

Spatial Structure of Public Service Distribution in Shanghai

Prof. WANG Yu

School of International & Public Affairs, Shang Jiaotong University

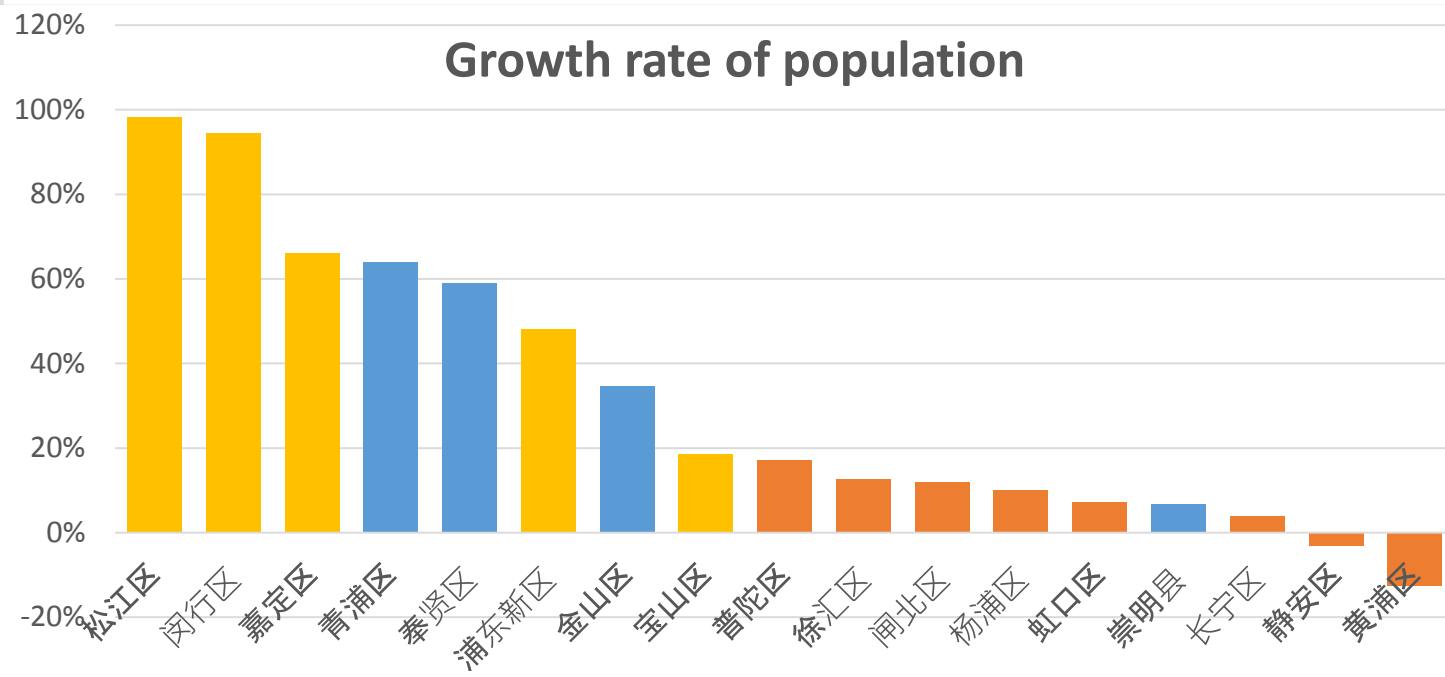
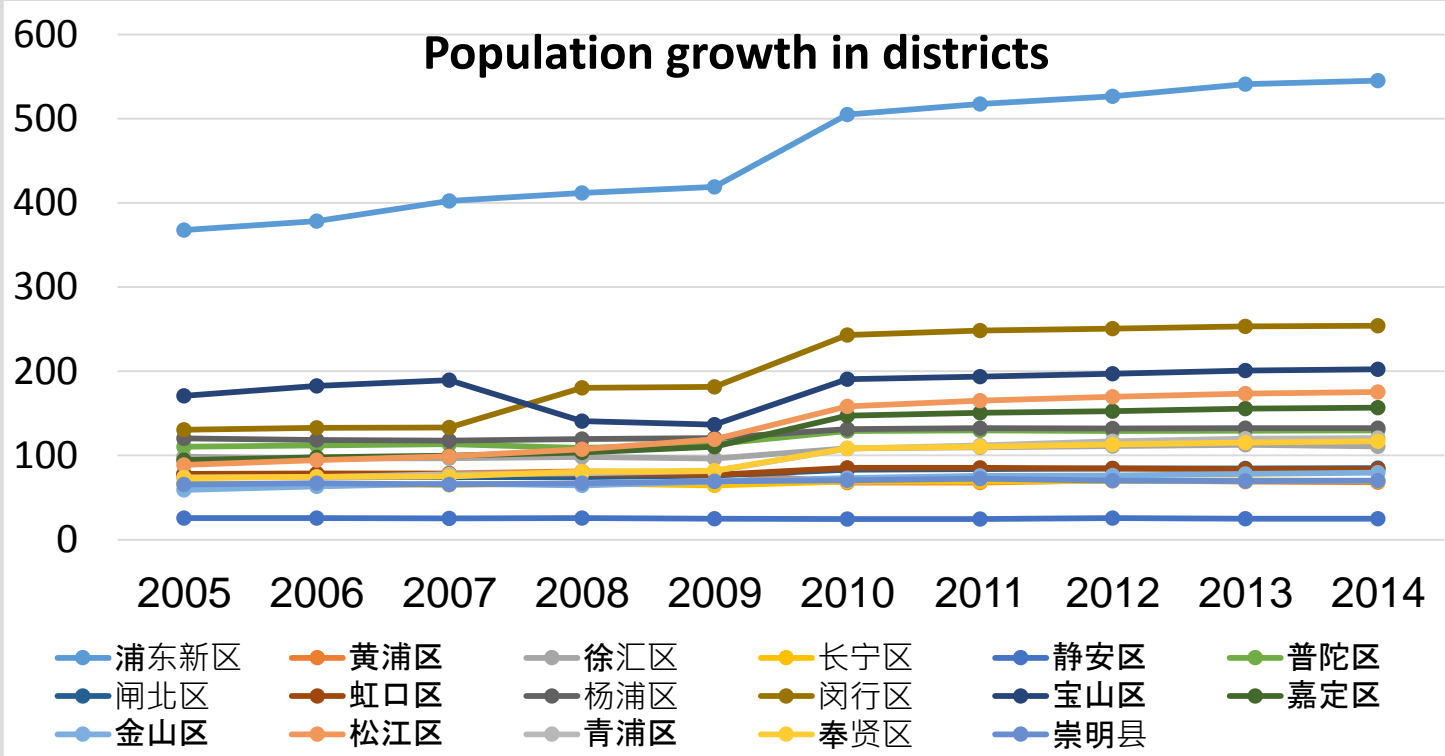
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Background

