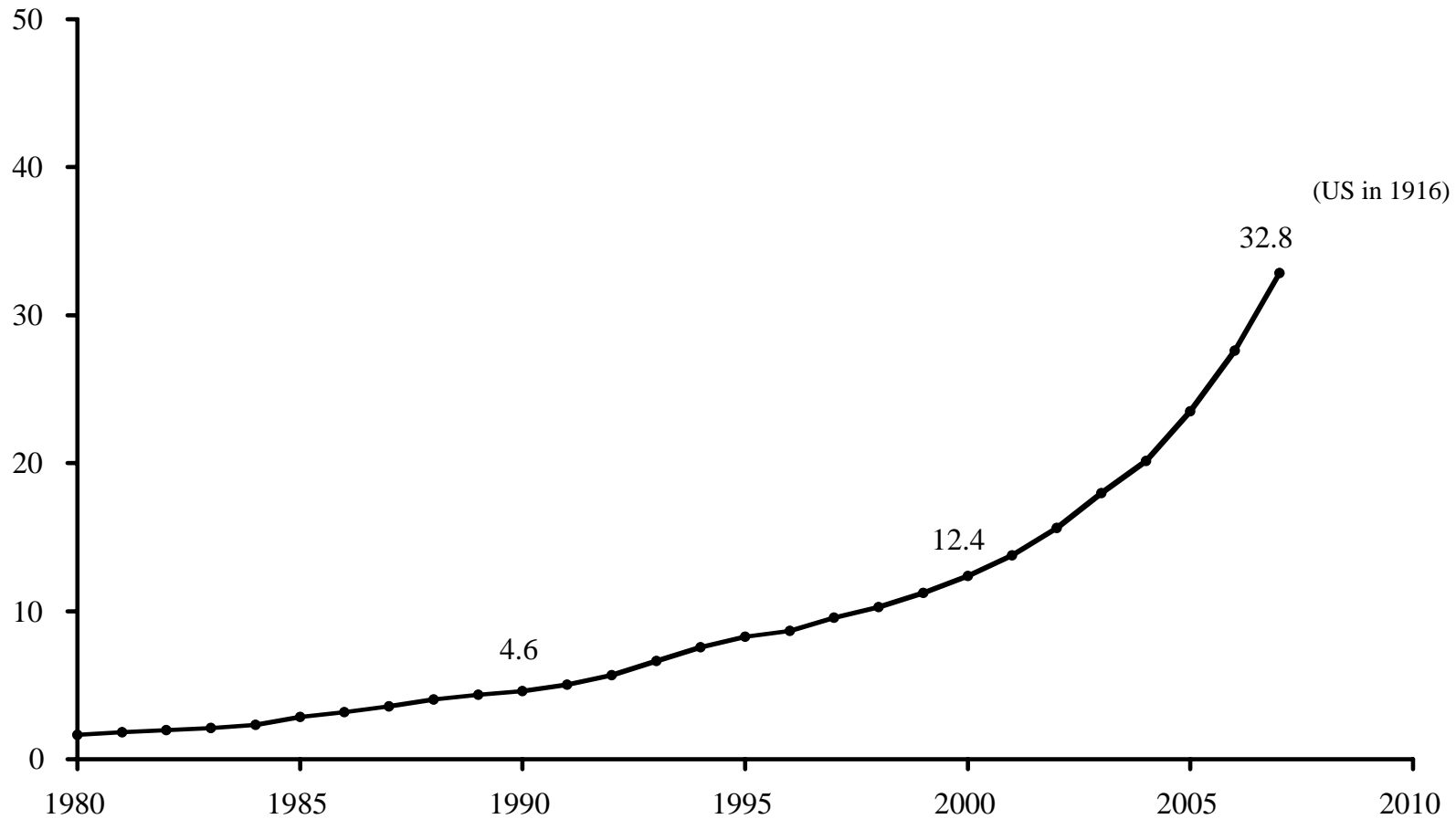


The Motorization of China

Walter McManus

