



# Relationship of Demographic Structural Change to Consumption Structure and Saving Rate

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# Outline

- Introduction
- **Factors of Relationship of structural change of population with changes of consumption structure and saving rate**
- **Several aspects of positive analysis and results**



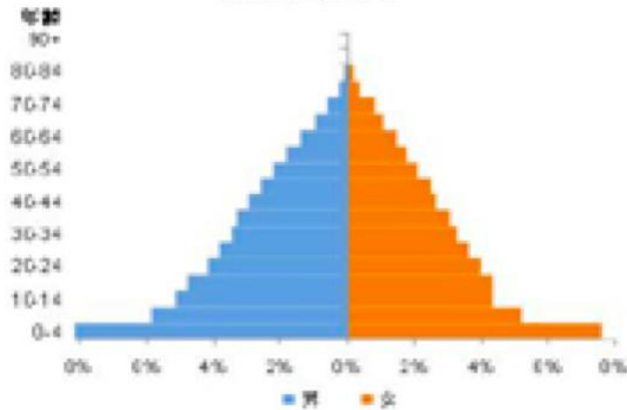
# Introduction

- **The feature of Chinese demographic structure is changing from a high fertility rate, high death rate and low life expectancy to low fertility rate, low death rate and high life expectancy**
  - Average Population growth rate was 0.57% from 2000 to 2010, 0.5 percentage point lower than previous 10 years
  - The share of population with age 60 years and above is 13.26%, the share of population with age 65 years and above is 8.87% in 2010
  - Average number of members of each household is 3.10 persons, this figure is 0.34 person less than 3.44 persons of Fifth National Census in 2000.

