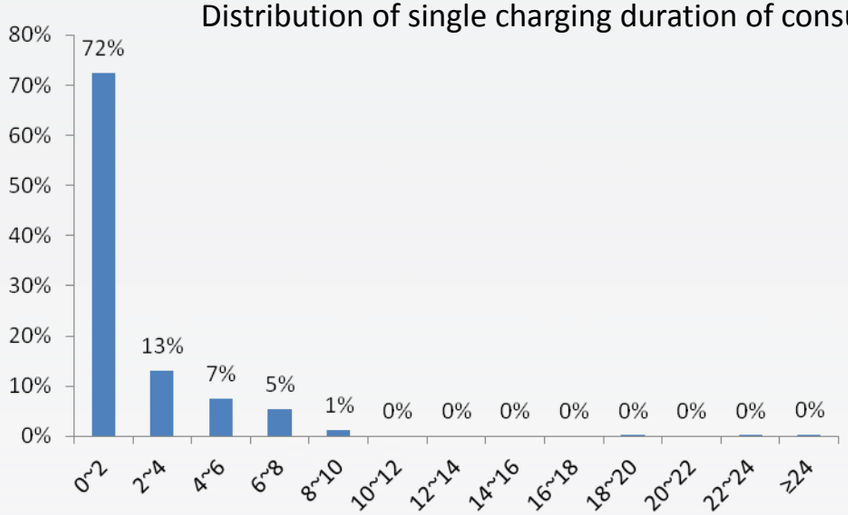
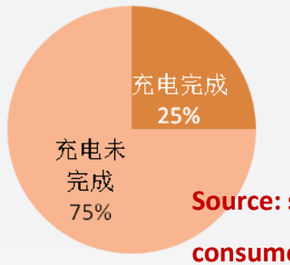
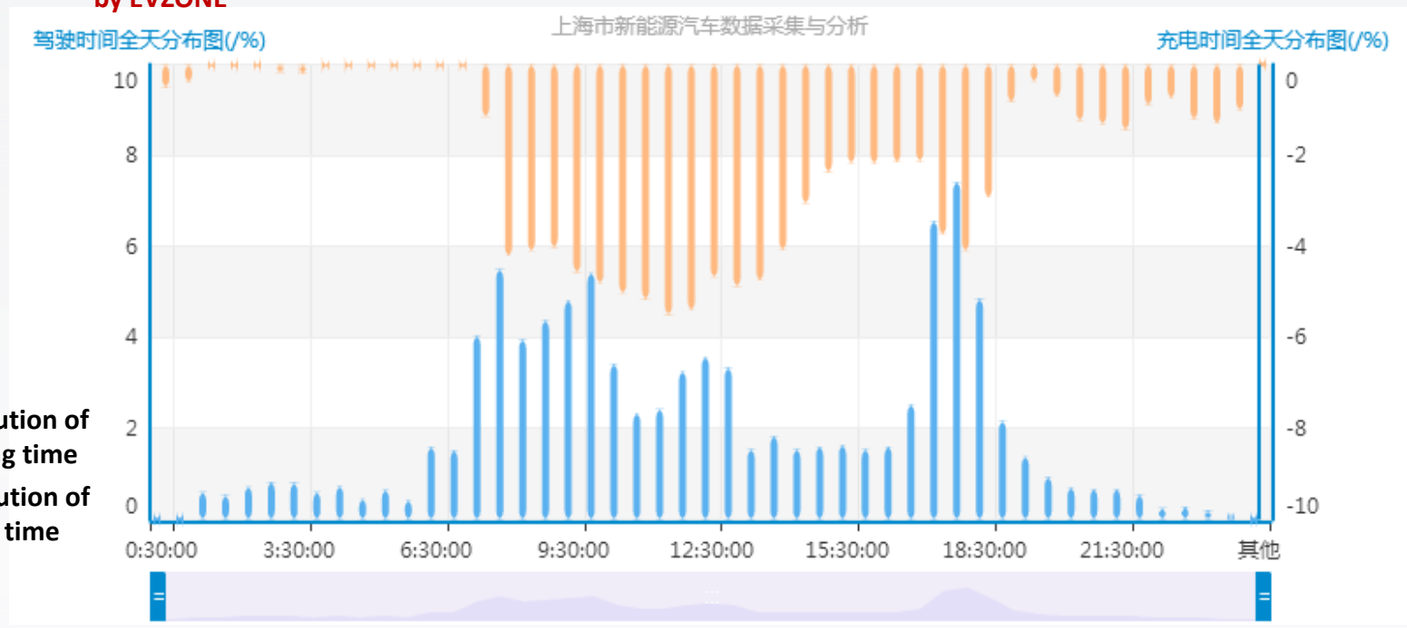
Latest research results of real consumers' usage – at the current stage when household-based charging in Shanghai remains low, the single charging duration of consumers in reality is no more than 2 hours.

