

Research Question

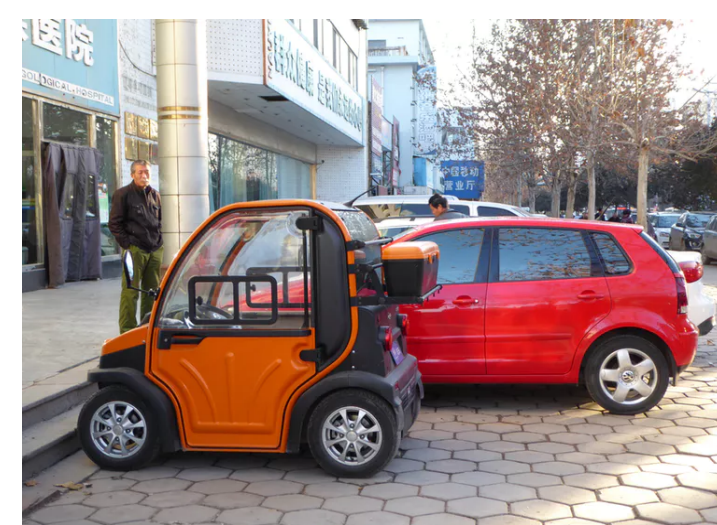
LSEV Definition: Four-wheel Battery Electric Vehicles with a maximum speed around 40~70km/h (Subsidized BEVs require Double 100 Standards (Maximum speed over 100km/h, Minimum range over 100km))



