

# Lecture 4 Health Insurance

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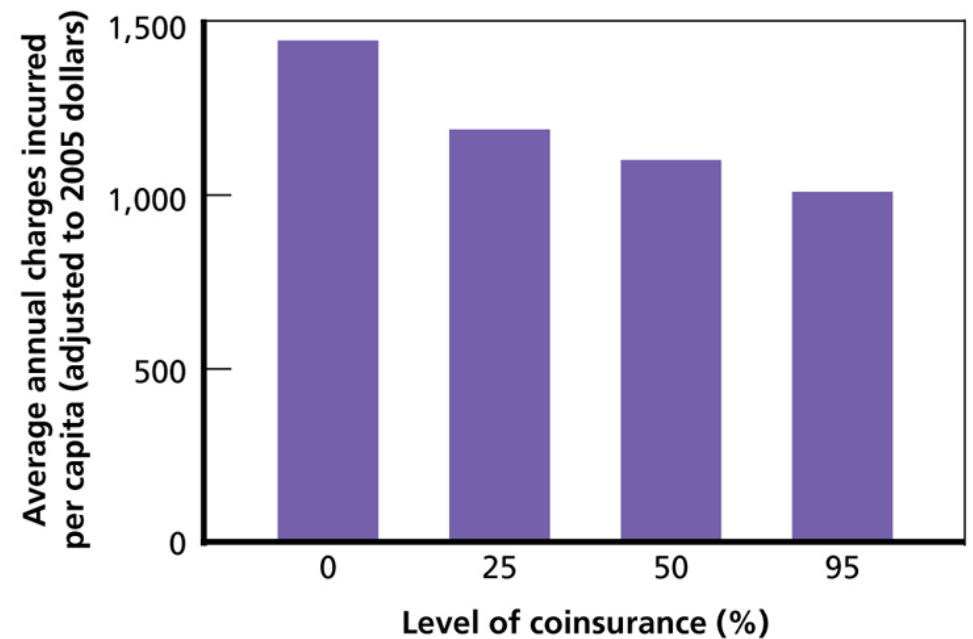


# Two Examples of US Health Insurance Experiments

- RAND Health Insurance Experiment (HIE)
- The Oregon Health Plans

# RAND's Health Insurance Experiment (HIE)

- Randomize all people into the following insurance groups
  - Catastrophic coverage (almost no insurance)
  - Individual deductible plan
  - Coinsurance plans
  - The free plan

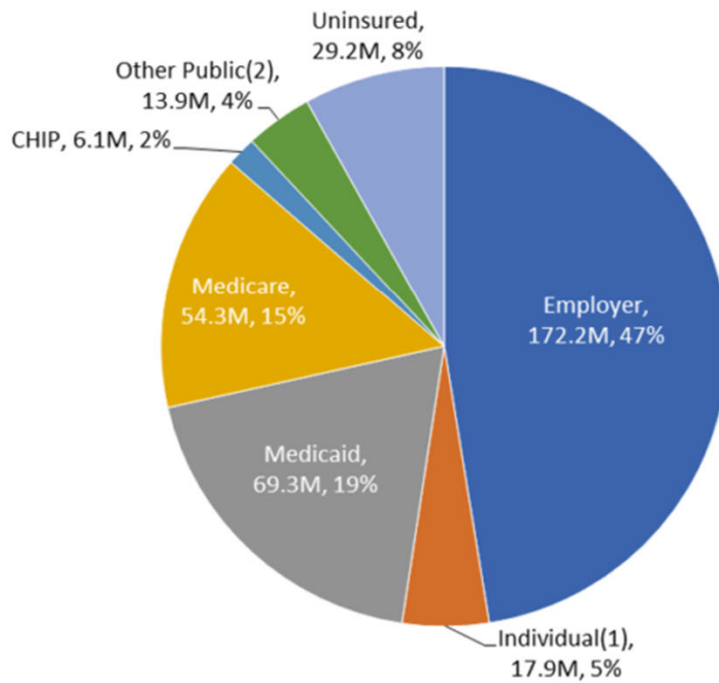


# The Oregon Medicaid health experiment

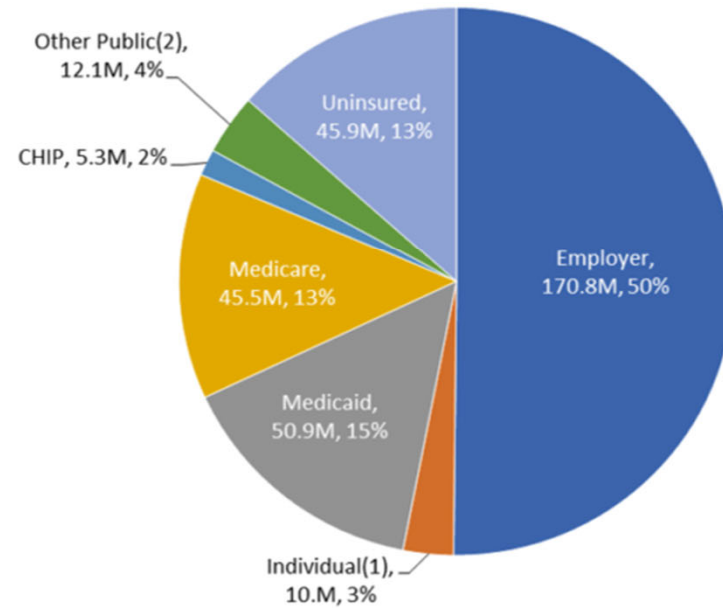
- The state of Oregon recently offered Medicaid to thousands of randomly chosen people in a publicly announced health insurance lottery.
- However, the coverage was not automatic, even for lottery winners.
- Winners have the opportunity to apply for the state-run Oregon Health Plan (OHP).