Distribution of single charging duration of consumers





Source: statistical data of consumers of 86 PEVs monitored by EVZONE



Judging from the real charging data of consumers, the charging duration of most consumers in Shanghai is less than 2 hours, and over 75% of users directly use vehicles without fully charging vehicles.

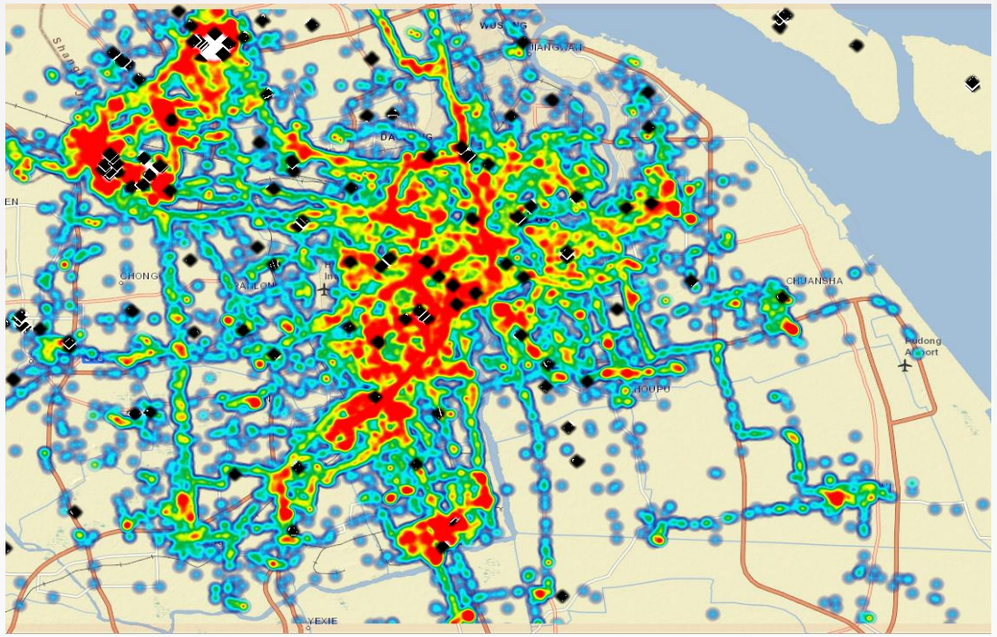
Based on the comparison of hours of use and charging time, we can find that there will be a charging peak almost after each use peak. The occurrence of use peak in the noon leads to the fact that the real charging time is unlikely to be very long.

3. Analytical research results of electric vehicle data

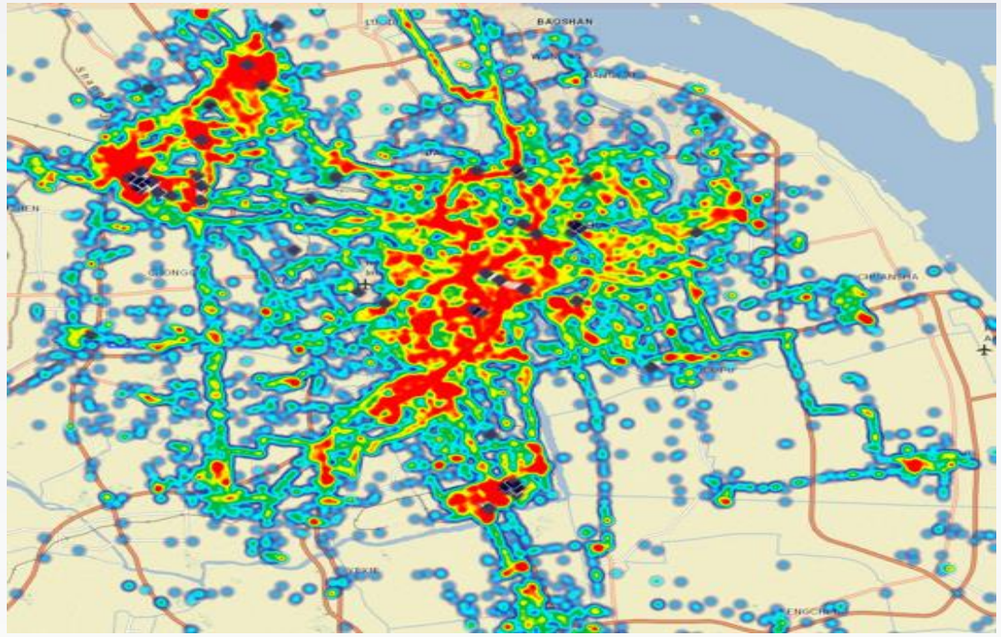
Analysis on the matching of infrastructure

By overlapping the distribution map of real electric vehicle active areas and the map of charging facilities in 2013, we can find that:

1. **The distribution of existing charging infrastructure in Shanghai is basically consistent with the area where vehicles are active;**
2. **But public charging points still call for reasonable planning and construction in terms of both space and quantity.**



Real usage of electric vehicles and layout of all charging facilities



Real usage of electric vehicles and layout of all charging facilities

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