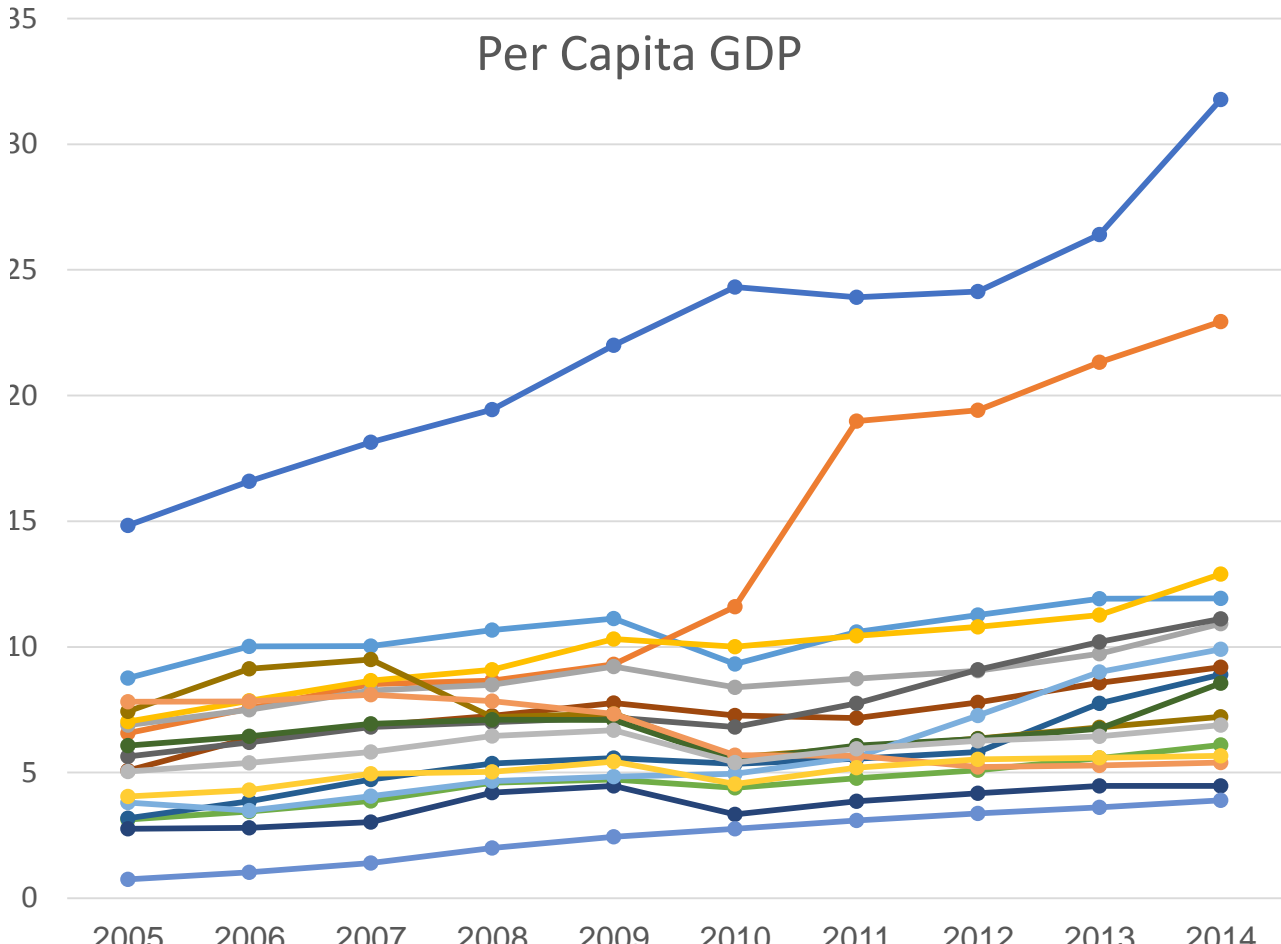
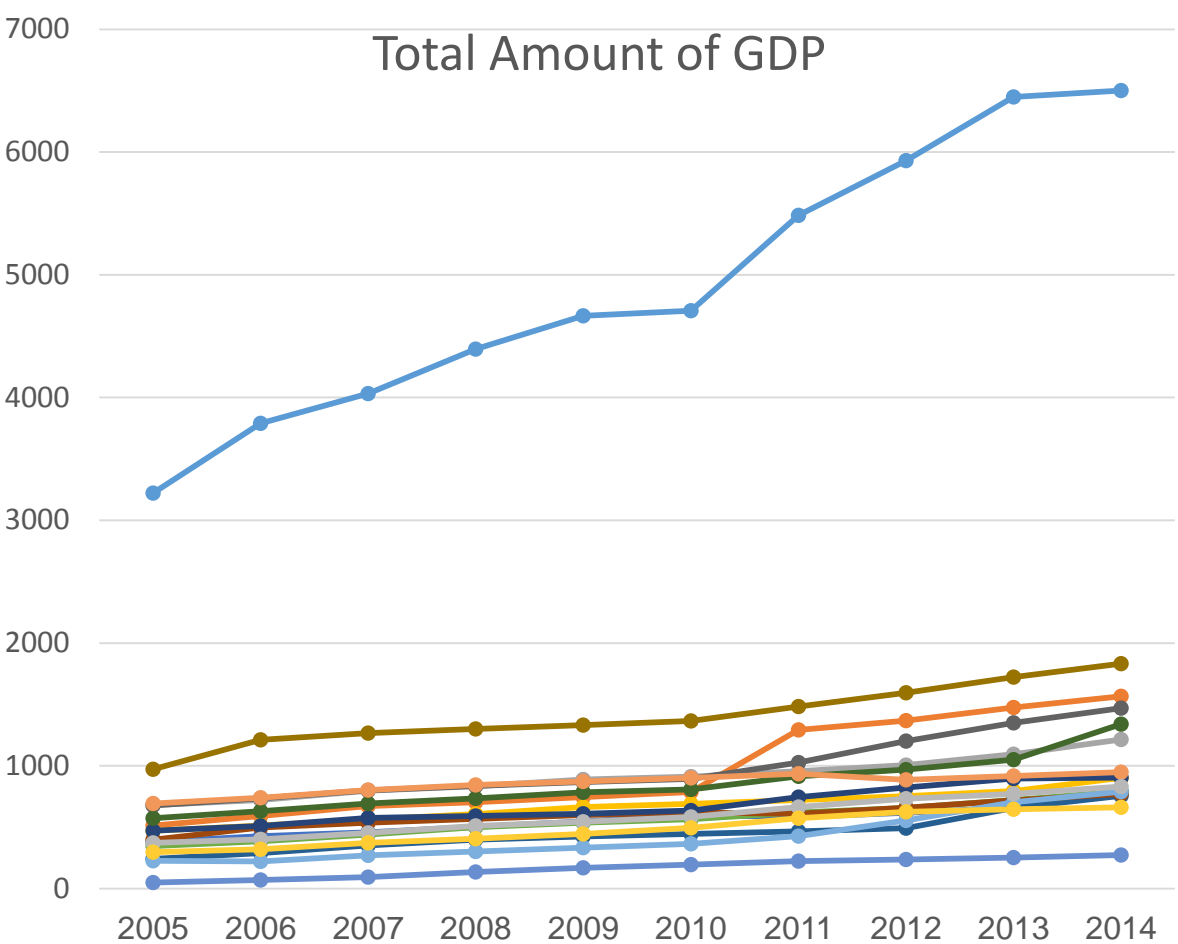
- Rapid growth of metro city Shanghai
 - Structural transformation and suburbanization
- Effective supply of public service
 - Balance between supply and demand
 - Difference between social groups
 - Spatial difference
 - Balance between cost and benefit
- Spatial Characters of public service distribution
 - Social economic growth: population, GDP...
 - Spatial difference of public investment
 - Planning policies: Urban renewal, special development zones, new town development.

上海



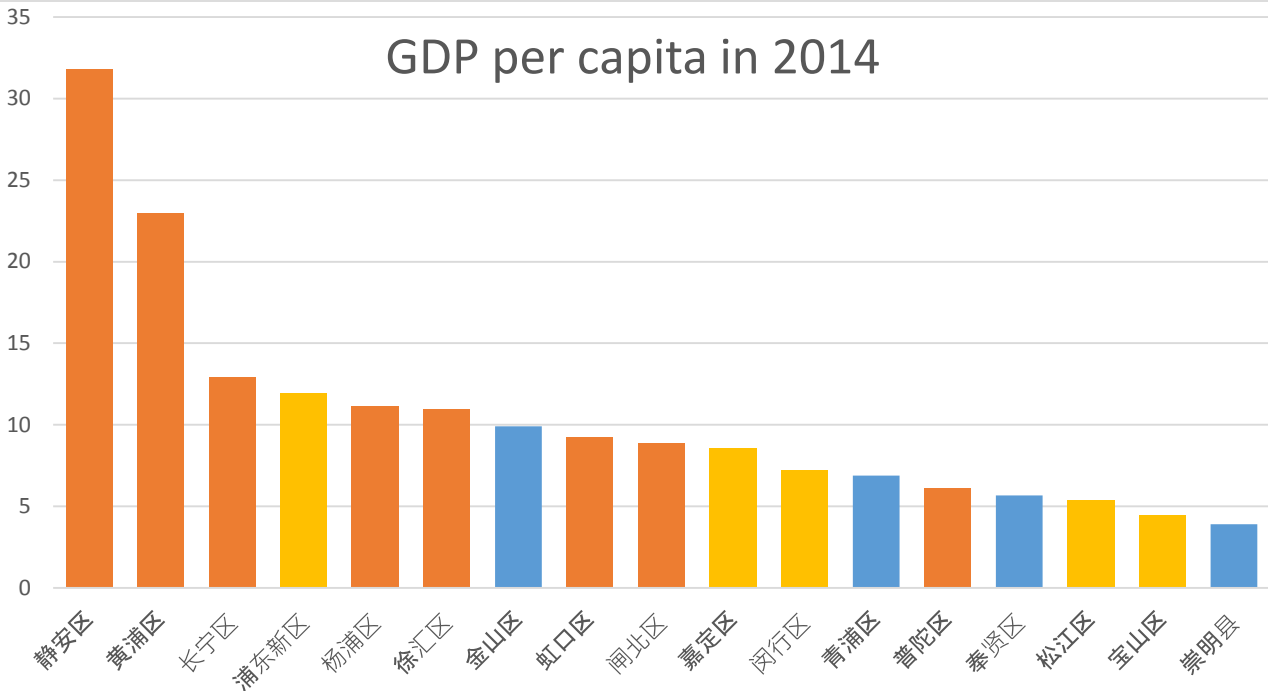


- Highest growth in suburb districts and remote areas
- Lowest growth in central areas
- Population decrease in downtown area