# Coverage and Payment for Health Insurance in the US (millions/percent of population)

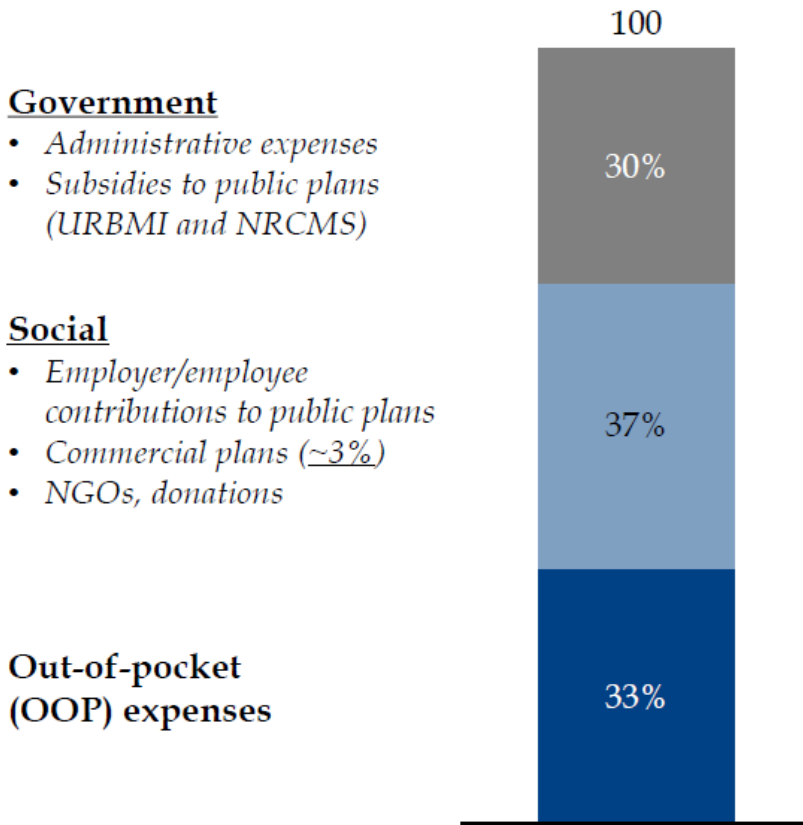
**Health Insurance, U.S. – 2015\***  
(millions/percent of population)



**Health Insurance, U.S. – 2009\***  
(millions/percent of population)



## Sources of healthcare expenditure funding



### Government

- *Administrative expenses*
- *Subsidies to public plans (URBMI and NRCMS)*

### Social

- *Employer/employee contributions to public plans*
- *Commercial plans (~3%)*
- *NGOs, donations*

### Out-of-pocket (OOP) expenses

## Key Public Plans

### UEBMI

- Urban Employee Basic Medical Insurance, a mandatory program for employees of urban state-owned and private enterprises
- Covers ~20% of population
- 75-85% inpatient reimbursement ratio

### URBMI

- Voluntary program for urban residents not eligible for UEBMI (seniors, unemployed, children, students, disabled)
- Covers ~15% of population
- 40-80% inpatient reimbursement ratio

### NRCMS

- Voluntary basic medical insurance for rural residents
- Covers ~60% of population
- 40-80% inpatient reimbursement ratio

# China's three basic social health insurance schemes

Scheme	Launch year	Covered population	Coverage rate in 2015	Pooling level	Premium contribution
Urban employee basic medical insurance	1998	Urban employees and retired	95%	City	Employee and employer
Urban resident basic medical insurance*	2007	Urban non-employed and self employed	95%	City	Individual with government subsidies
Rural new cooperative medical scheme*	2002	Rural people	99%	County	Individual with government subsidies

\*Merged in 2016 to form the urban rural resident basic medical insurance (URBBI).

# China's NCMS expansion and infrastructure development – Insurance Premium

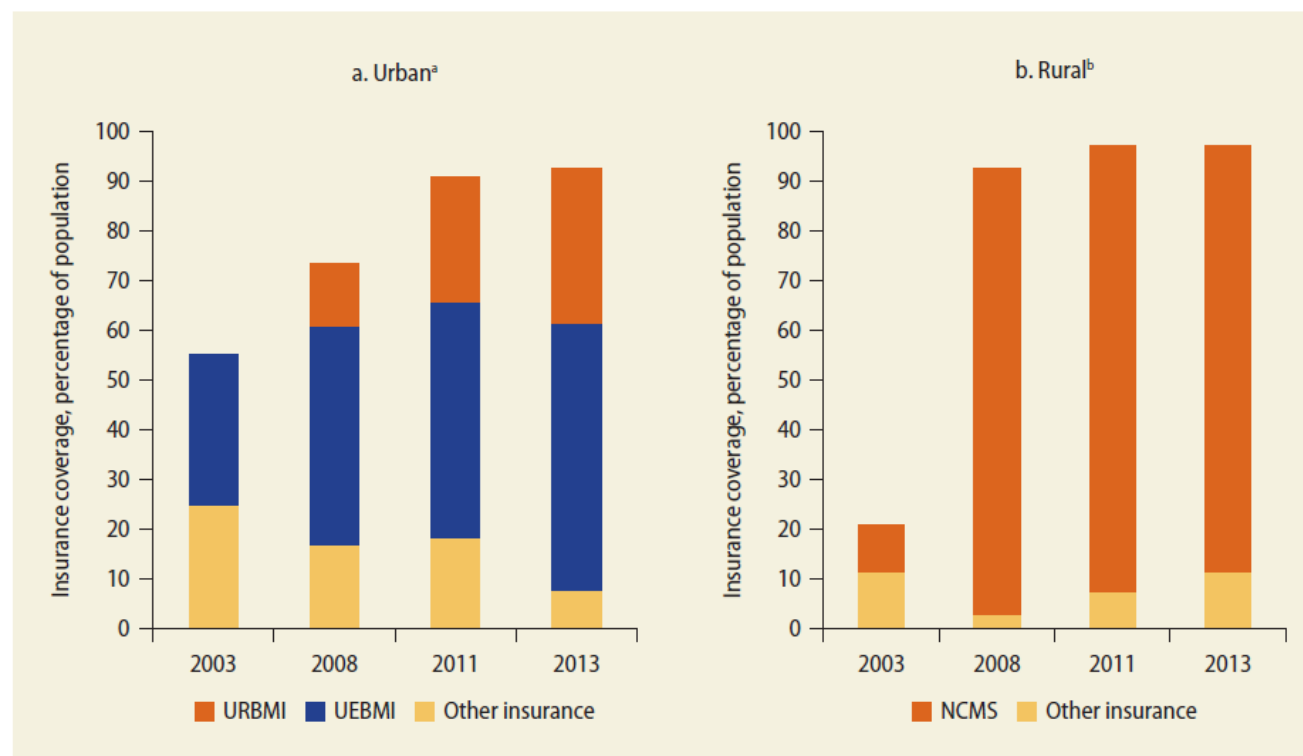
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Government Subsidies		80	120	200	240	280	320	380	420	450	490	520
Individual Contribution		20	30	50	60	70	90	120	150	180	220	250
Total Insurance Premium		100	150	250	300	350	410	500	570	630	710	770
Central Government Subsidies	East			30	49	44	67	45				
	Central			108	142	203	193	277				
	West			123	156	193	225	268				

Sources: 1. Website of (China) National Health Committee; 2. NCMS Information Manuals



# Expansion of Insurance Coverage in China (%)

**FIGURE 1.5** Coverage of social health insurance in China, 2003–13



Sources: Center for Statistics and Information data, National Health and Family Planning Commission; Meng and others 2012.

a. UEBMI = Urban Employee Basic Medical Insurance. URBMI = Urban Resident Basic Medical Insurance.

b. NCMS = New Cooperative Medical Scheme (2003 data include the predecessor to NCMS, the Cooperative Medical Scheme). "Other" insurance comprises the government insurance scheme, the labor insurance scheme, and other commercial and noncommercial schemes.