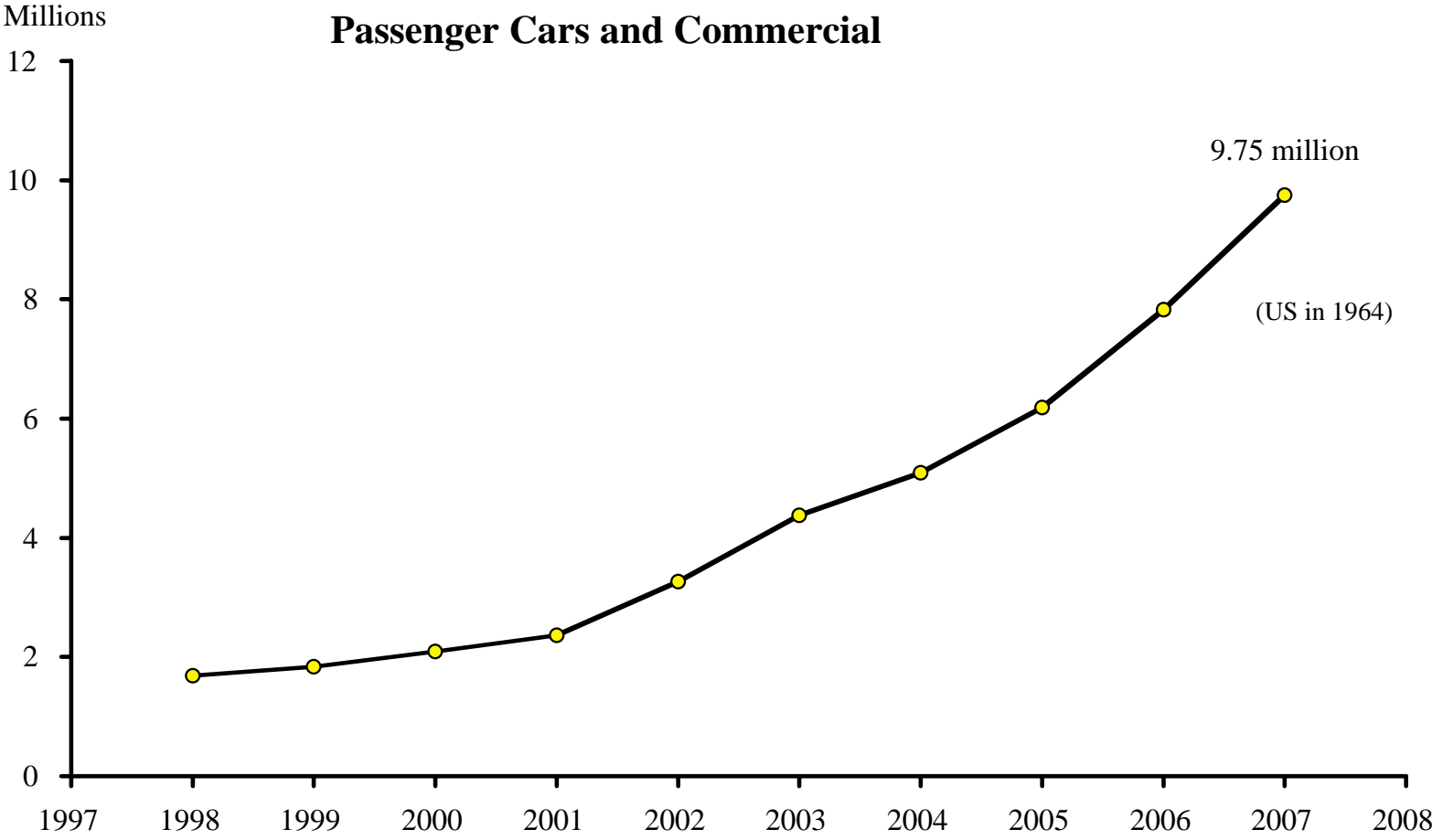
watsmcm@umich.edu

China: Vehicles per 1000 Persons



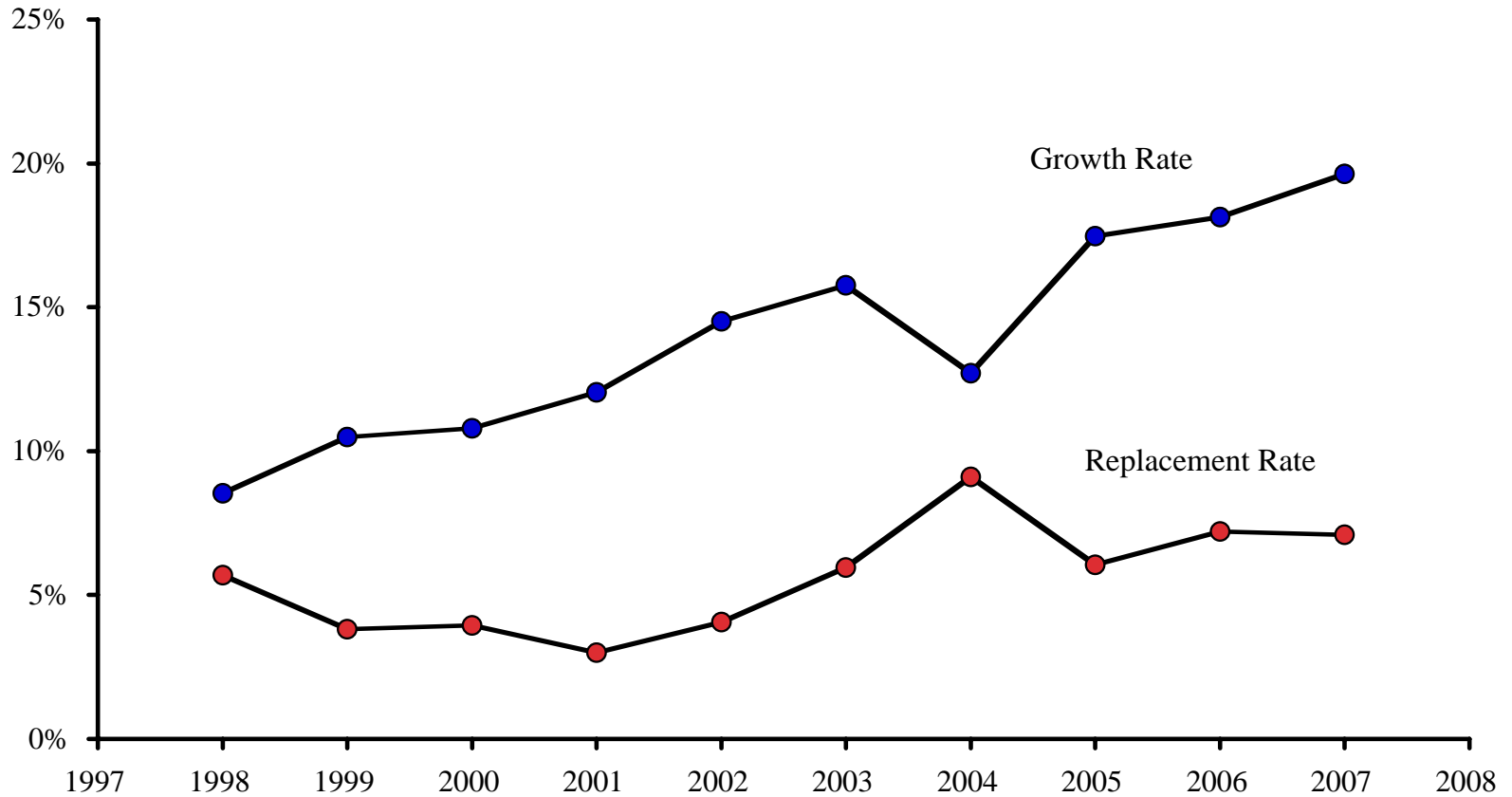
Sources: U.S. DOE Transportation Energy Data Book, Automotive Analysis Division of UMTRI