LEVDEO, Little Prince



Shifeng, D201



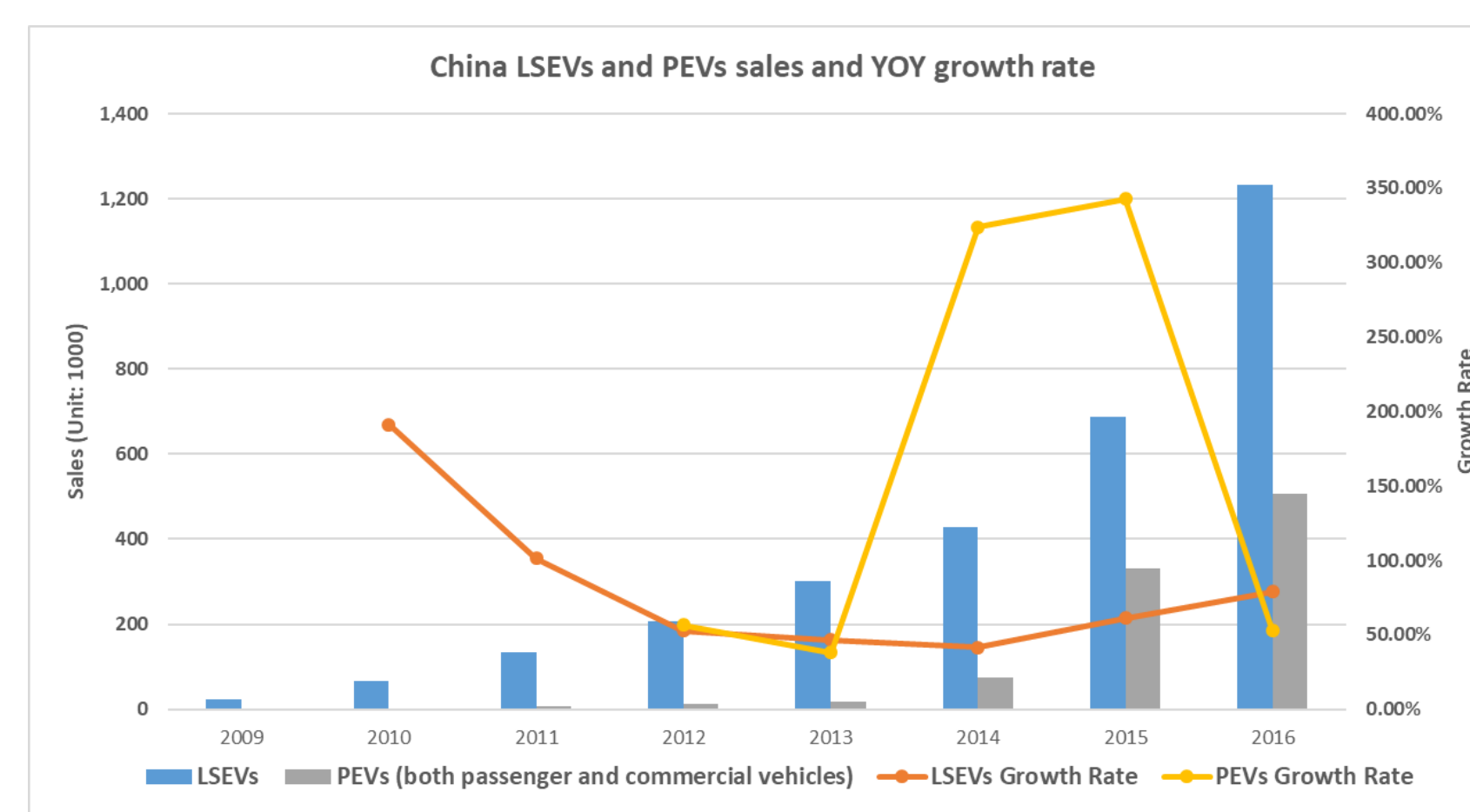
Dayang, CHOK-S

3 LSEV model: The size of LSEVs varies from normal size vehicle to golf-cart size vehicle

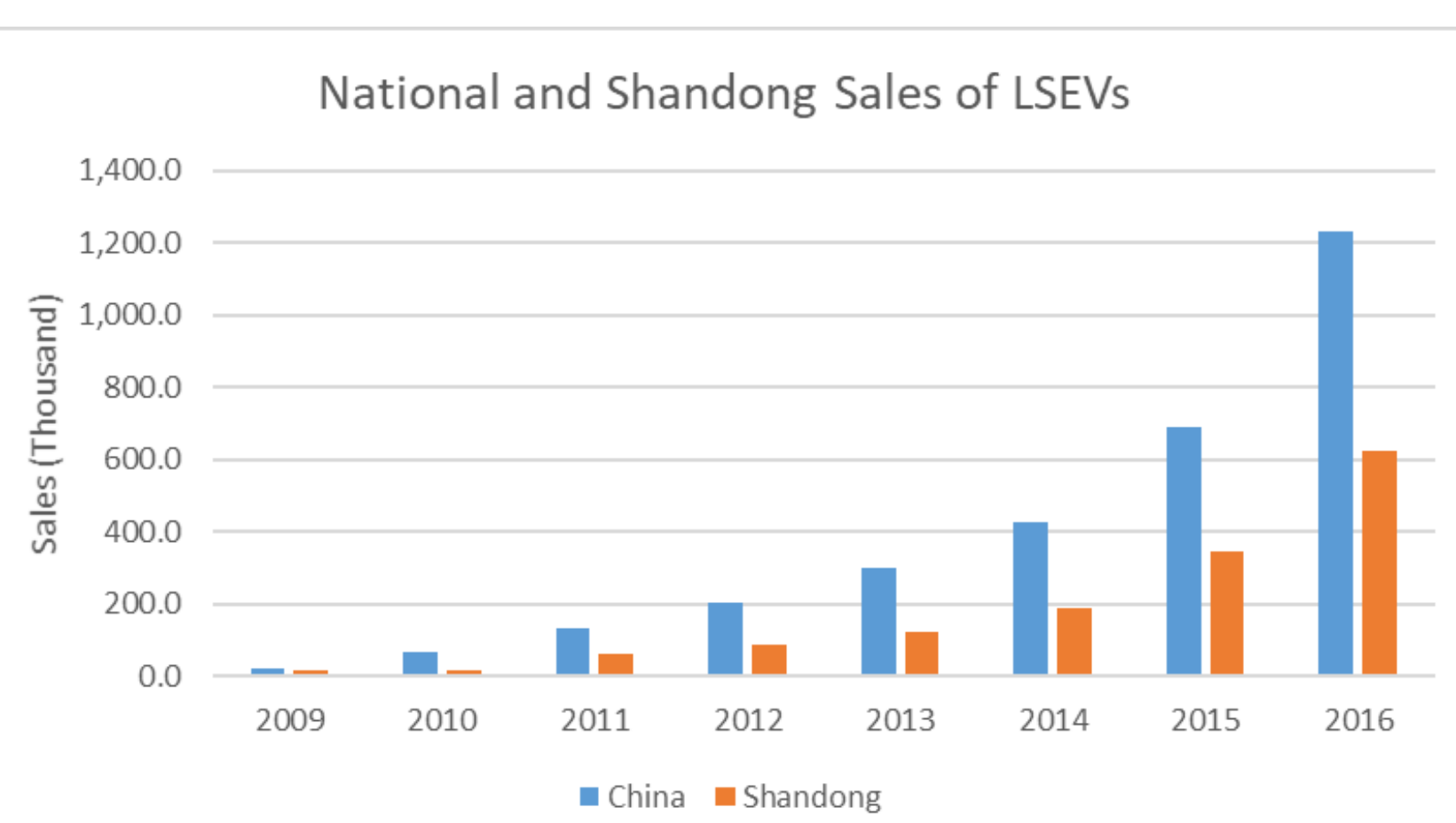
Research Questions

- How is the LSEV market growing? Chinese market? Overseas markets?
- How fast is the growth? What is the spatial and demographic distribution?
- What characteristics of LSEVs are favored?
- Who is buying LSEVs? What kind of vehicles is it displacing?
- What regulations exist or are being created?