# Gaps in Healthcare Financing in China

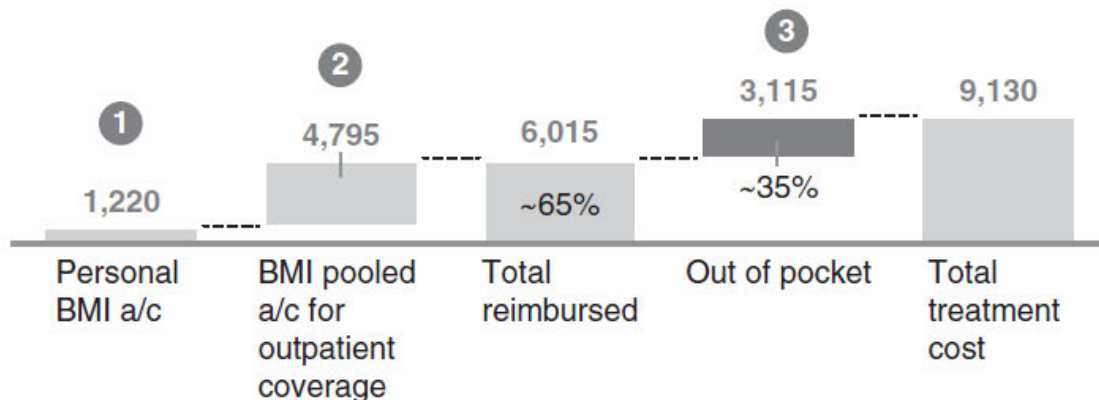
- The Urban Employee Basic Medical Insurance premium was ¥4190 per person, ¥780 per person for the Urban Resident Basic Medical Insurance and ¥660 per person for the New Cooperative Medical Scheme (2018)

Example: Mr Wang, a retired employee under the UEBMI scheme in Shanghai receiving treatment for diabetes in a Class III hospital

■ Reimbursed ■ Out of pocket

- Treatment cost: 9,130 RMB per year, 8,770 RMB of which is covered by prescriptions and treatment under the outpatient reimbursement scheme
- Assume Mr Wang has 1,220 RMB in his personal BMI account<sup>1</sup>

- 1 Payment from personal BMI account: 1,220 RMB  
Remaining 7,550 RMB is the “reimbursable portion”  
Check: 7,550 is >Deductible line (700 RMB for SH) and <Annual cap
- 2 Payment from BMI pooled account = 4,795 RMB based on 70% reimbursement rate for Shanghai<sup>2</sup>
- 3 Out-of-pocket expense = 3,115 RMB



Effective reimbursement rate under different schemes

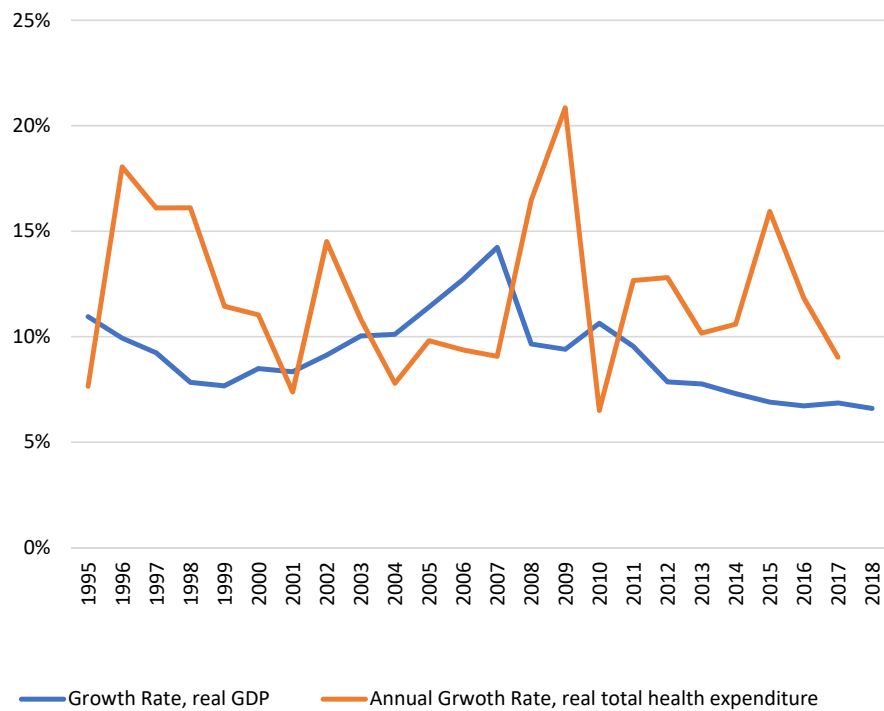
City	UEBMI (staff)	UEBMI (retired)	URBMI	NCMS
Shanghai	60%	65%	12%	7%
Hangzhou	67%	81%	15%	10%
Nantong	31%	37%	6%	2%

**Reimbursement rates vary even at the same location!**

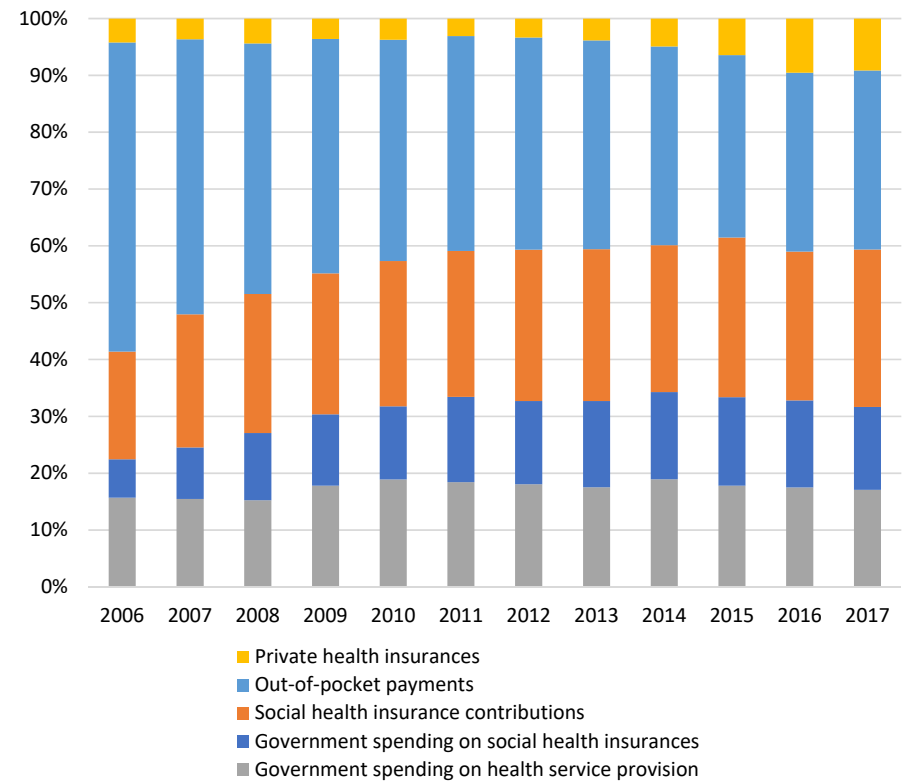
<sup>1</sup> Average fund in a Shanghai resident’s personal BMI account is estimated at 1,217 RMB