China Annual Vehicle Sales: Passenger Cars and Commercial



Sources: U.S. DOE Transportation Energy Data Book, Economic Intelligence Unit, Automotive Analysis Division of UMTRI

China Vehicle Parc: Growth and Replacement Rates



Sources: U.S. DOE Transportation Energy Data Book, Economic Intelligence Unit, Automotive Analysis Division of UMTRI

Forecasting Future Motorization in China

- World Business Council for Sustainable Development (2004), ***Mobility 2030: meeting the challenges to sustainability***
- Dargay et al. 2007, Vehicle ownership and income growth worldwide: 1960-2030, Energy Journal 28(4):143-170

Household Demand

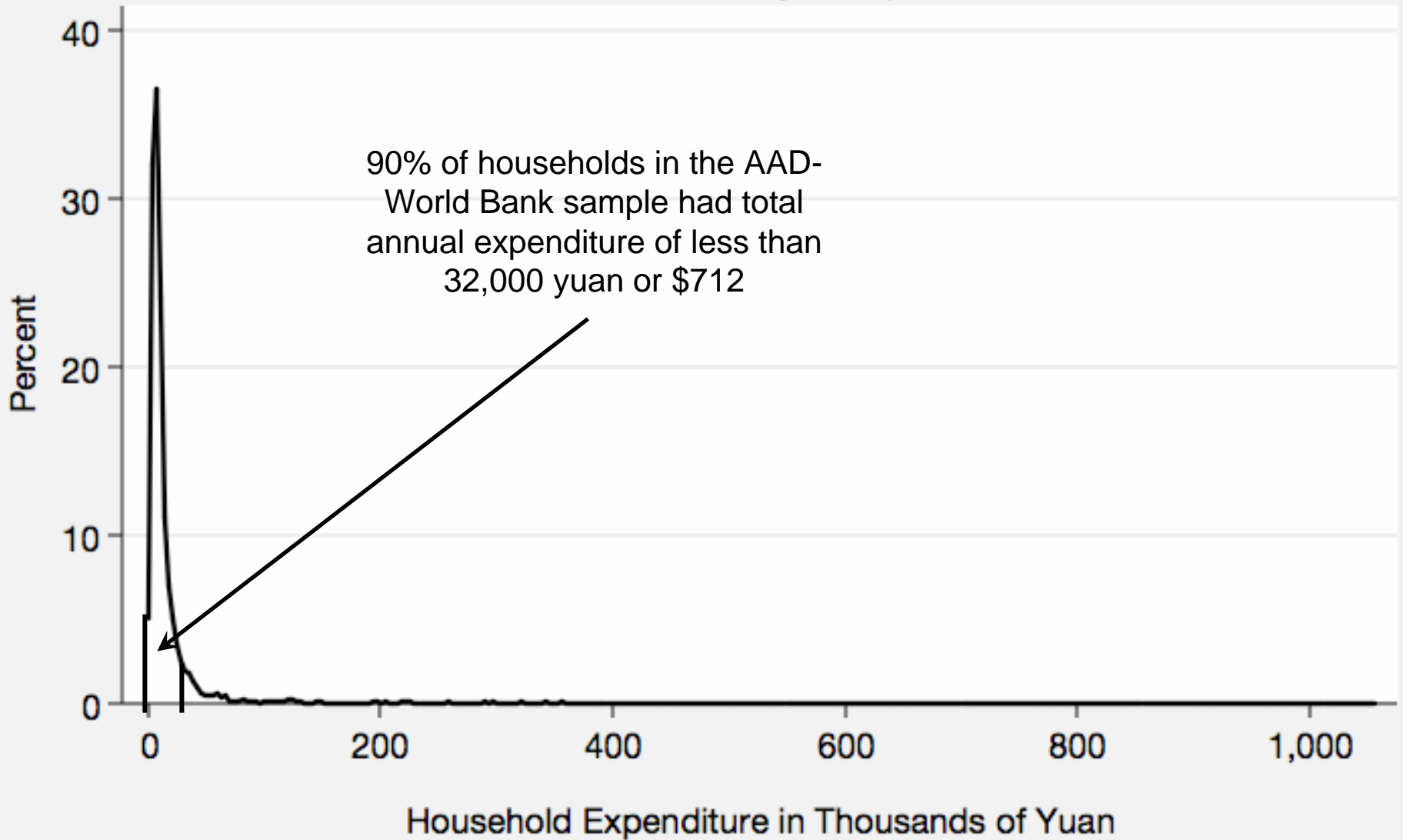
- Survey of Chinese Households, 2005
- Conducted by Automotive Analysis Division and World Bank
- 2,500 households in five cities
- Demographics and economics
- Automotive demand
 - Ownership (revealed preference)
 - Likelihood of future ownership (stated preference)