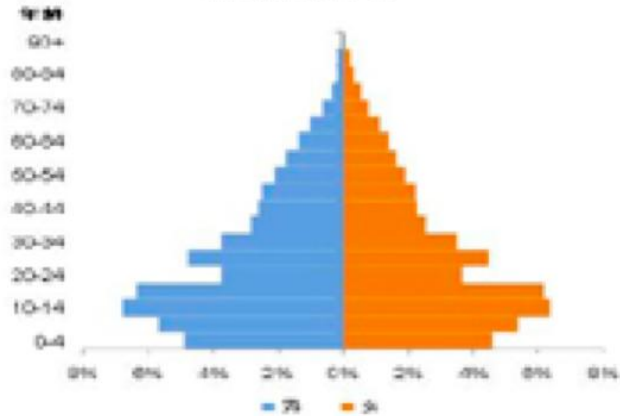


# 历次普查年龄金字塔 Age Pyramid from Population Censuses

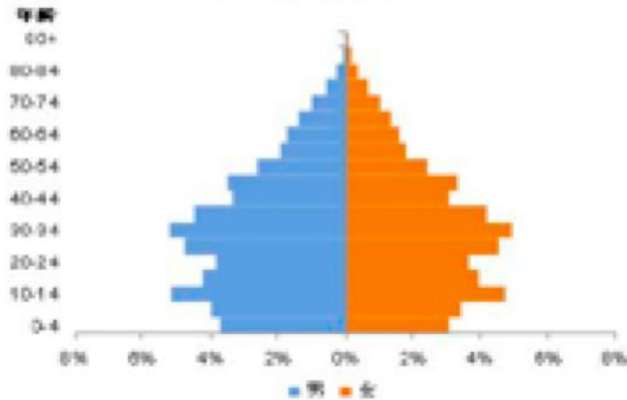
1953人口金字塔



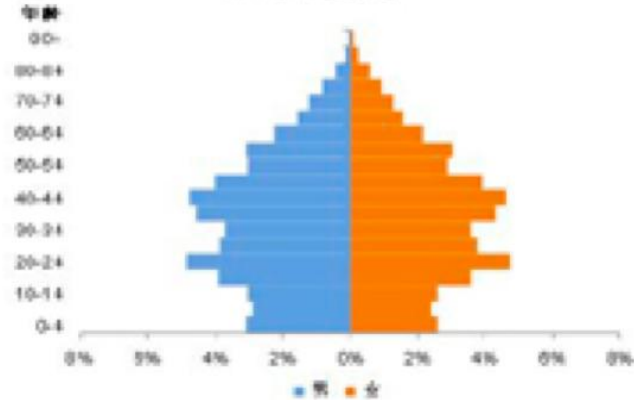
1982人口金字塔



2000人口金字塔



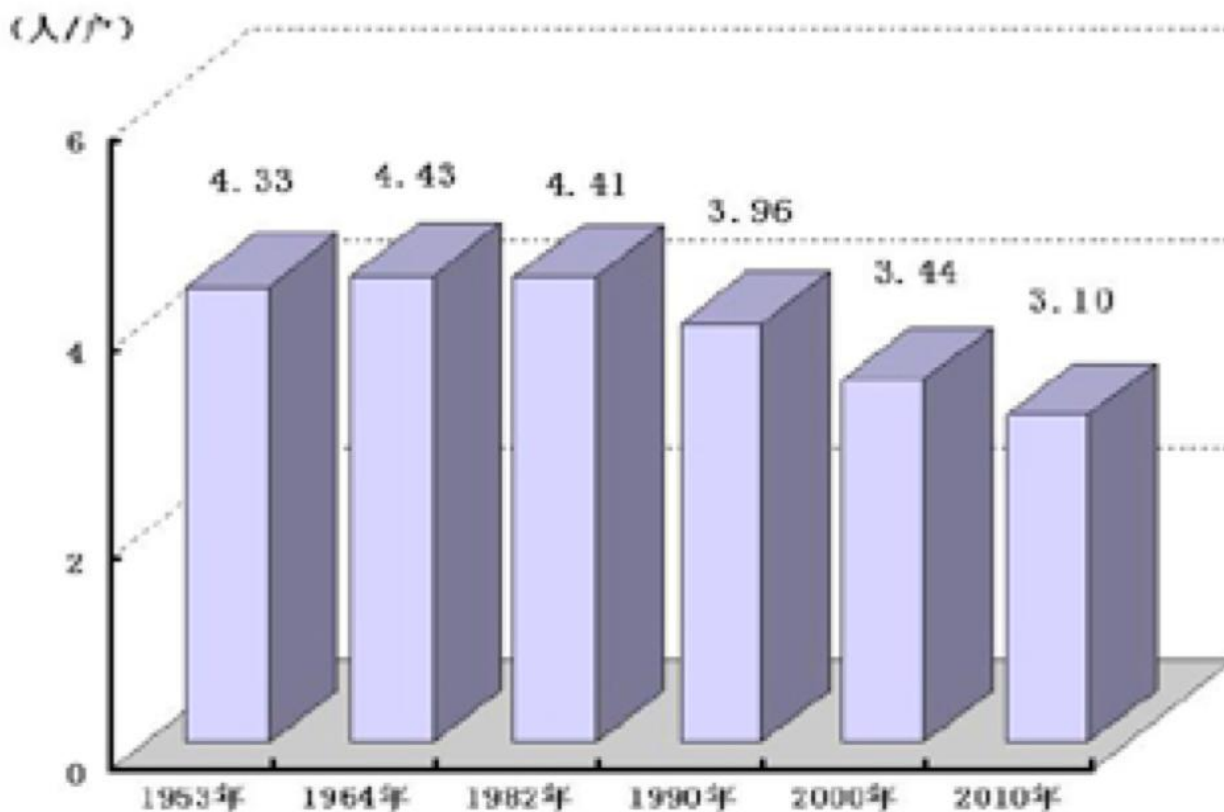
2010人口金字塔





# 历次普查平均家庭户规模

Average Size of Family Households from Population Censuses





# Introduction

- **This demographic structural change will not only increase the burden of social security pension and reduce the supply of labor force, it will also influence the saving rate and consumption structure and effect the sustainability of China's economic development**
- **How large will be the impact to consumption structure and saving rate due to structural change of the population? What is the mechanism of this impact?**



# Factors of Relationship of structural change of population with changes of consumption structure and saving rate



# Data

- **CHIP (Chinese Household Income Project)**
- The purpose of this project was to measure and estimate the distribution of personal income and related economic factors in both rural and urban areas of the People's Republic of China.
- CHIP 1995, Carl Riskin, Zhao Renwei Li Shi
- CHIP 2002, Li Shi
- CHIP 2007, Li Shi (Unpublished)
- Inter—university Consortium for Political and Social Research P.O., Box 1248, Ann Arbor, Michigan 48106.
- [WWW.ICPSR,umich.edu](http://WWW.ICPSR.umich.edu).