<sup>2</sup> (7,550 RMB–700 RMB deductible line) x 70% = 4,795 RMB

# Health Insurance Compositions and Increasing efficiency as strategic Purchasers

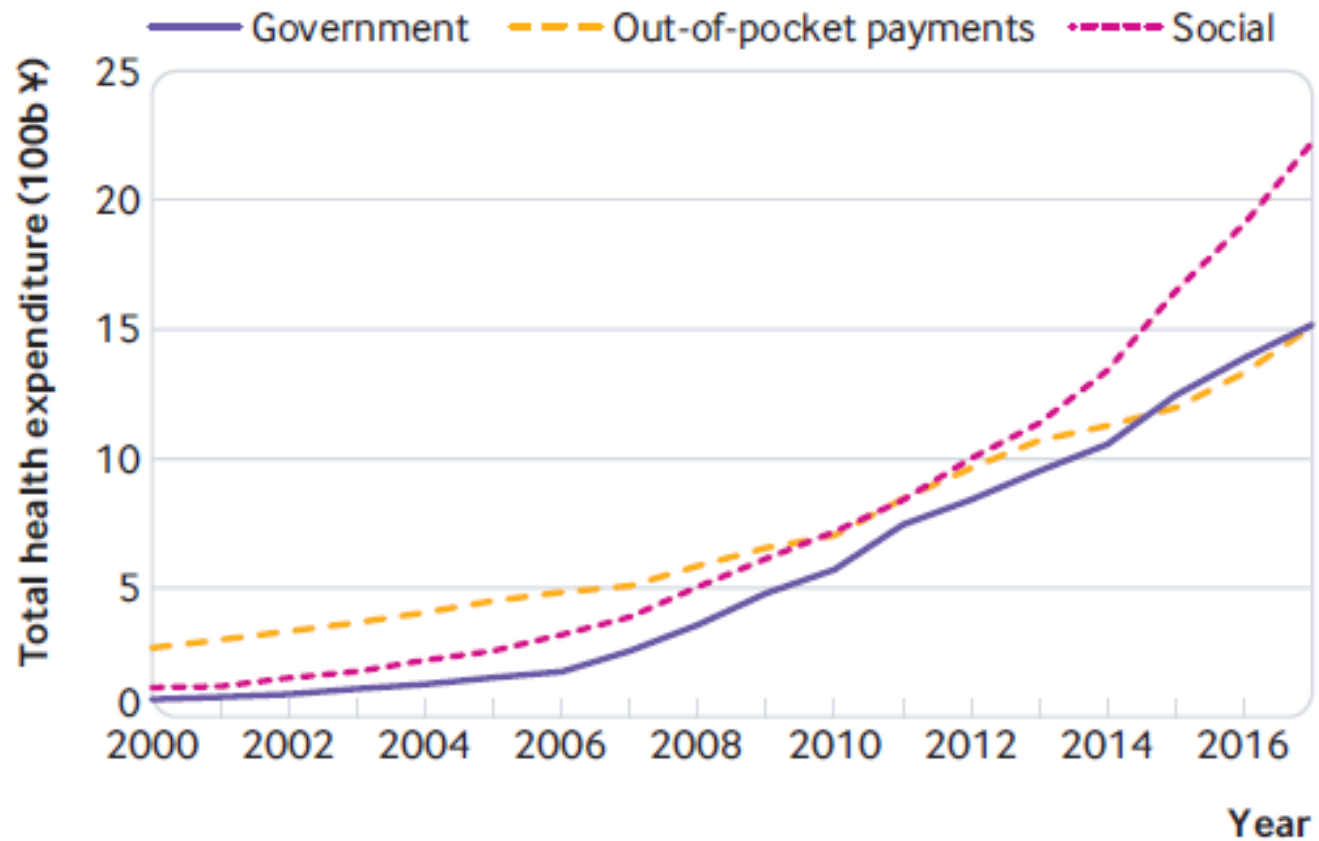


Source: China Health Statistical Yearbook



Source: Government spending on social health insurances is obtained from China Health Statistical Yearbook, other statistics are obtained from China National Health Accounts Report

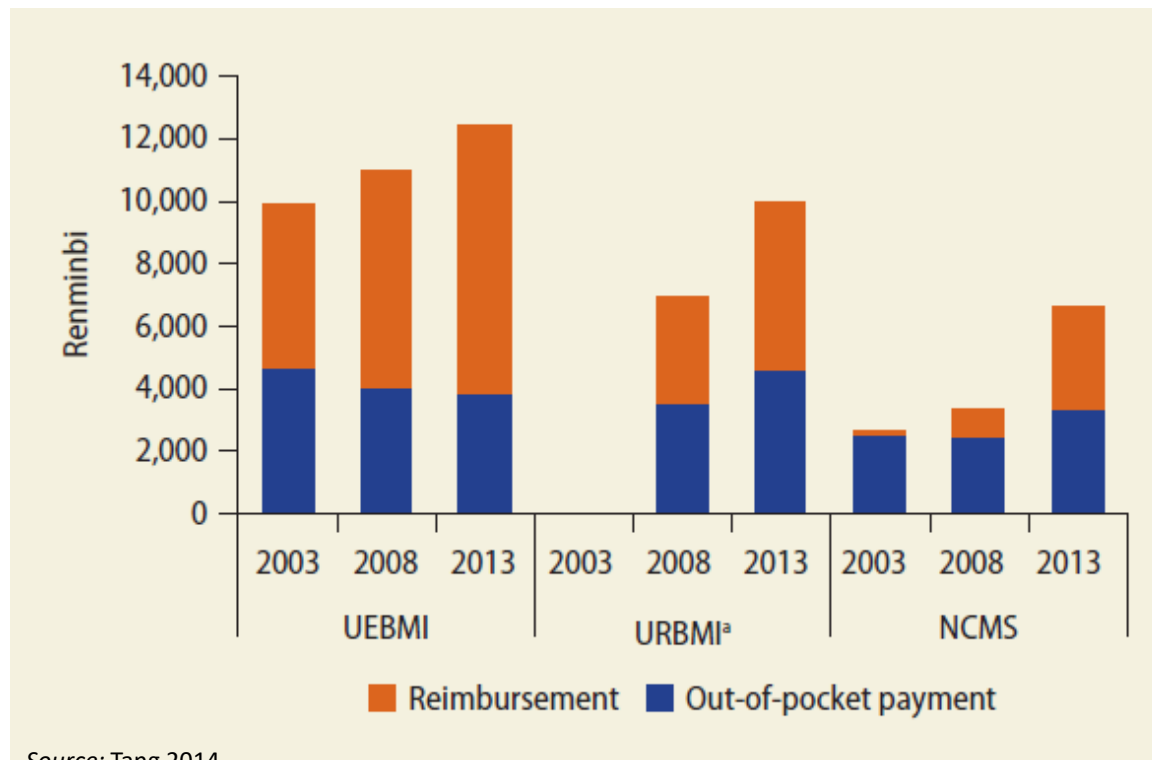
# Social spending replaces other sources in health expenditure, China, 2000-17