Cities in the 2005 AAD-World Bank



Distribution of Household Expenditure

China 5-City Sample



Ownership (revealed preference)

- Probit regression of 0,1 indicator of car ownership on total annual expenditure, market value of home, size of household (number of persons), and 0,1 indicators of city

Probit Regression Elasticities: Currently Own a Car

	Own	P> z **
Expenditure	0.0026	0%
Household Size	0.0153	9%
Survey City*		
Wuhan	0.0021	33%
Shenyang	0.0010	57%
Fuzhou	0.0021	29%
Xi'an	0.0024	28%
Home Ownership**		
From parents	0.0001	96%
Bought	0.0032	4%
Self-built	0.0002	64%
Rent	0.0001	87%
From others	0.0004	45%
Other	0.0012	26%

Number of obs = 2,306

LR chi2(8) = 25.84

Prob > chi2 = 0.0113

Log likelihood = -265.22804

Pseudo R2 = 0.0465

* Shanghai is the reference city.

** Employer-owned is the reference category.

- Expenditure used as proxy for income (income missing for a majority of the sample)
- One percent increase in expenditure leads to an increase in probability of car ownership of 0.0026 Pp.

Ordered Probit Regression Elasticities: How Likely to Buy a Car

	Not Likely	Somewhat	Definitely	P> z **
Expenditure	(0.023)	0.018	0.005	0%
Household Size	(0.026)	0.021	0.006	26%
Probability Own Car	0.040	(0.031)	(0.009)	0%
Survey City*				
Wuhan	0.002	(0.002)	(0.001)	63%
Shenyang	(0.000)	0.000	0.000	100%
Fuzhou	(0.016)	0.012	0.003	0%
Xi'an	0.007	(0.005)	(0.002)	15%
Home Ownership**				
From parents	0.001	(0.001)	(0.000)	82%
Bought	(0.016)	0.013	0.004	0%
Self-built	(0.001)	0.001	0.000	46%
Rent	(0.004)	0.003	0.001	4%
From others	(0.001)	0.001	0.000	43%
Other	0.001	(0.001)	(0.000)	78%