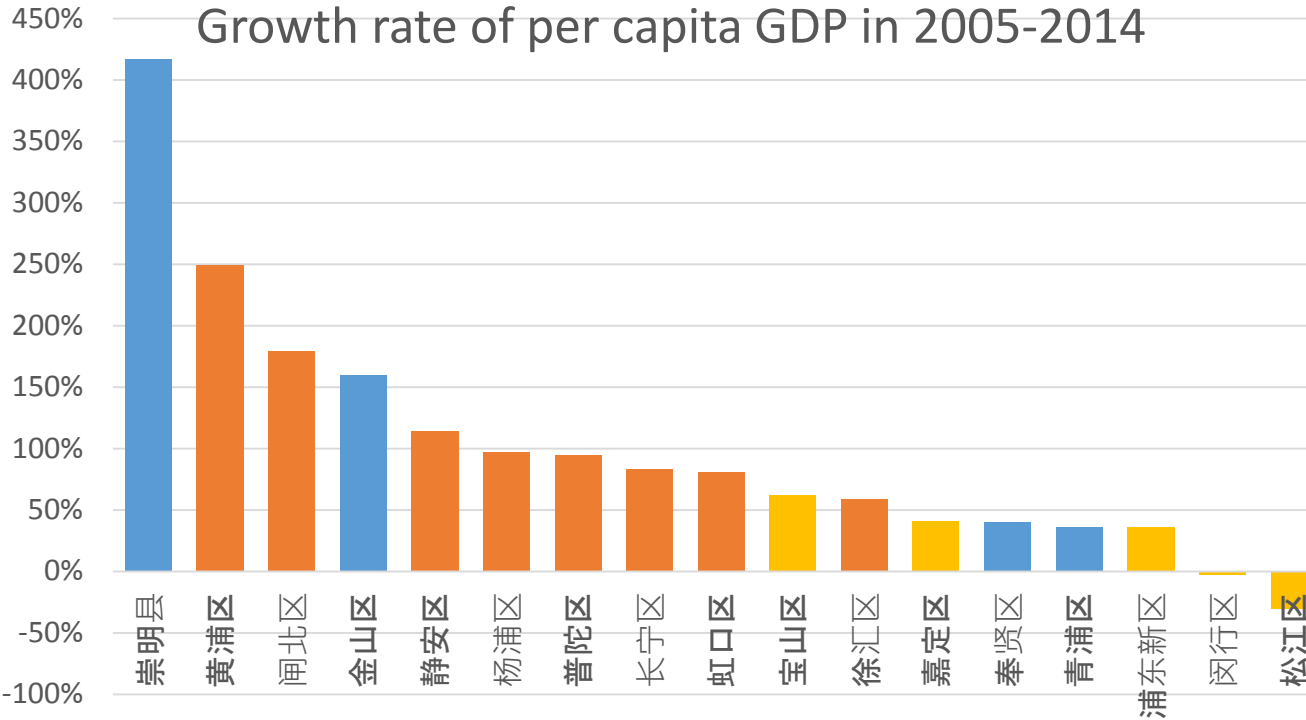
- Higher per capita GDP in central districts and Pudong, Jinshan
- Lowest PCG in Chongming and Baoshan

GDP per capita in 2014



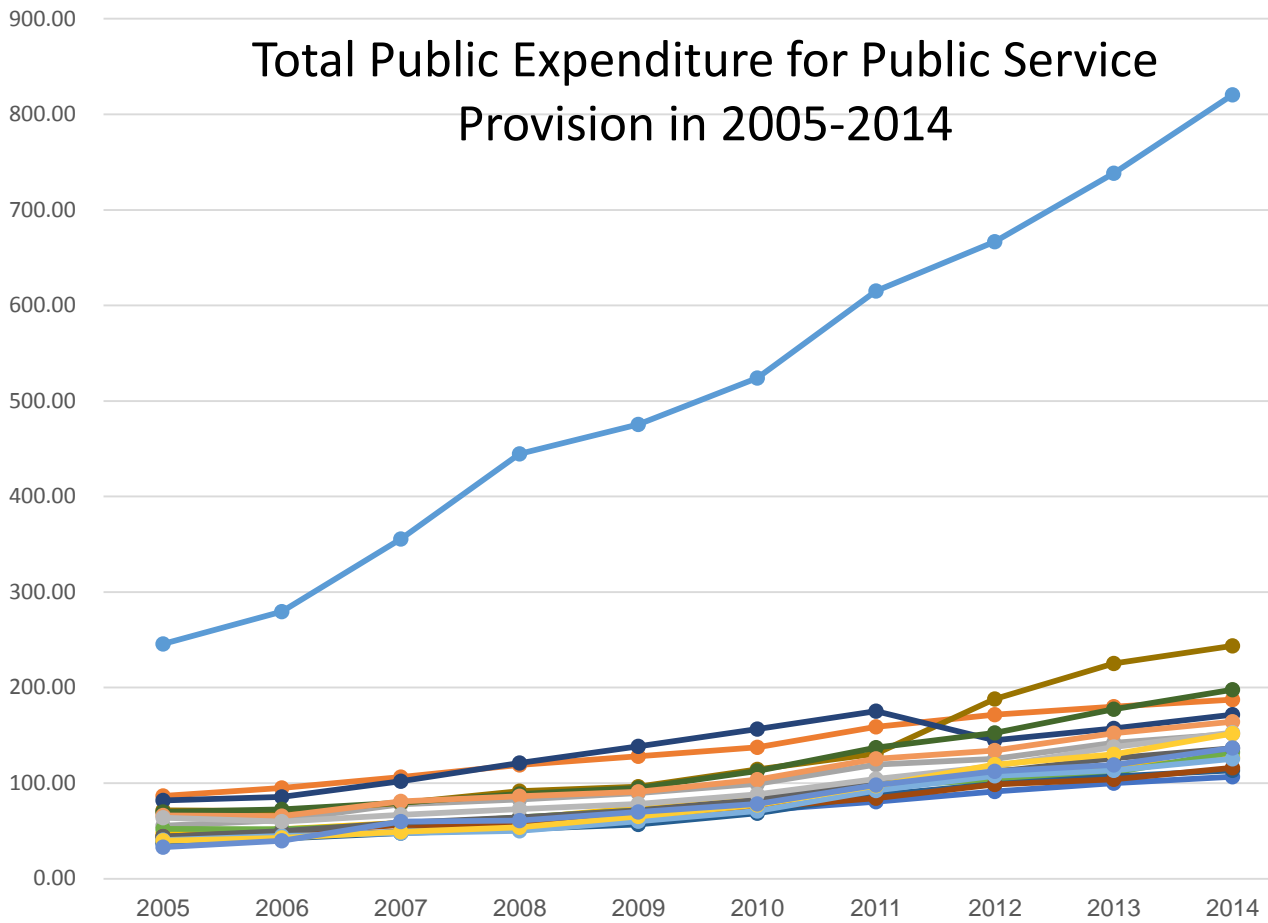
- Highest in central districts and Pudong, Jinshan, Lowest in Chongming and Baoshan
- Most central districts is higher than suburb districts
- Highest district in Jingan is ten times of lowest district Chongming.

Growth rate of per capita GDP in 2005-2014

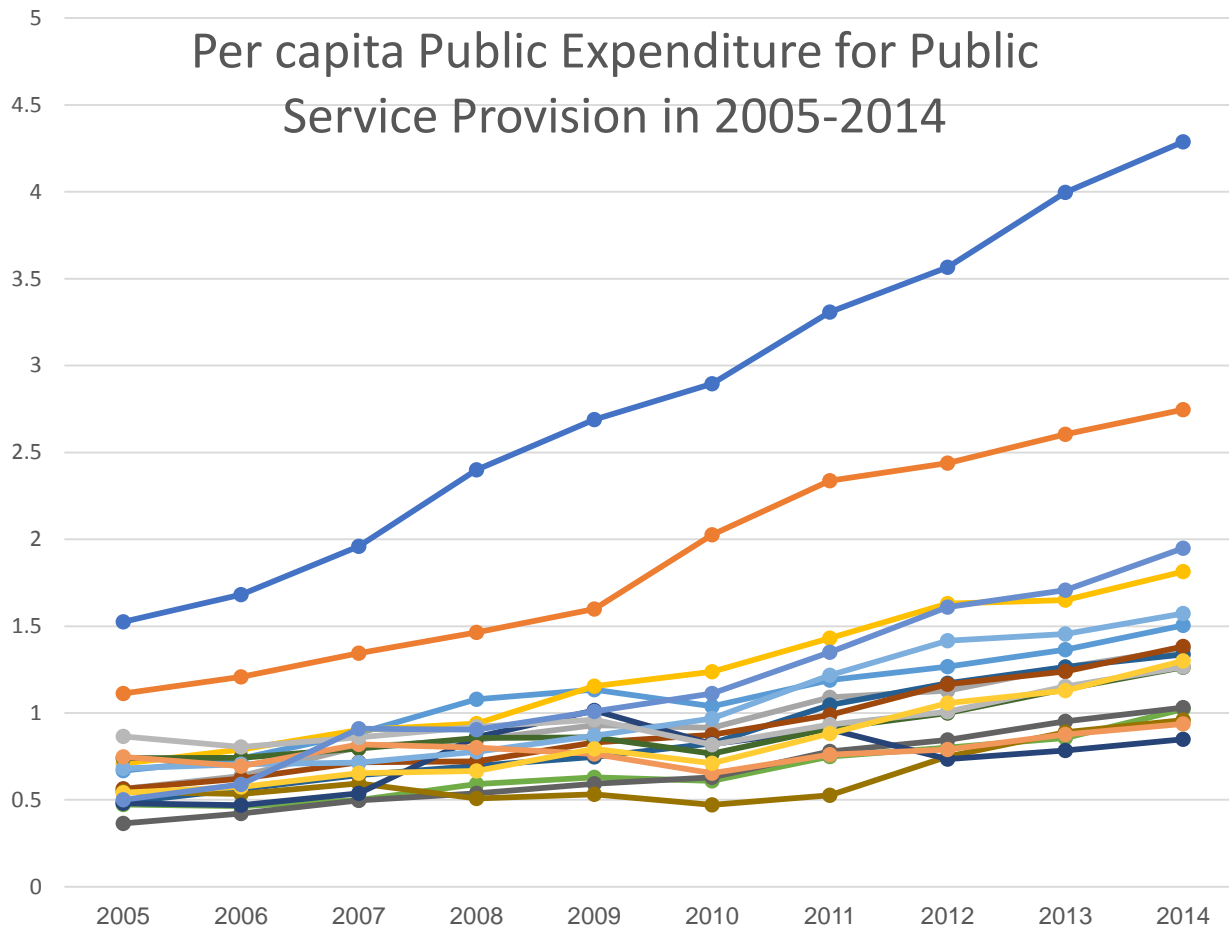


- Highest growth rate in remote districts Chongming and Jinshan
- Growth rate is comparatively higher in central districts
- Suburb districts is growing slowly