# Chinese Central Gov versus subnational Gov Spending on Healthcare

Year	Total	Central Government	Subnational Government	Central Government (%)	Subnational Government (%)
	100 million	100 million	100 million		
2002	908.51	24.68	883.83	2.716	97.284
2003	1,116.94	31.68	1,085.26	2.837	97.163
2004	1,293.58	33.89	1,259.69	2.620	97.380
2005	1,552.53	31.83	1,520.70	2.051	97.949
2006	1,778.86	32.65	1,746.21	1.835	98.165
2007	2,581.58	44.38	2,537.20	1.719	98.281
2008	3,593.94	60.98	3,532.96	1.697	98.303
2009	4,816.26	76.57	4,739.69	1.590	98.410
2010	5,732.49	87.77	5,644.72	1.531	98.469
2011	7,464.18	82.80	7,381.38	1.109	98.891
2012	8,431.98	86.46	8,345.52	1.025	98.975
2013	9,545.81	88.43	9,457.38	0.926	99.074

# Trends in out-of-pocket health care payments in China, by insurance type, 2003–13



Source: Tang 2014.

Note: NCMS = New Cooperative Medical Scheme; UEBMI = Urban Employee Basic Medical Insurance; URBMI = New Urban Resident Basic Medical Insurance.

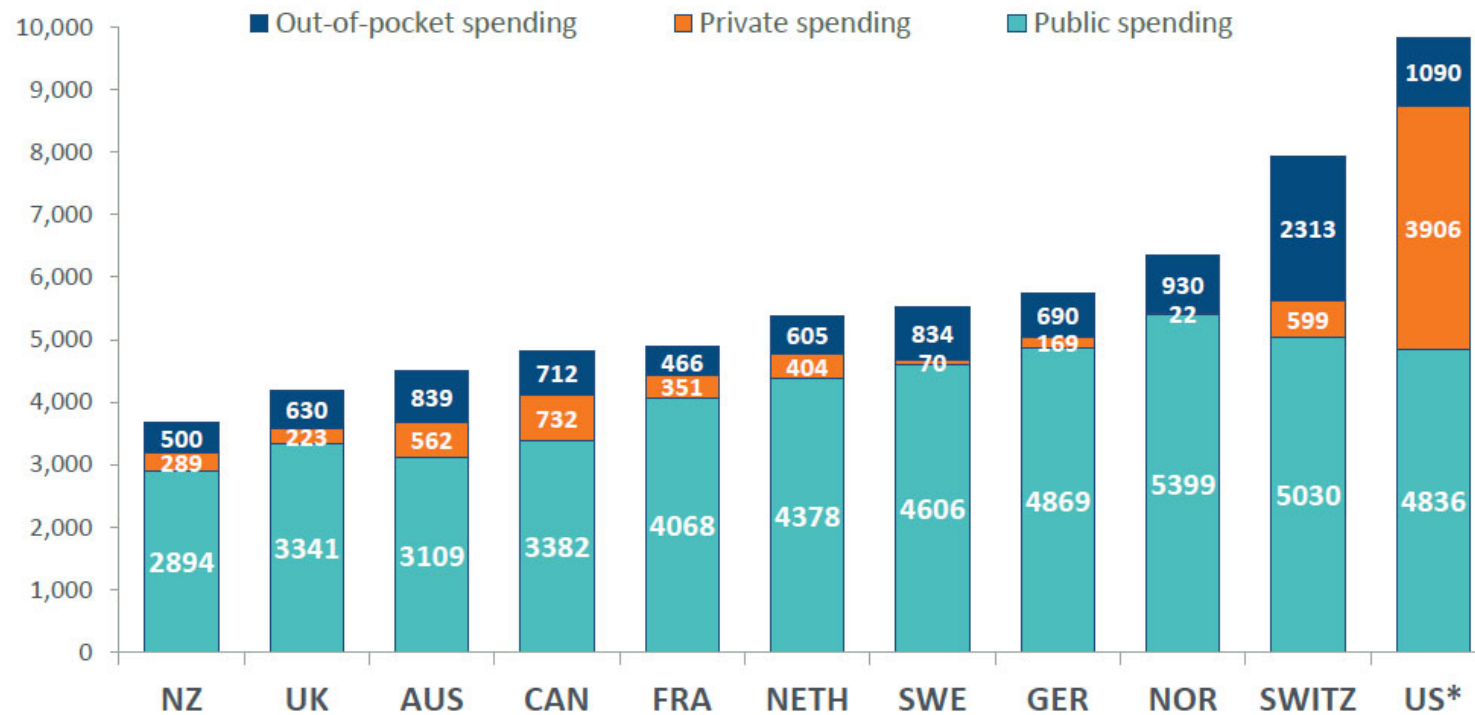
a. No 2003 data are available for URBMI, which was not launched until 2007.