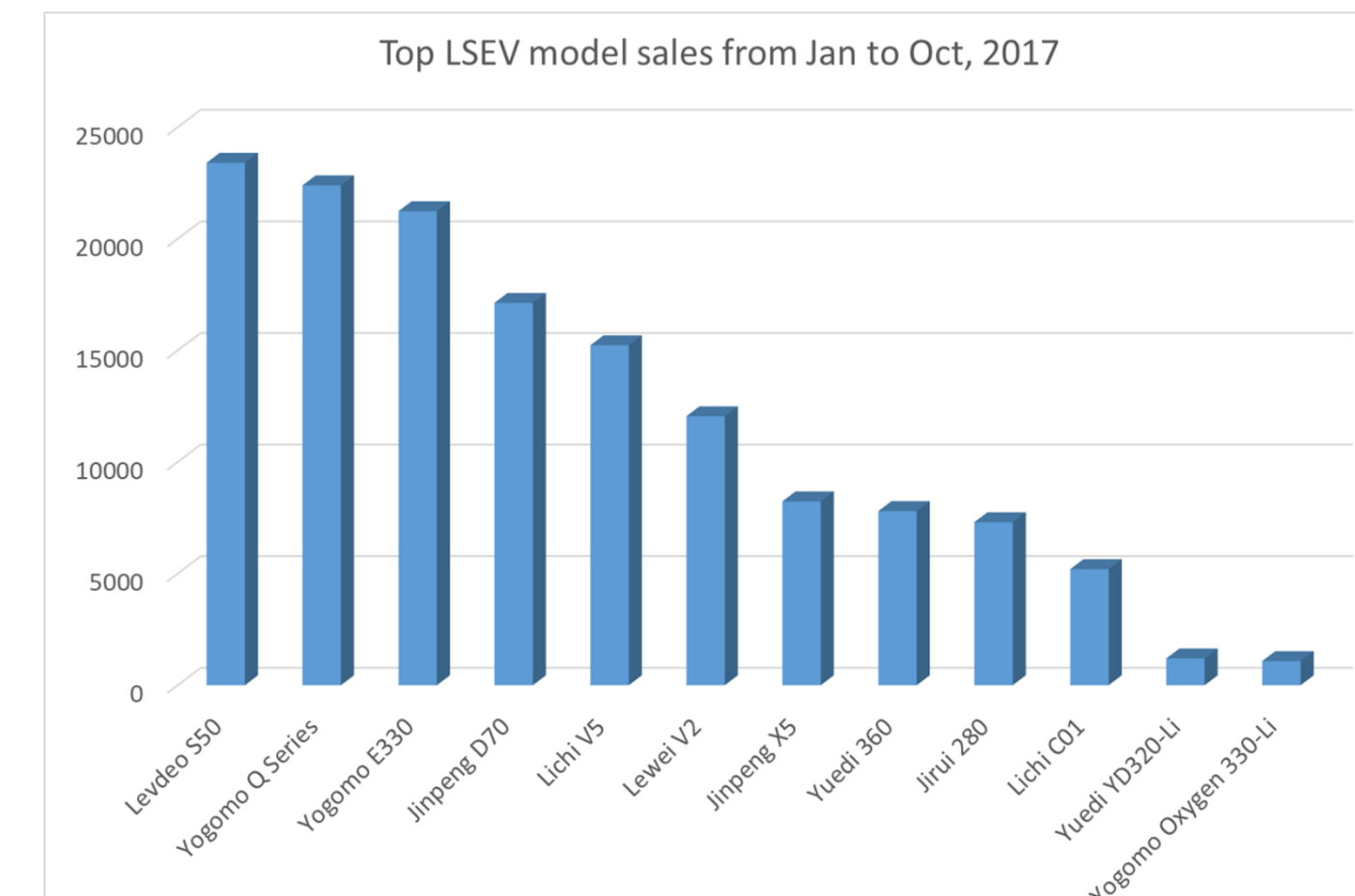
Emerging Market in China



LSEV markets without government subsidies are growing even bigger than PEV markets with huge government subsidies.



Shandong Province accounts for around 50% of LSEV national sales in 2016.



Top 12 bestsellers of LSEVs in 2017, among which two models are Lithium-ion battery

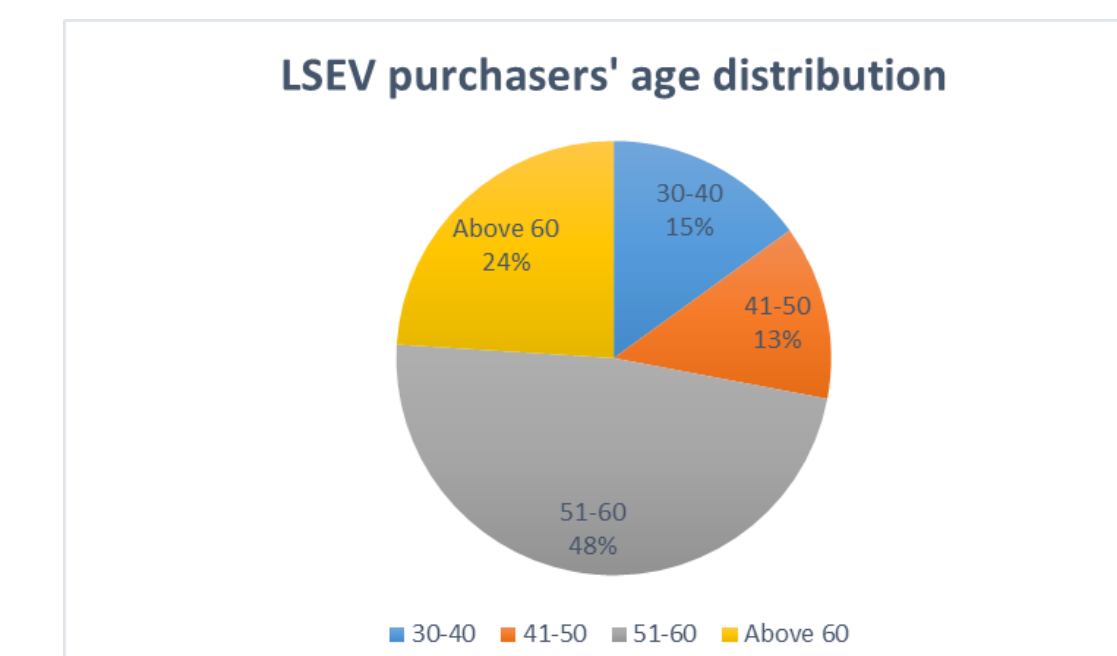
Source: PEV numbers from CAAM; LSEV numbers from CATARC and ResearchInChina