Number of obs = 2,298

LR chi2(13) = 108.35

Prob > chi2 = 0.0000

Log likelihood = -1,012.0611

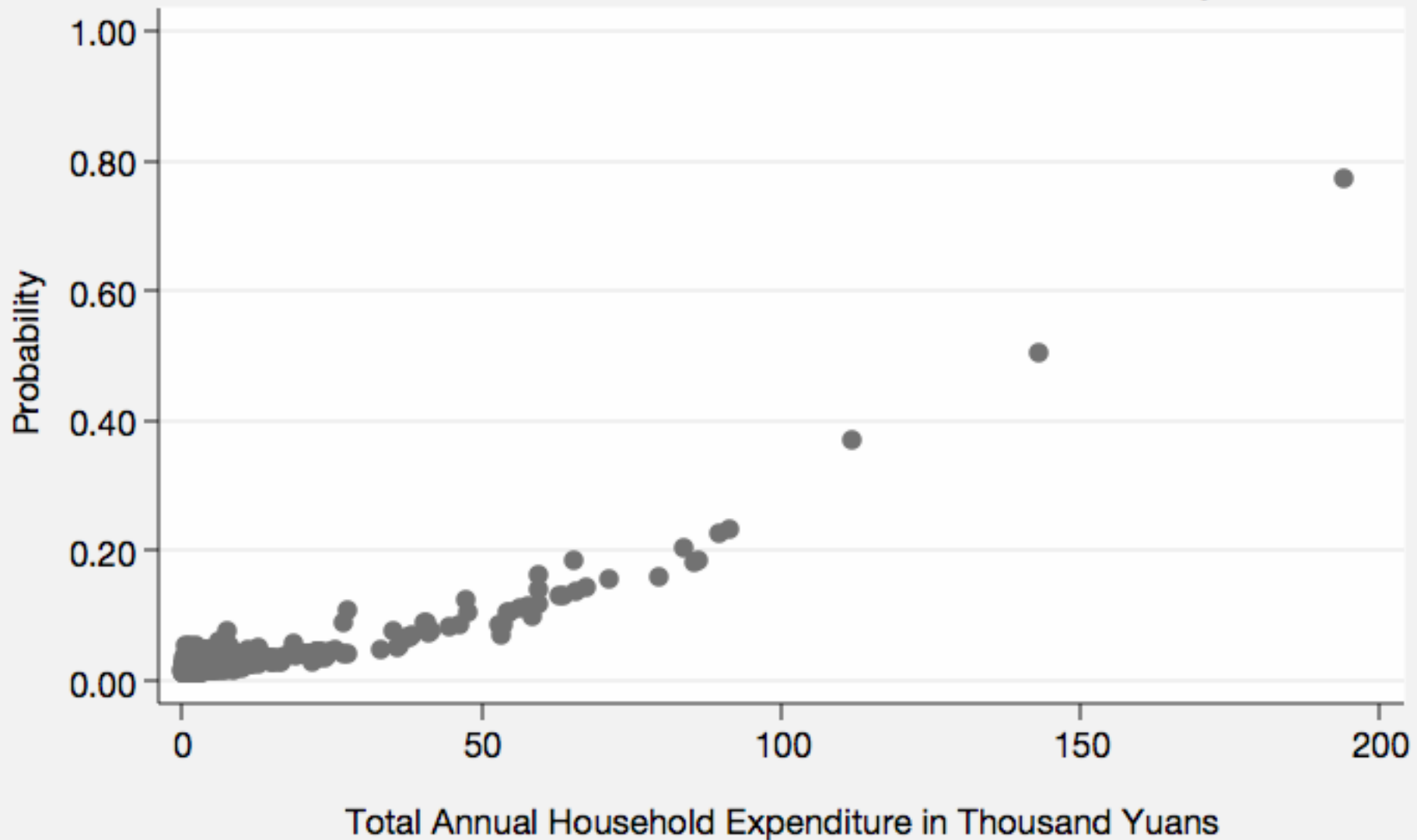
Pseudo R2 = 0.0508

* Shanghai is the reference city.