SPENDING & COSTS

# Health Care Spending per Capita by Source of Funding, 2017

*Adjusted for Differences in Cost of Living*

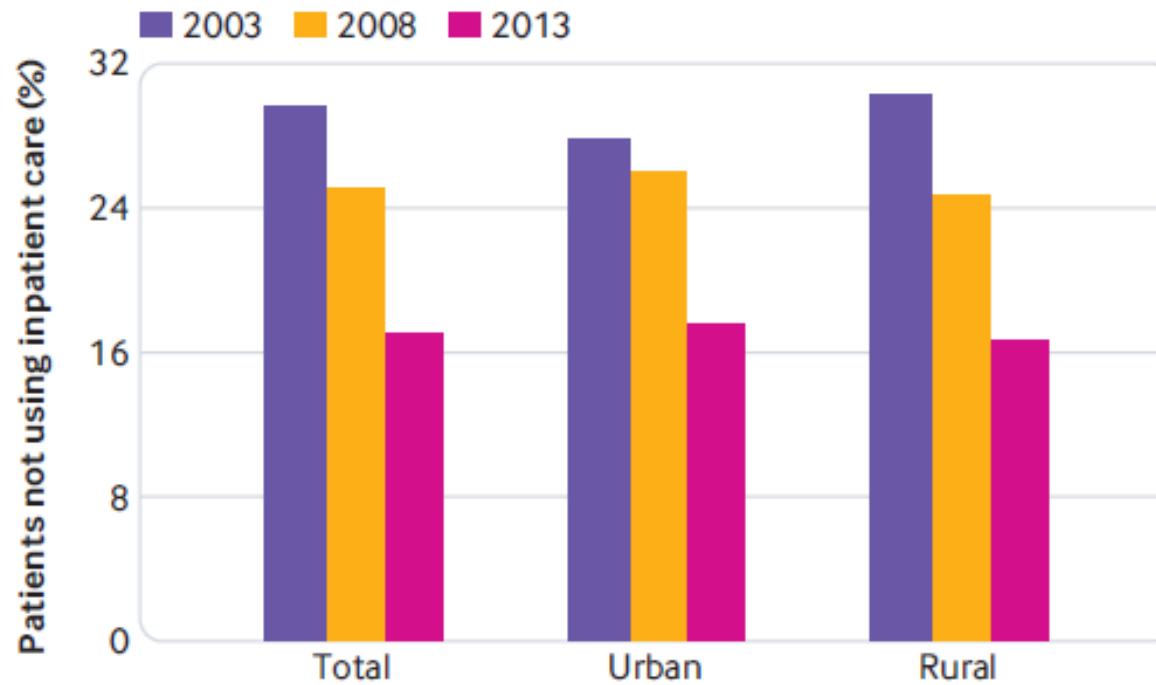
Dollars (\$US)



Data from 2017 or most recent year: 2016 for FRA, SWITZ, UK and the US, and 2015 for AUS. Current expenditures on health, adjusted for US\$ purchasing power parities (PPPs). Numbers may not sum to total health care spending per capita due to excluding capital formation of health care providers, and some uncategorized health care spending.  
 \*NOTE: For the US, spending in the 'Compulsory private insurance schemes' (HF122) category has been reclassified into the 'Voluntary health insurance schemes' (HF21) category, given that the individual mandate will end starting in 2019.  
 Source: OECD Health Data 2018.



# Percentage of patients who did not use inpatient care when needed, China



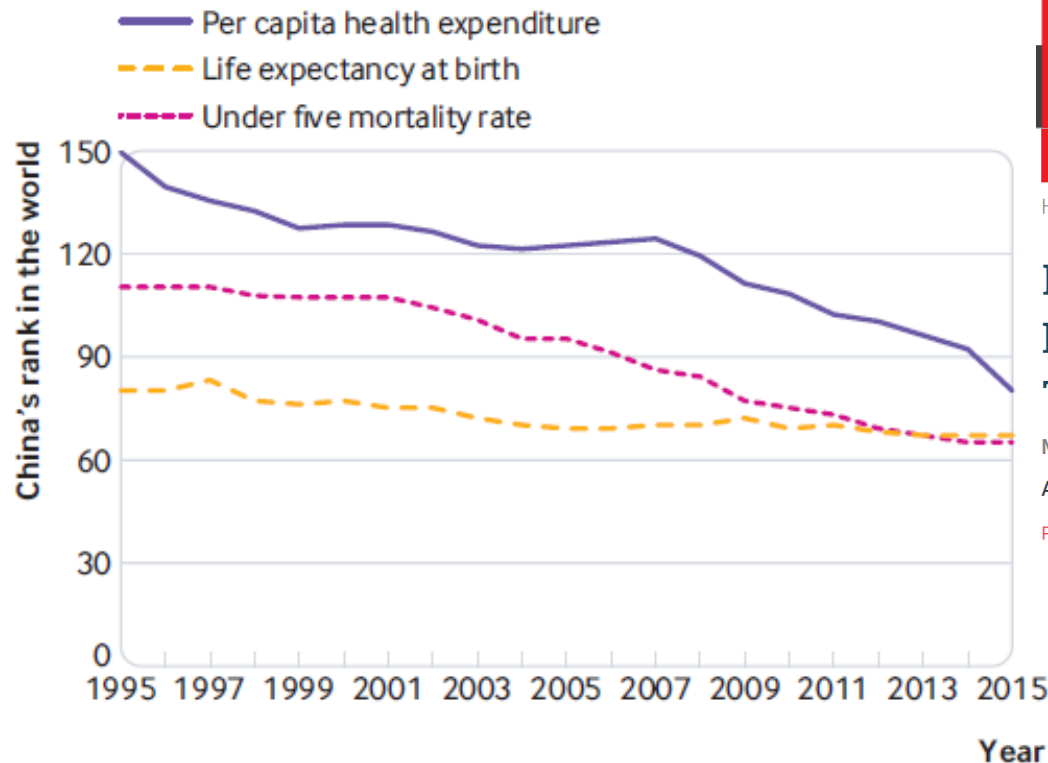
# Incidence of catastrophic health expenses between 2010 and 2016 in China

Catastrophic health spending is an indicator of financial protection, defined as health spending that exceeds a predefined percentage or threshold of a household's ability to pay for health care. However, ability to pay can be interpreted in different ways, leading to measurement differences.

	2010	2012	2014	2016	Difference between 2016 and 2010	p value
<b>The proportion of households with catastrophic health expenditure<sup>§</sup></b>						
All	13.58%	11.98%	11.43%	11.06%	-2.52%	<0.01
Urban	11.15%	10.61%	9.25%	8.94%	-2.21%	<0.01
Rural	15.90%	13.42%	13.99%	14.01%	-1.89%	<0.01
Group by household Income						
First quartile (0-25%)	22.17%	16.71%	17.32%	17.49%	-4.68%	<0.01
Second quartile (26-50%)	13.55%	12.29%	12.23%	11.69%	-1.86%	<0.01
Third quartile (51-75%)	9.78%	10.11%	8.73%	8.95%	-0.83%	0.339
Fourth quartile (76-100%)	9.06%	9.16%	7.34%	6.95%	-2.11%	<0.05
<b>The proportion of households with catastrophic health expenditure<sup>¶</sup></b>						
All	31.45%	29.27%	27.99%	27.28%	-4.17%	<0.01
Urban	29.09%	27.01%	23.80%	24.89%	-4.20%	<0.01
Rural	33.71%	31.68%	32.99%	30.87%	-2.84%	<0.01
Group by household Income						
First quartile (0-25%)	41.58%	33.81%	36.55%	35.85%	-5.73%	<0.01
Second quartile (26-50%)	32.33%	31.03%	31.18%	29.43%	-2.90%	<0.05
Third quartile (51-75%)	27.04%	27.31%	24.76%	23.91%	-3.13%	<0.05
The richest quartile (76-100%)	25.03%	24.22%	19.01%	21.14%	-3.89%	<0.01

CFPS=China family panel studies.\*In 2016, the household income per capita for the first quartile was ¥2216, second quartile was ¥7725, third quartile was ¥15756, and fourth quartile was ¥42909. †CFPS does not ask respondents to recall inpatient expenditure for every admission. Instead, CFPS asks respondents to recall total inpatient expenditures in the last year. ‡The percentage of households in which out-of-pocket payments for health care was 40% or more of households' total consumption expenditure net of food. §The percentage of households in which out-of-pocket payments for health care was 25% or more of households' total consumption expenditure net of food. ¶The percentage of households in which out-of-pocket payments for health care was 10% or more of households' total consumption expenditure net of food.