Total Public Expenditure for Public Service Provision in 2005-2014



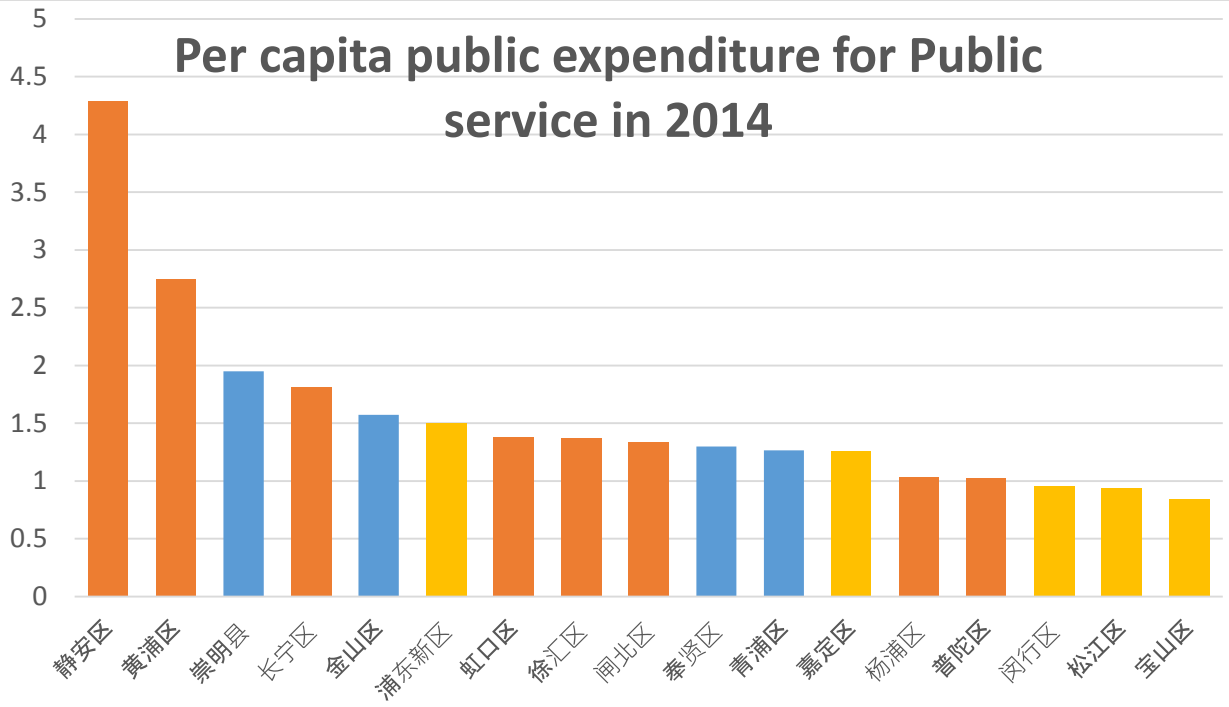
Per capita Public Expenditure for Public Service Provision in 2005-2014



- 浦东新区
- 黄浦区
- 徐汇区
- 长宁区
- 静安区
- 普陀区
- 嘉定区
- 闸北区
- 虹口区
- 杨浦区
- 宝山区
- 闵行区
- 青浦区
- 奉贤区
- 崇明县

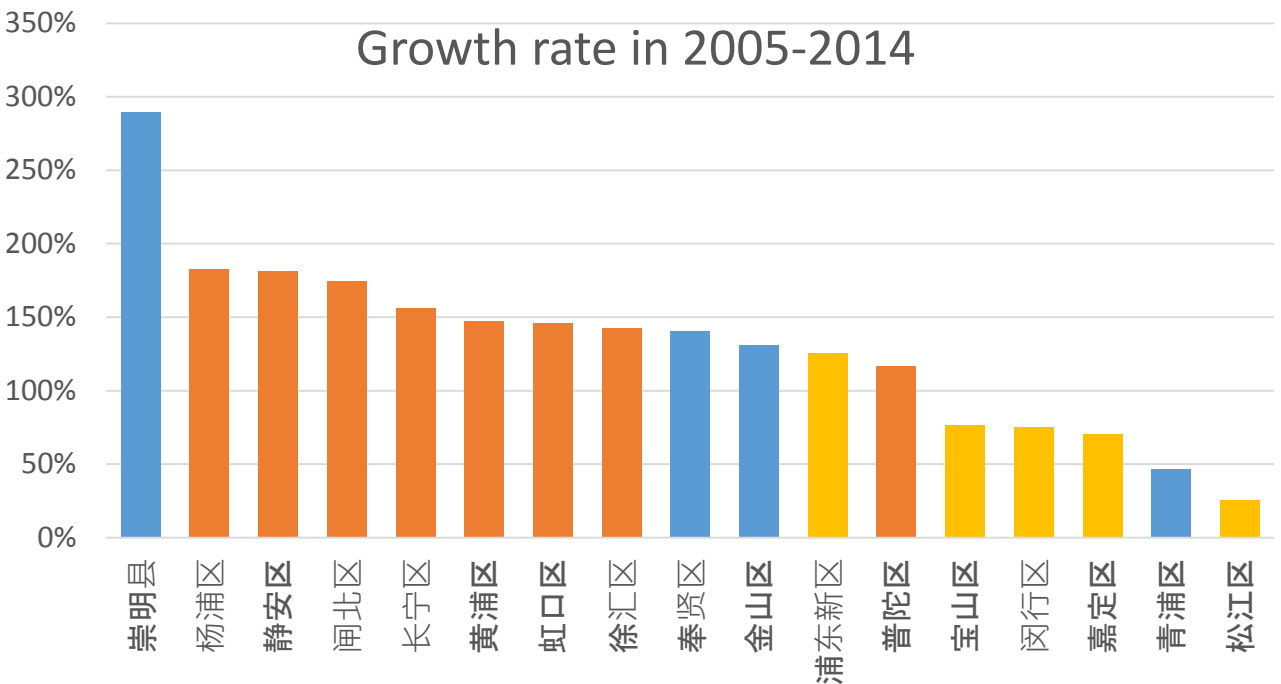
- 浦东新区
- 黄浦区
- 徐汇区
- 长宁区
- 静安区
- 普陀区
- 嘉定区
- 闸北区
- 虹口区
- 杨浦区
- 宝山区
- 闵行区
- 青浦区
- 奉贤区
- 崇明县

Per capita public expenditure for Public service in 2014



- Highest in Jingan is 5 times of lowest in Baoshan
- Most suburb districts and some central districts (Yangpu and Putuo) have lower public expenditure than others