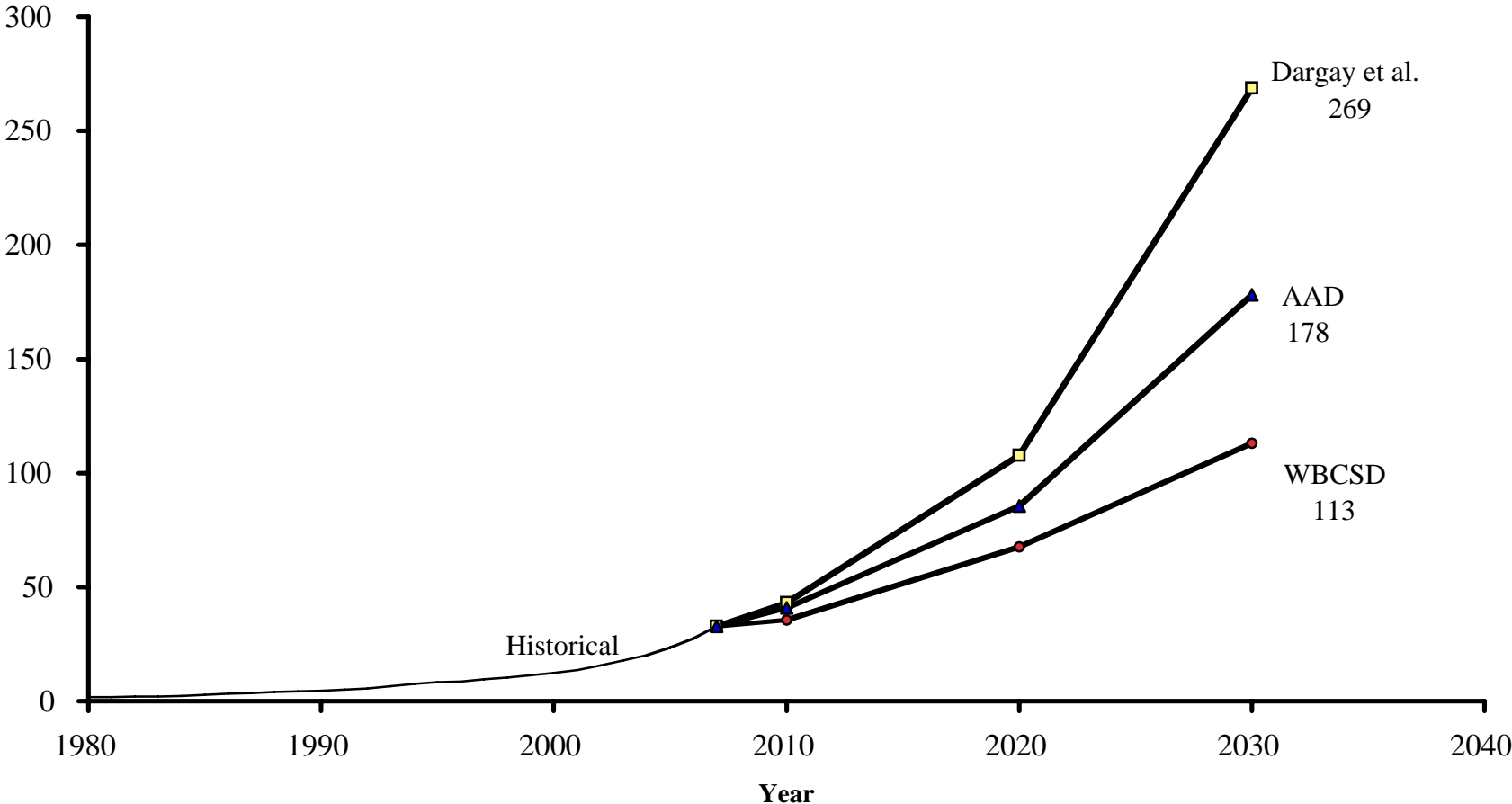
** Employer-owned is the reference category.

Predicted Probability of Car Ownership

Households in AAD-World Bank China Consumer Survey 2005



Vehicles per 1,000 Persons in China: Comparison of Alternative Forecasts



Concluding Comments

- Very rapid motorization expected
- Infrastructure issues
- Manufacturing capabilities issues
- Fuel supply issues