# China's world ranking for per capita health expenditure, mortality among children 5 years, and life expectancy at birth, 1995-15



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HEALTH AFFAIRS > VOL. 36, NO. 9: MARKET CONCENTRATION

## Mortality In Rural China Declined As Health Insurance Coverage Increased, But No Evidence The Two Are Linked

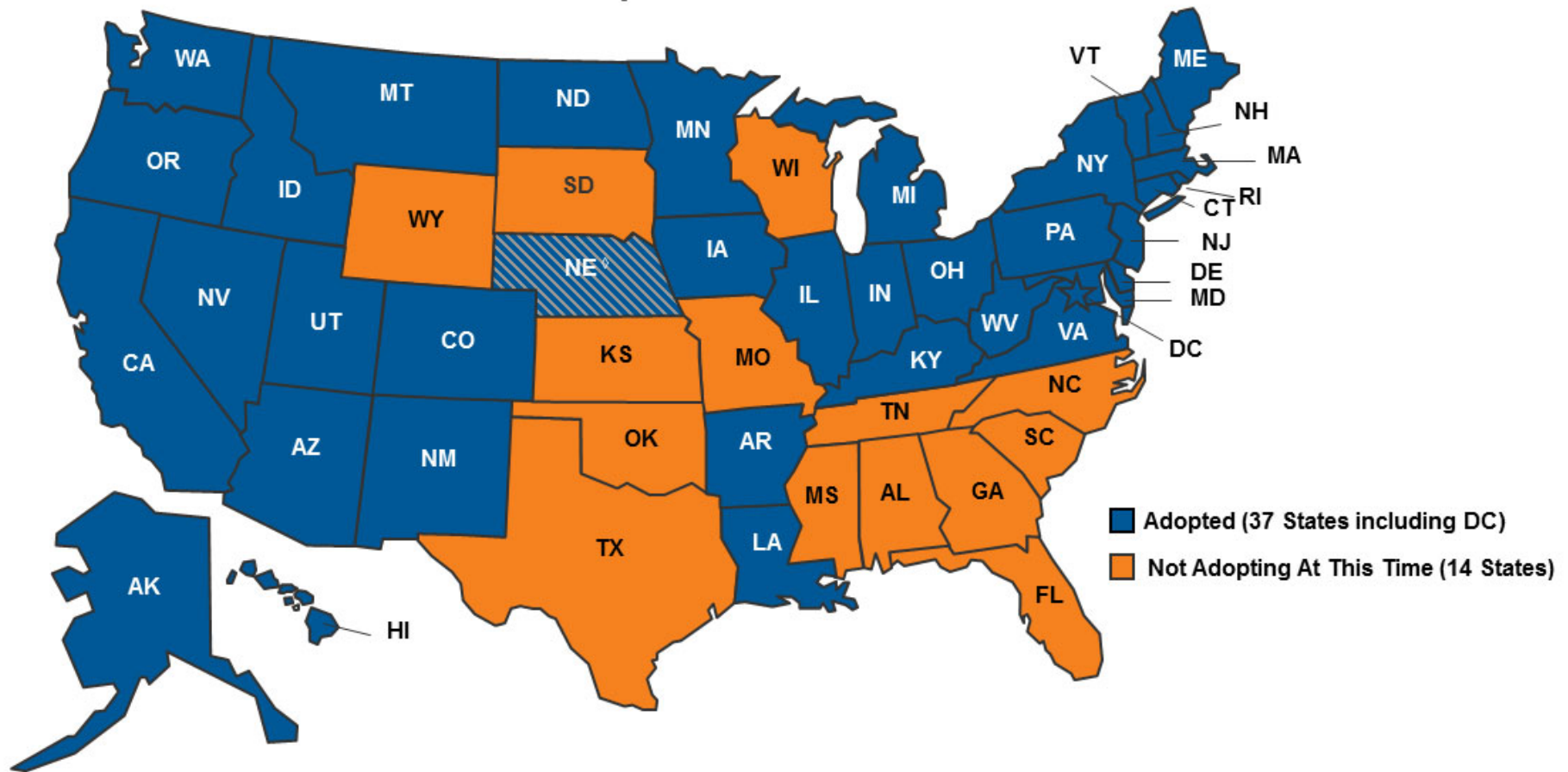
Maigeng Zhou, Shiwei Liu, M. Kate Bundorf, Karen Eggleston, and Sen Zhou

AFFILIATIONS ▾

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<https://doi.org/10.1377/hlthaff.2017.0135>

# Status of State Medicaid Expansion Decisions



NOTES: Current status for each state is based on KFF tracking and analysis of state activity. <sup>o</sup>Expansion is adopted but not yet implemented in NE. (See link below for additional state-specific notes).

SOURCE: "Status of State Action on the Medicaid Expansion Decision," KFF State Health Facts, updated January 10, 2020. <https://www.kff.org/health-reform/state-indicator/state-activity-around-expanding-medicaid-under-the-affordable-care-act/>

# Medicaid Expansion

- Card, David, and Lara D. Shore-Sheppard. 2004. “Using Discontinuous Eligibility Rules to Identify the Effects of the Federal Medicaid Expansions on Low-Income Children.” *Review of Economics and Statistics*, 86(3): 752–66.

This paper exploits the discrete nature of the eligibility criteria for two major federal expansions of Medicaid to measure the effects on Medicaid coverage, overall health insurance coverage, and the probability of visiting a doctor. The '100 percent' expansion, effective in 1991, extended Medicaid eligibility to children born after September 30, 1983 in families below the poverty line. We estimate that this law led to about a 10 percentage point rise in Medicaid coverage for children born just after the cutoff date, and a similar or slightly smaller rise in overall health insurance. It also increased the fraction of children in the newly eligible group with a doctor visit in the previous year. The '133 percent' expansion, effective in 1990, extended Medicaid to children under 6 in families with incomes below 133 percent of the poverty line. This law had relatively small effects on Medicaid coverage for children near the eligibility limits, and little or no effect on health insurance coverage.