Results

Spatial and Demographic distribution



- LSEV markets originated from **Shandong**, then diffused to neighborhood provinces, **Jiangsu, Hebei, Henan**
- Compact distributed.
- Four LSEV industrial clusters, over 150 LSEV makers.
- Four clusters accounts for 90% of LSEV makers.



- 72% LSEV purchasers are over 50 years old
- Mainly at rural areas, 3rd and 4th tier cities
- Mostly low income
- Mostly without driver licenses
- Mainly short distance of trips

Characteristics of LSEV products

- Low purchase, operational and maintenance cost
 - MSRP, 20,000~50,000 Yuan (\$3,000-\$7,500)
- Lead-acid battery mostly, Li-ion LSEV sales growing rapidly
- Max speed 40-70 km/h
- Range 100-220 km
- Charging 8-10 hrs for lead-acid battery
- No driver license required in rural areas
- Not satisfying vehicle crash safety standards

Top 3 sellers in 2017

Model	Levdeo S50	Yogomo Q	Yogomo E330
Battery	Lead-acid battery	Lead-acid battery	Lead-acid battery
Max speed	45-60km/h	40km/h	40-50km/h
Range	100-190km	110km	100-200km
Charging	8-10hrs	8-10hrs	8-10hrs
Dimension	3246*1570*1570mm	3110*1410*1515mm	3450*1500*1500mm
Curb weight	756-980kg	650kg	736-850kg
Purchase price	41880 Yuan/\$6332	30800 Yuan/\$4655	30800-45800 Yuan /\$4655-\$6922

Source: Interviews, online data and surveys

HYPOTHESIS: LSEVs are displacing bikes, e-bikes, China Rural Vehicles in rural areas.

Comparison		Speed and Range	Power Source	Relationship with LSEV
Low Speed 2(3)-wheeler	Bicycle	Very low, very short	Human	Complementary
	Electric Bike or Scooter	Low, short	Electricity	Competitive
	Motorcycle	Low, short	Gasoline	Competitive
Low Speed Vehicle (4-wheeler)	Chinese Rural Vehicles	Low, short	Gasoline or Diesel	Competitive
	LSEV	Low, short	Electricity	-----
Normal Speed Vehicle	Micro-BEV (A00)	High, short	Electricity	Competitive
	PEV	High, short	Electricity	Competitive
	HEV	High, long	Gasoline	Complementary
	Gasoline car	High, long	Gasoline	Complementary

Policy Debate & Discussion

Policy Debate

- Central government vs Local government (regulate or encourage)?
- Register as Passenger vehicles or motorcycles or new category?
- Li-ion or lead-acid battery?

Discussion

- LSEV market is an **emerging unregulated** market with rapid growth and compact distribution spatially
- LSEV main users are elderly, low-income and rural area people; **low price of LSEVs** and **no need for driver license** is the main purchase incentives (based on interviews).
- **HYPOTHESIS:** LSEVs are **displacing low-end transportation tools** (bikes, e-2-wheeler, motorcycles, CRVs) to satisfy rural area people's increasing demand for better travel experience.
- The policy debate implies that central and local governments, different stakeholders have different interests and motivations, resulting in the slow and controversial policymaking