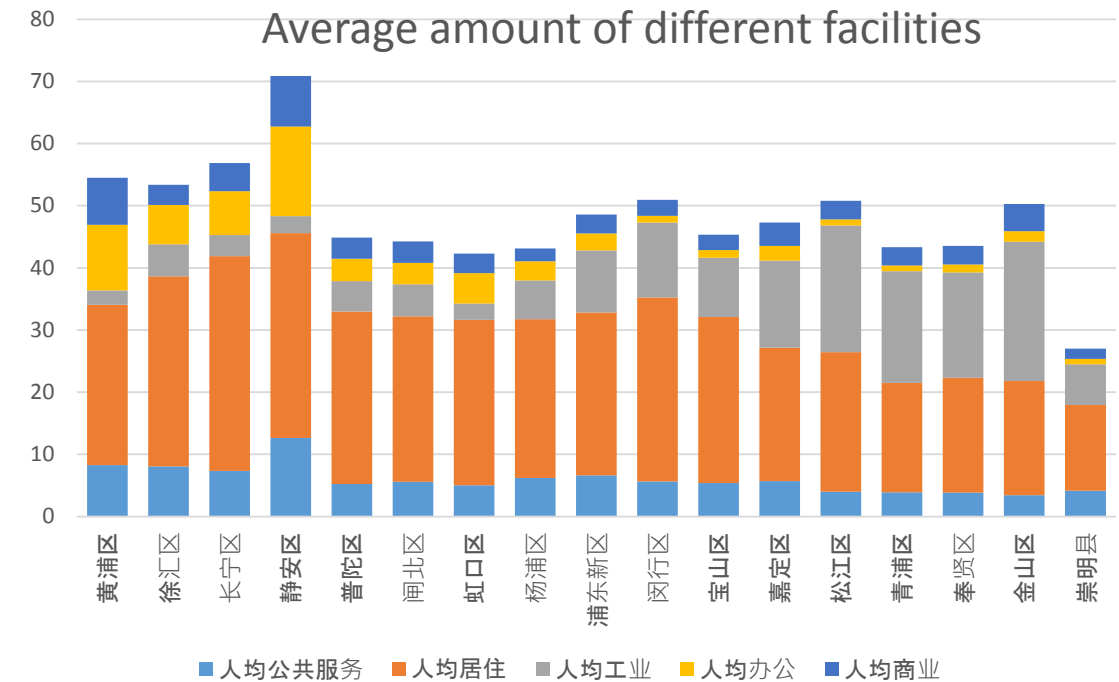
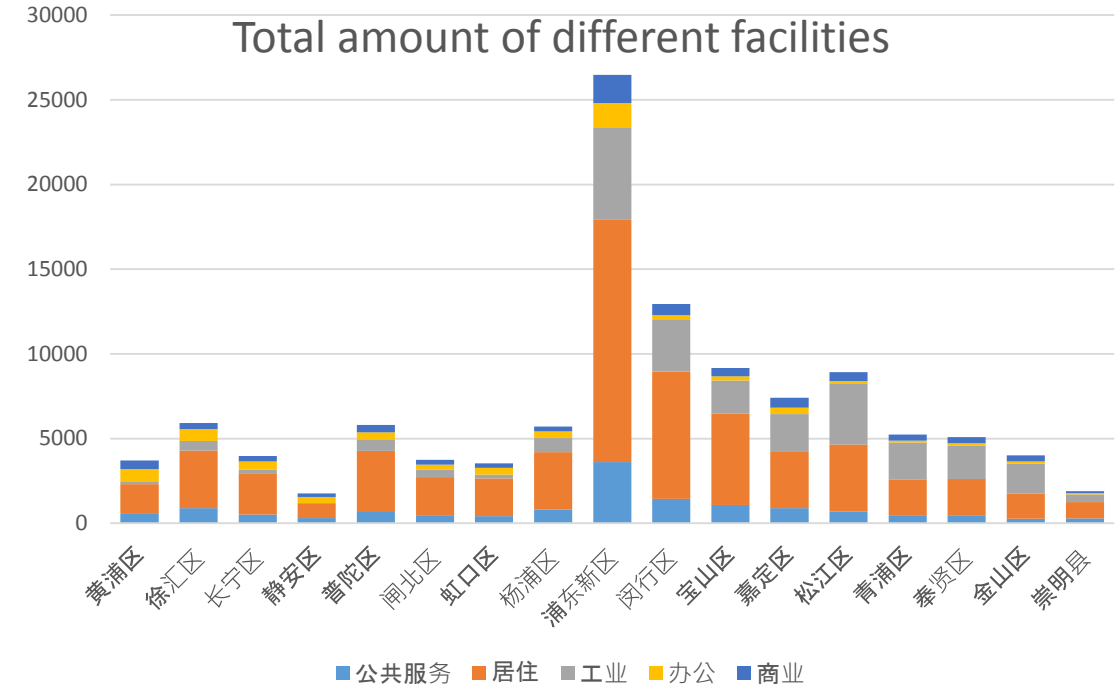
Growth rate in 2005-2014



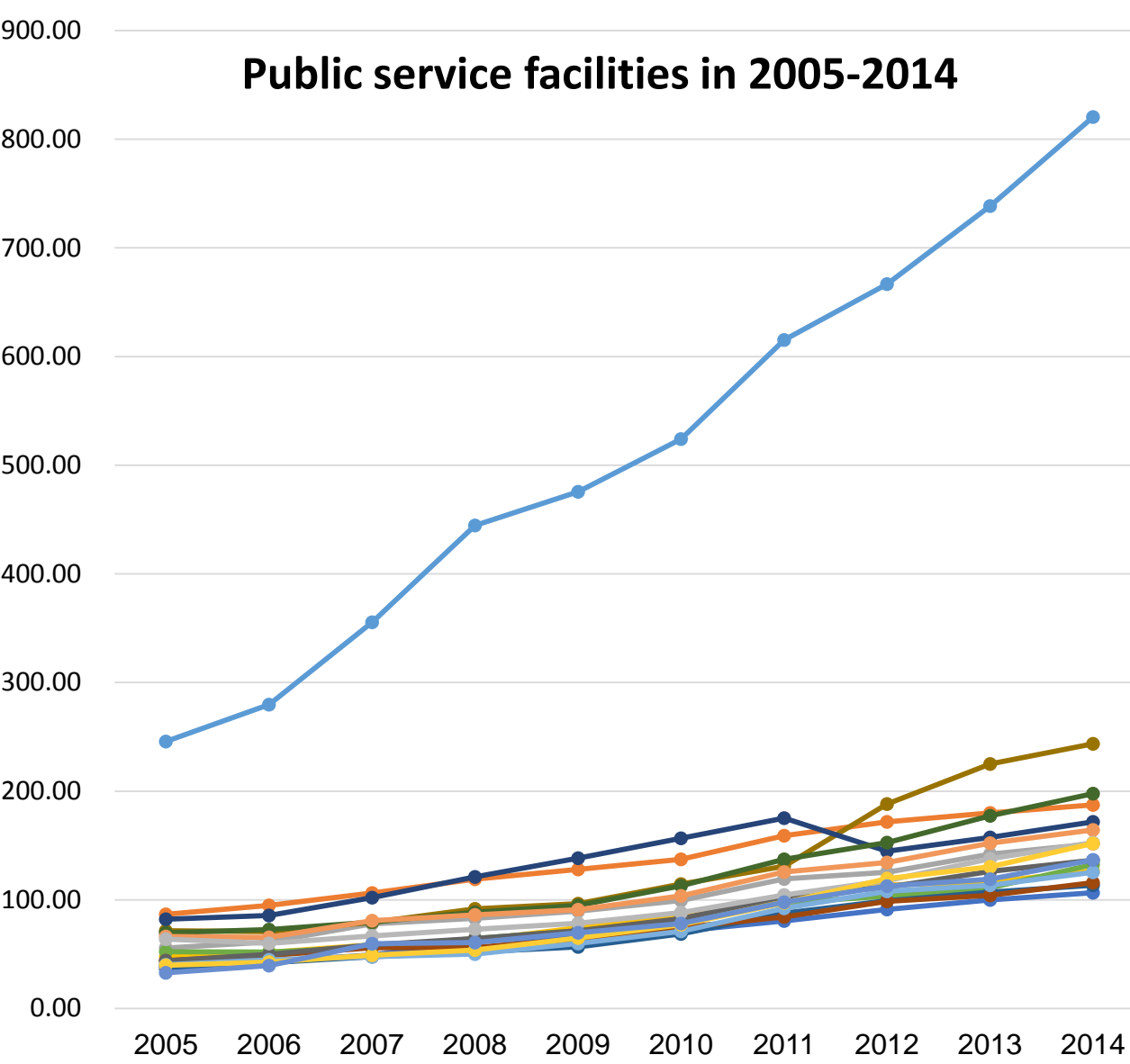
- Central districts are comparatively higher growing than suburb and other remote districts ;
- Fastest increase in remote district Chongming;
- Suburb districts have the lowest growth rate than others.

Characters of Urban Structure

- Central districts
 - Bigger share of commerce and office building
 - Residential areas are still remained
 - More public service facilities
- Suburb districts
 - Bigger share of residential buildings
 - Fewer share of commerce and office buildings
 - Less public service facilities
- Remote districts
 - Bigger share of industrial facilities
 - Less residential buildings
 - Less commerce and office buildings
 - Less public service facilities