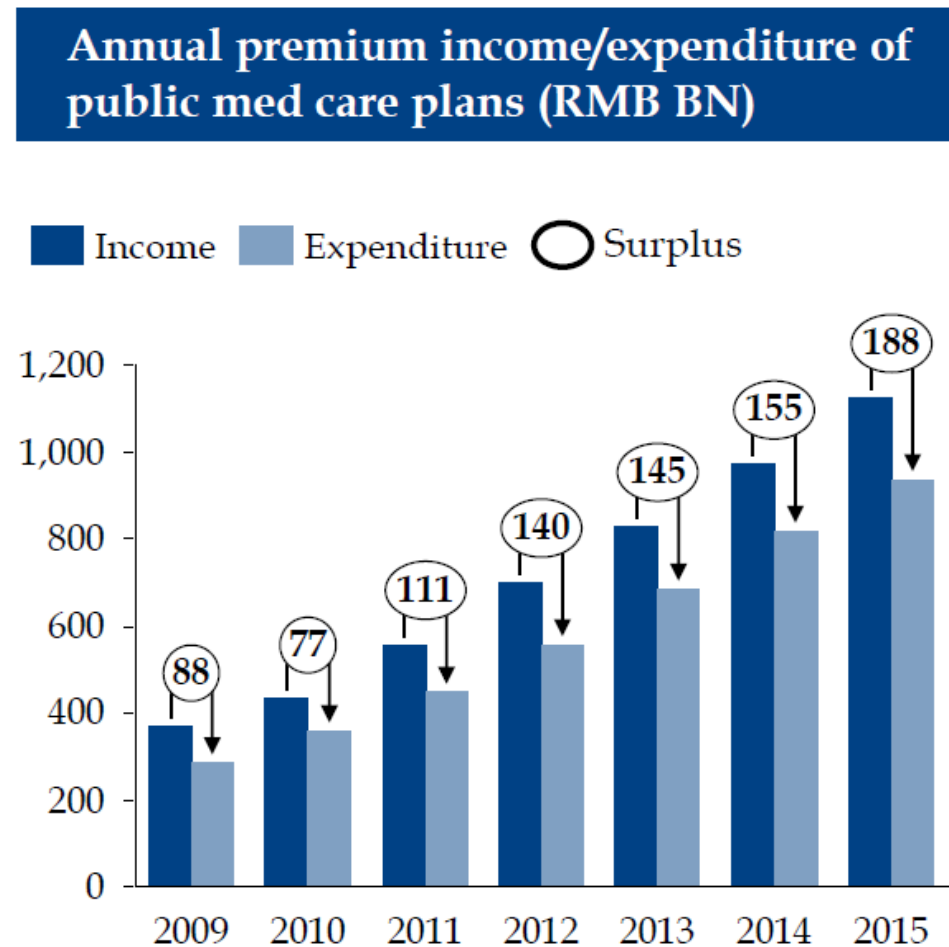
# Medicare Eligibility

- Card, David, Carlos Dobkin, and Nicole Maestas. 2009. "Does Medicare Save Lives?" *Quarterly Journal of Economics*, 124(2): 597–636.

The health insurance characteristics of the population changes sharply at age 65 as most people become eligible for Medicare. But do these changes matter for health? We address this question using data on over 400,000 hospital admissions for people who are admitted through the emergency room for "non-deferrable" conditions -- diagnoses with the same daily admission rates on weekends and weekdays. Among this subset of patients there is no discernible rise in the number of admissions at age 65, suggesting that the severity of illness is similar for patients on either side of the Medicare threshold. The insurance characteristics of the two groups are much different, however, with a large jump at 65 in the fraction who have Medicare as their primary insurer, and a reduction in the fraction with no coverage. These changes are associated with significant increases in hospital list chargers, in the number of procedures performed in hospital, and in the rate that patients are transferred to other care units in the hospital. **We estimate a nearly 1 percentage point drop in 7-day mortality for patients at age 65, implying that Medicare eligibility reduces the death rate of this severely ill patient group by 20 percent.** The mortality gap persists for at least two years following the initial hospital admission.

# Aging and increasing reimbursement pressure in China

- At the national level, public plans are still at surplus position, but is facing increasing balancing pressure giving demographic shift

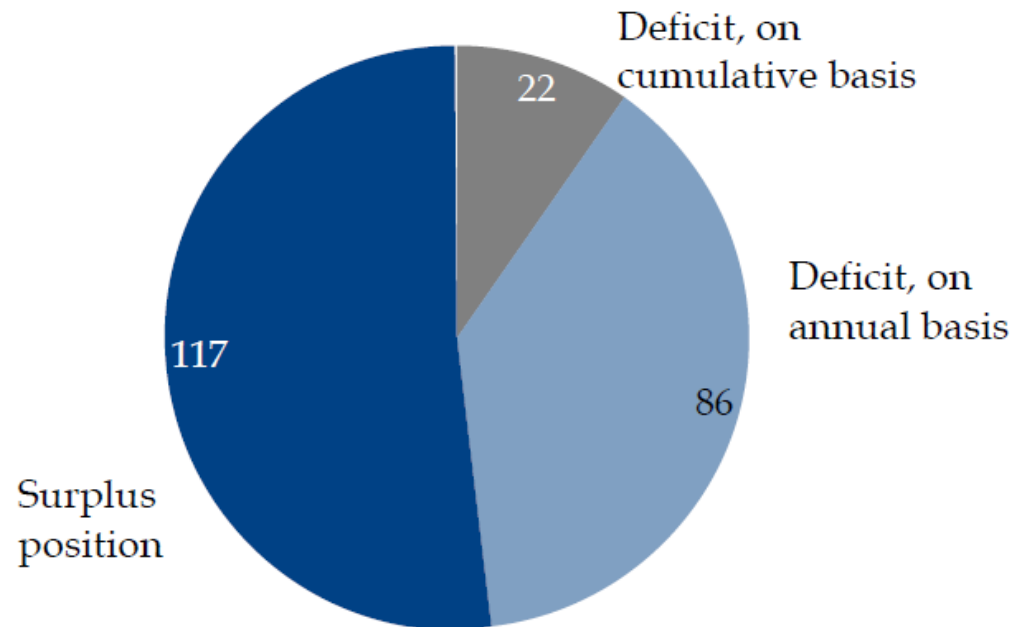


# Aging and increasing reimbursement pressure in China

- BUT at the municipality level, almost half of the cities are already in deficit position (mostly in less developed mid-west regions)

## Med care plans' surplus/deficit position by city

225 municipalities in total





Questions? Comments?