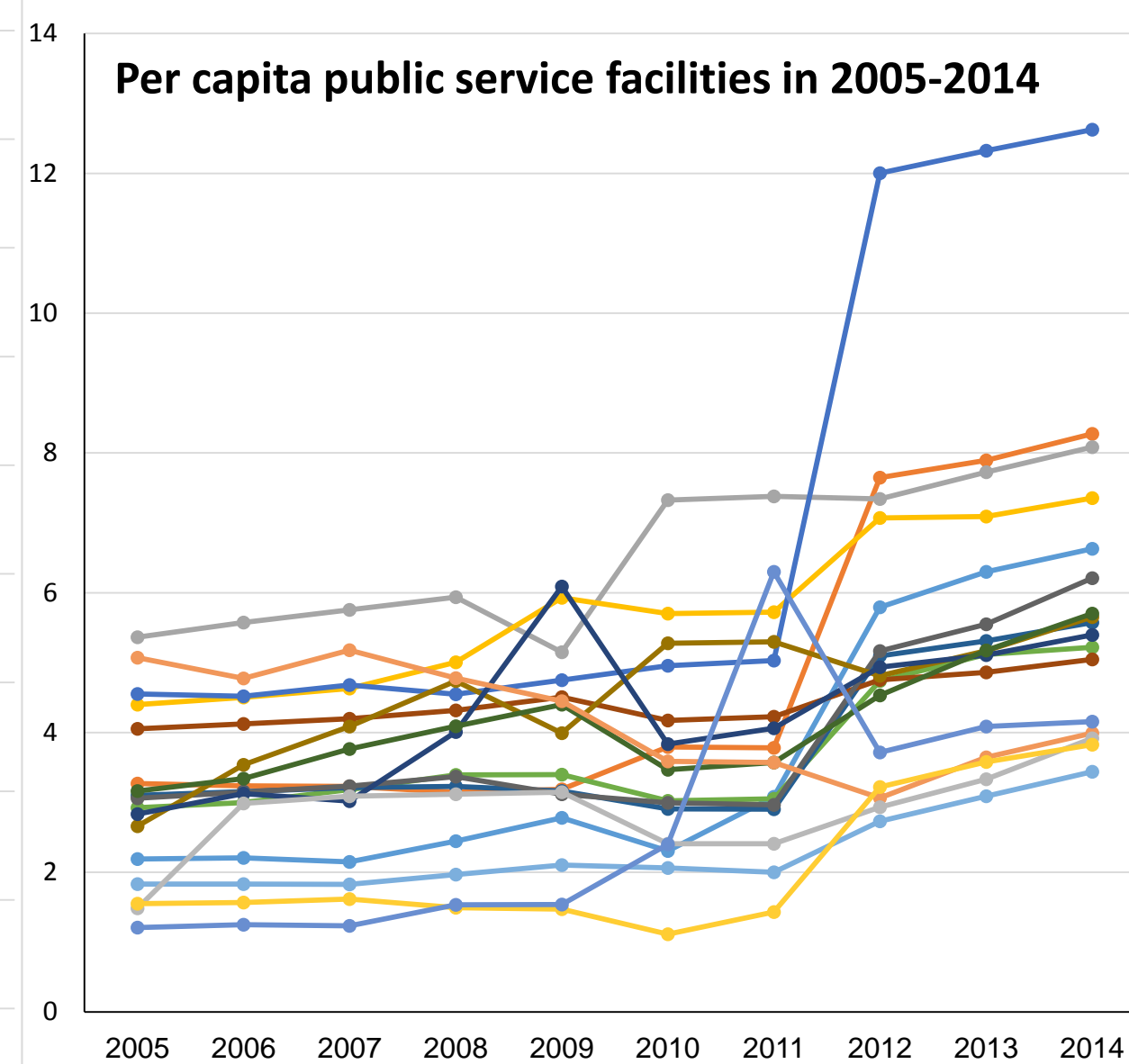


Public service facilities in 2005-2014



- 浦东新区
- 黄浦区
- 徐汇区
- 长宁区
- 静安区
- 普陀区
- 闸北区
- 虹口区
- 杨浦区
- 宝山区
- 嘉定区
- 金山区
- 松江区
- 青浦区

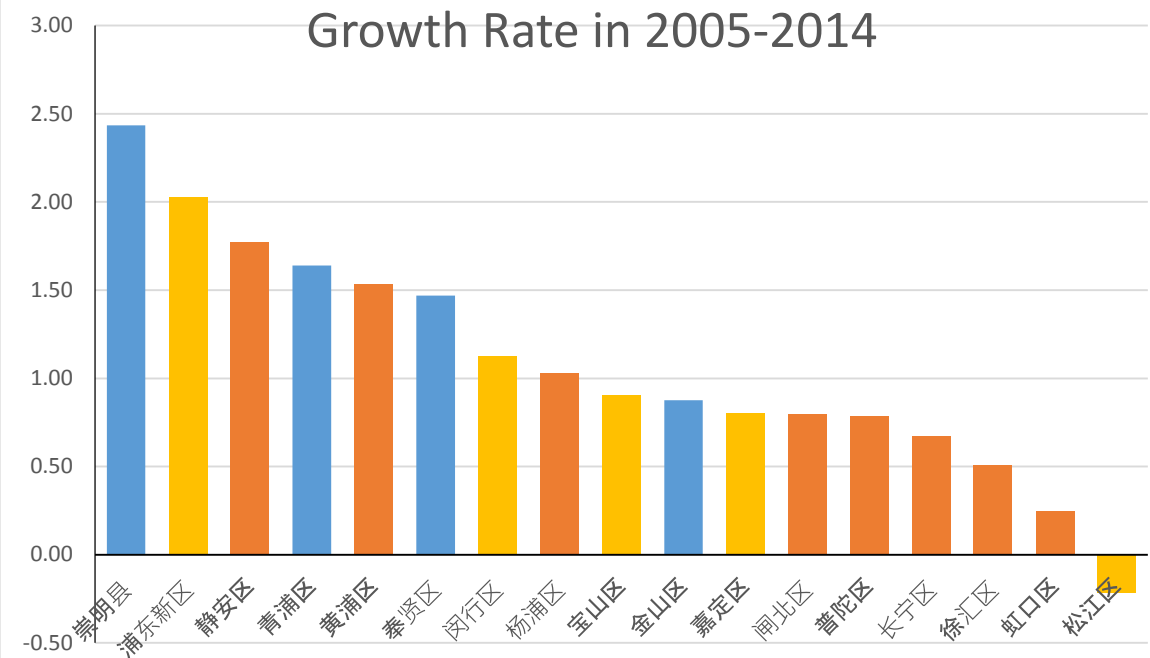
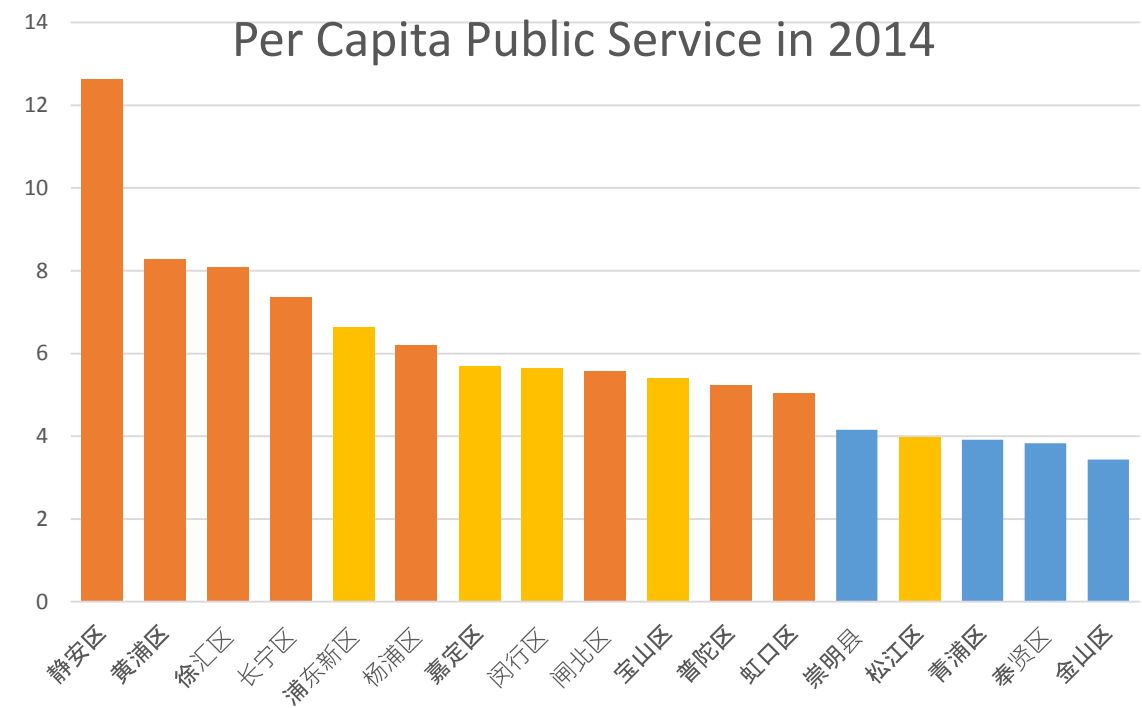
Per capita public service facilities in 2005-2014



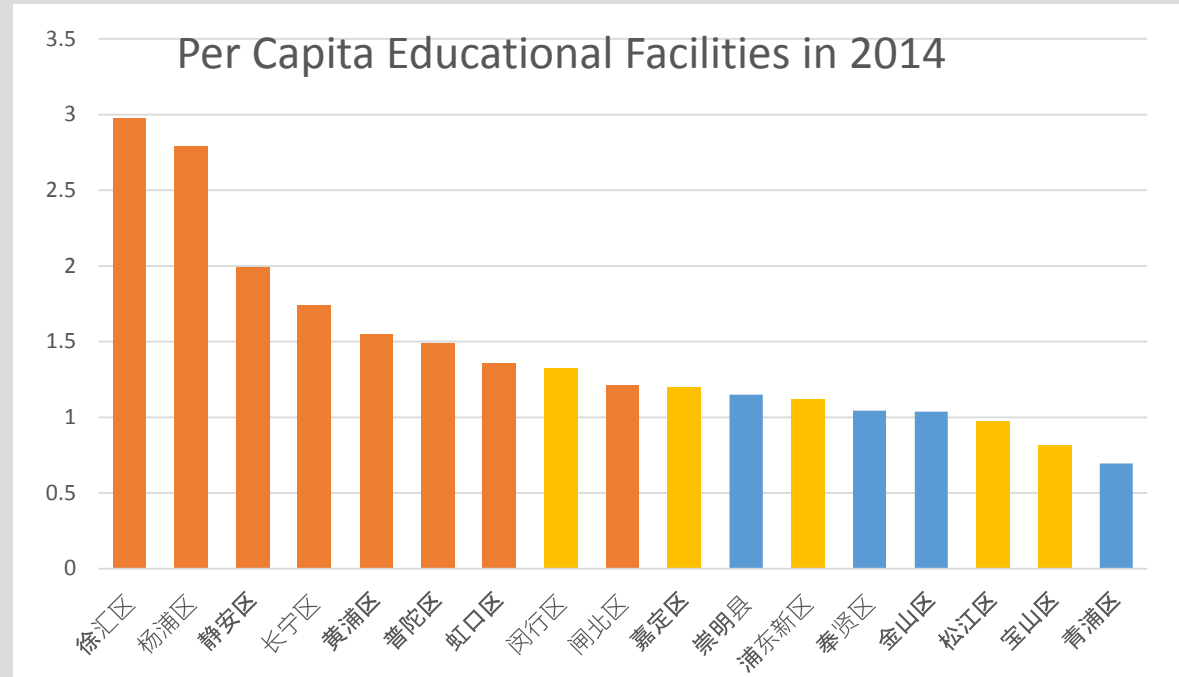
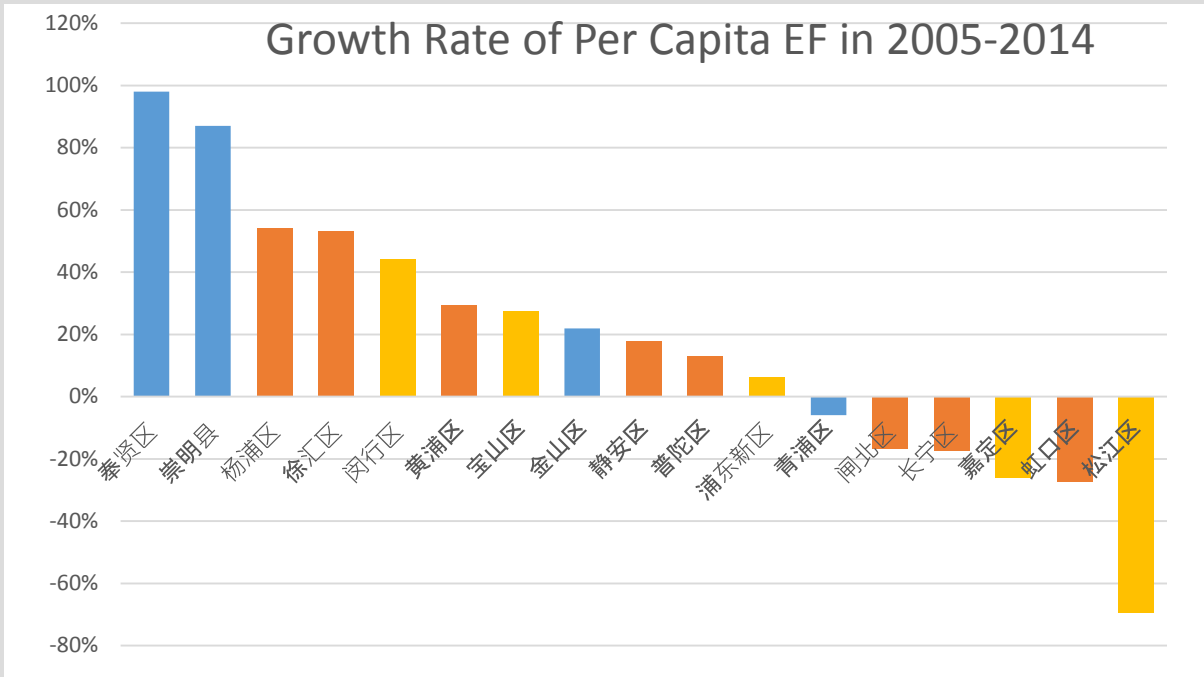
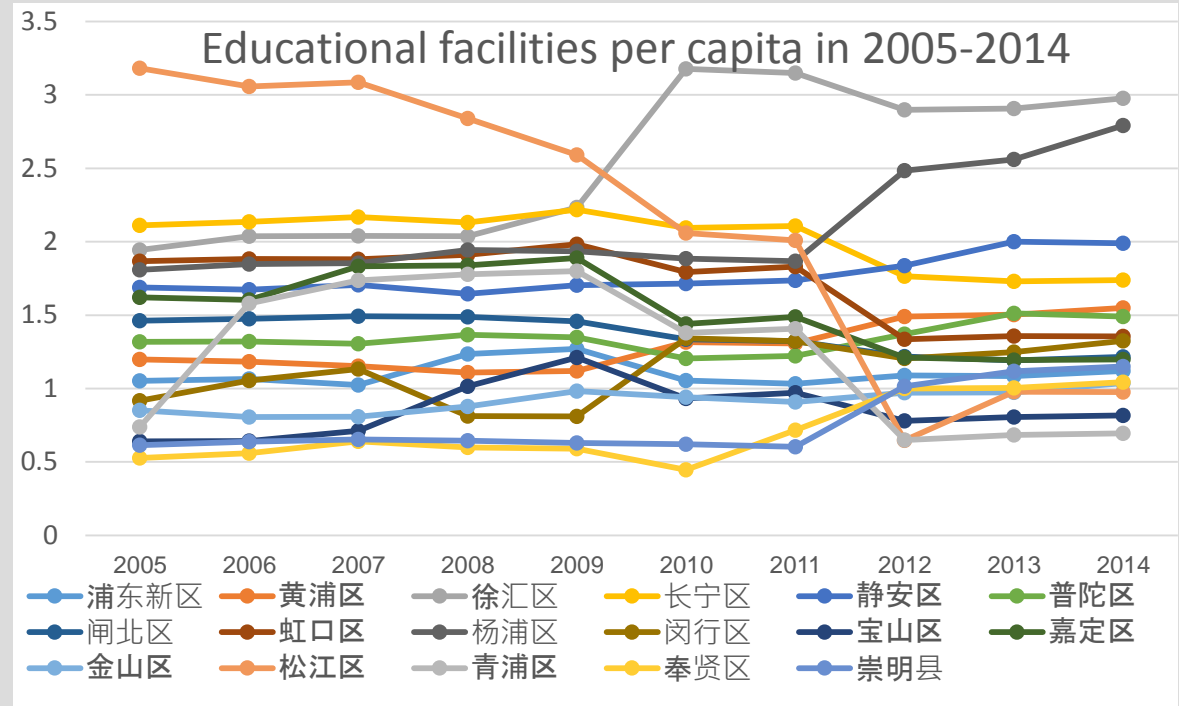
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Spatial Structure of Public Service

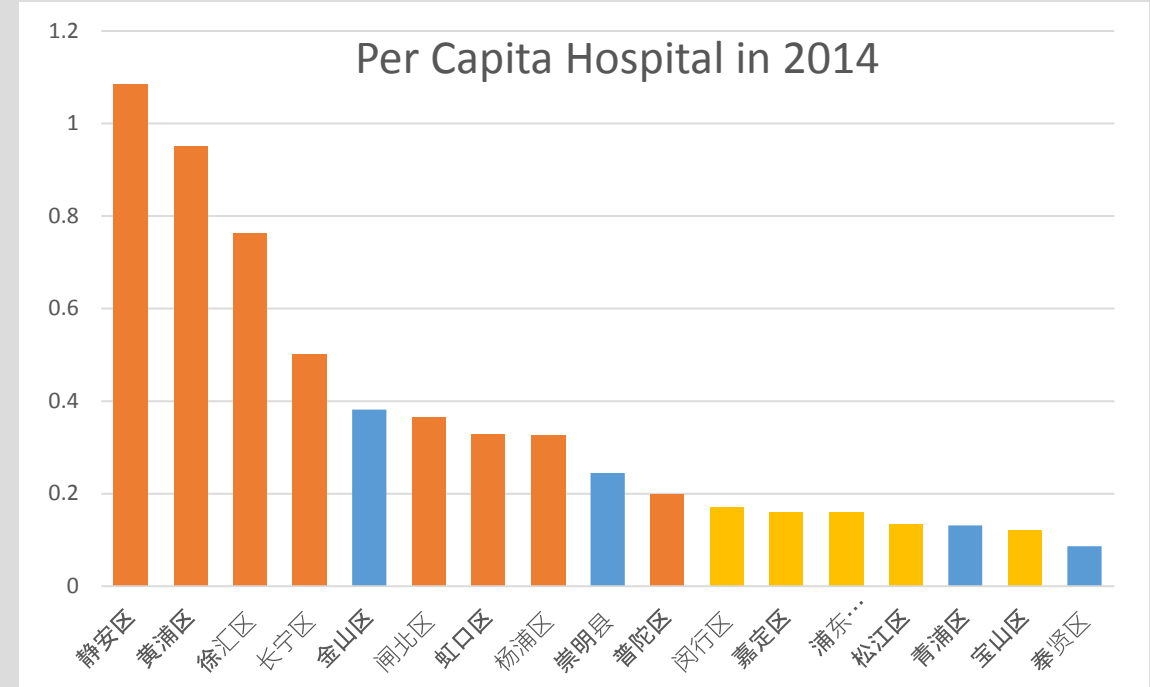
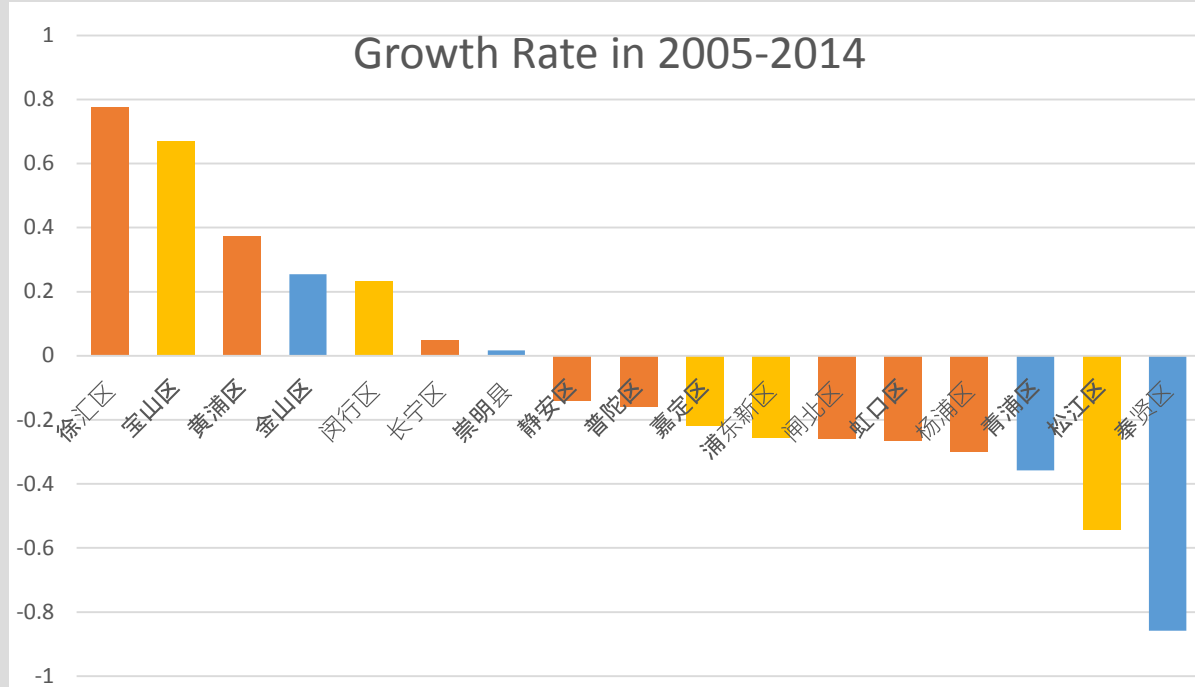
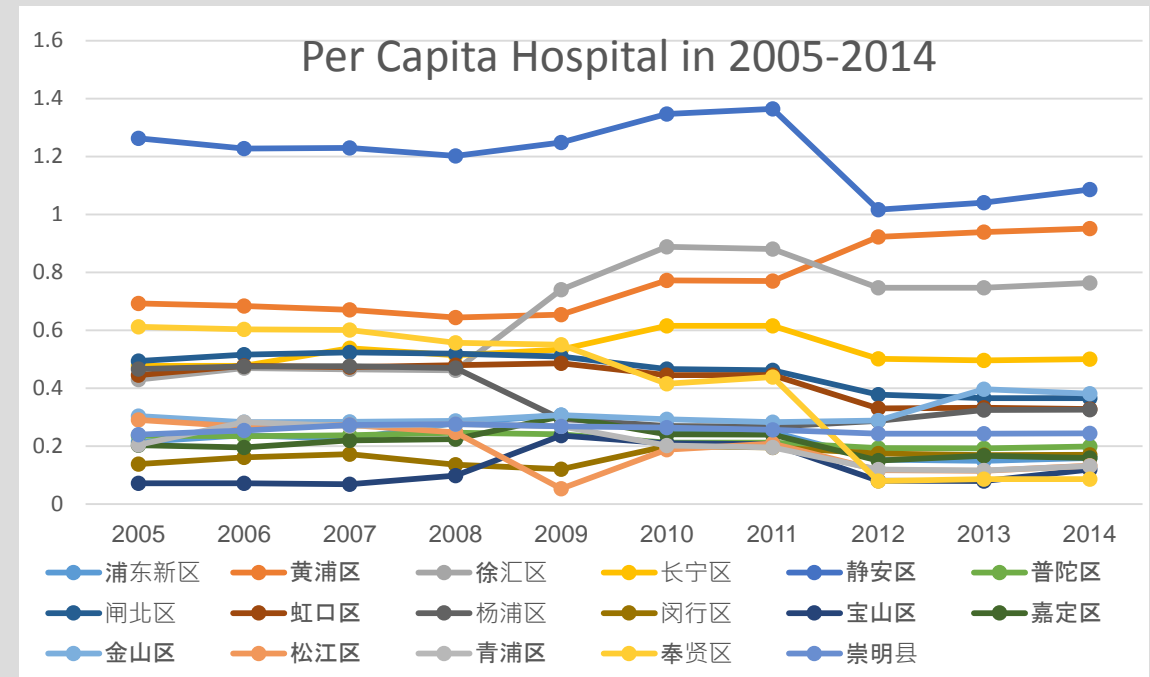
- Higher level in central districts,
 - Lower level in suburb districts,
 - Lowest level in remote districts
 - Highest district Jingan is 4 times of lowest district Jinshan.
-
- Highest growth in some remote districts and two central districts where population is decreasing
 - Lowest growth in most central districts
 - Decrease in Songjiang where has the highest population growth



- Higher average level in central districts than suburb and remote districts
- The highest district of Xuhui district is 4 times of lowest of Qingpu
- One third of districts is decreasing due to population increase (suburb districts) and total amount decrease in central districts.
- Highest growth in two remote districts and two central districts due to total amount increase
- Higher growth in central district due to population decrease
- Decrease in suburb districts due to decrease of total amount and rapid growth of population



- Most central districts have higher average level of hospitals than suburb and remote districts
- Highest average amount in Jingan is 13 times of lowest in Fengxian
- Nearly two third of districts are decreasing, which include central and suburb and remote districts
- Districts (徐汇、金山、黄浦、长宁) which have higher average level are growing faster than districts which have lower average level (奉贤、青浦、松江、浦东)



Transformation of Urban Structure

	Growth rate of total amount				
	Public service	Housing	Commerce	Office	Industry
1.浦东	+++++	+++	+	+	++++
2.黄浦、静安、徐汇、长宁、普陀、闸北、虹口、松江	+	+	++	++	-
3.奉贤	++++	++++	+++++	+++	+++++
4.金山	++	+++	++	+++	+++
5.闵行、青浦、崇明	++++	+++++	++++	+	+++
6.杨浦, 宝山, 嘉定	++	+	++	+++++	+

- Cluster analysis of growth rate of total amount

- higher growth group in suburb and remote districts: 3,5
- The lowest growth group in central districts: 2
- The highest growth group of office in suburb: 6
- The highest growth group of other facilities all in remote districts

Transformation of Urban Structure

	Growth rate of per capita amount				
	Public service	Housing	Commerce	Office	Industry
1.浦东	+++++	+++	---	---	+++++
2.虹口、杨浦	+	+++	++	++++	-
3.徐汇、宝山	+	+	++	++++	+
4.金山, 青浦, 奉贤, 崇明	++++	+++++	+++++	+++++	++
5.黄浦, 长宁, 普陀, 静安, 闸北, 闵行, 嘉定	+++	+++	++	++	-
6.松江	---	-	-	-	---

- Cluster analysis of average growth rate
 - High growth group all in suburb: 4;
 - Low growth group in most central districts: 5
 - Decreasing group in suburb: 6
 - High growth of office in suburb : 2, 3,
 - High growth of housing and commerce in remote districts
 - High growth of industry in suburb and remote districts: 1, 4

Regression Analysis on Penal Data of Public Service in 2005-2014

Model	Model of whole city	Model of central area	Model of suburb area
Depend variable	Public service per capita	Public service per capita	Public service per capita
Ln public expenditure	1.330587***	0.870541 (0.3712)	1.854330***
Ln housing	0.064765***	0.059079*	0.147688***
Ln commerce	-0.027916 (0.7671)	0.050455 (0.7250)	-0.062884 (0.6721)
Ln industry	-0.018305 (0.3372)	-0.222070***	0.006784 (0.7398)
Ln office	-0.289638***	-0.280719*	-0.255700 (0.1111)
Ln per capita GDP	0.164640**	0.205175 (0.0764)	0.039320 (0.6514)
Ln scale	-0.001222***	0.033591*	-9.245605 (0.8546)
Ln population	0.000791 (0.6250)	-0.00868 (0.3995)	-0.000257 (0.8918)
Ln share of migration population	1.826746**	1.140190 (0.6538)	2.294987**
Ln share of service industry	1.586033**	2.162439*	1.376256 (0.2438)
Cons	0.036750*	0.378704 (0.6834)	-2.342806**
R ²	0.637360	0.690422	0.674992
F-stastic	27.94511	15.38838	16.40713
F-stastic(prob)			
Durbin-Waston stat	1.695137	1.612875	1.995604

Main Factors Influencing Spatial Structure of Public Service Distribution

- **Public service**

- City level

- The most influential factors of public expenditure and industrial structure, per capita GDP, share of migration population
- Spatial balance between housing and public service

- Central area

- Spatial balance between housing and public service
- More public service in districts with fewer office and industrial facilities

- Suburb area

- The most influential factors of public expenditure and share of migration population
- Spatial balance between housing and public service

- **Hospital**

- City level

- More hospitals in districts with fewer share of migration population, public expenditure
- Concentration in central area with more office and per capita GDP

- Central area

- More hospital in districts with fewer public expenditure

- Suburb area

- More hospital in districts with fewer housing and migration population

- **Education**

- City and central area

- More educational facilities in suburb area due to planning and development of new towns

- Suburb area

- The most influential factors of office, housing and industry

Conclusion

- Amount and spatial structure of public service provision
 - The most influential factors: public expenditure and GDP
 - Amount of hospitals is more correlative with PE and GDP than educational facilities.
 - Unbalance between public service and population
 - The influence of the migrant population
 - More migrants, fewer public service
 - Fewer population, more public service
 - Concentration in central area
 - Enlarging disparity of average level between central area and suburb area
 - Rapid growth of population in suburb area and population loss in central area
- Decentralized governance enlarged the disparity between districts
 - More intervention of city government for equity of public service delivery
 - Public service delivery for migrants
- Stable and sustainable financial resource for local government