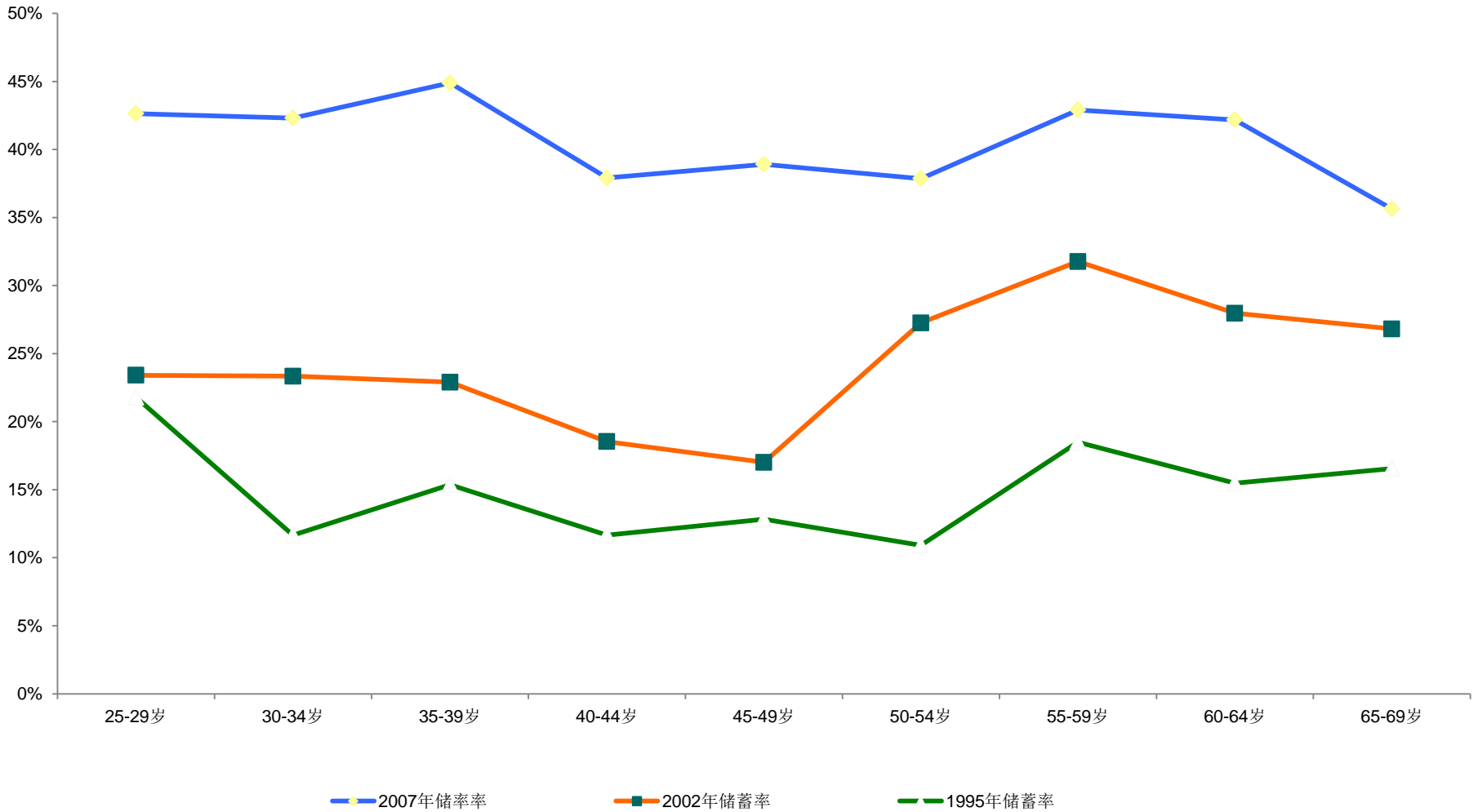


# Data

- According to the age of head of households, we divided households into 9 groups: age 25-29、age 30-34、age 35-39、age 40-44 、age 45-49、age 50-54、age 55-59、age 60-64、age 65-69
- Due to few samples on age 25- and 70+, this study focuses on the households whose head aged 25-70.



# Age structure of population and Saving Rate





# Age structure of population and Saving Rate

- Saving rate of households appears a trend of decline post the age of 60 years of the head of households, but the scope of decline is not large.
- The saving rate of the households with age of head in the period of working age, it will vary in an U-shape with the age of the householder, i.e. the saving rate is at low level during the middle period of the working age.
- Nearly the level of saving rate of households in the period of different age are in rising as a whole, i.e. China's micro household saving rate appeared a rising trend post 90s of last century.

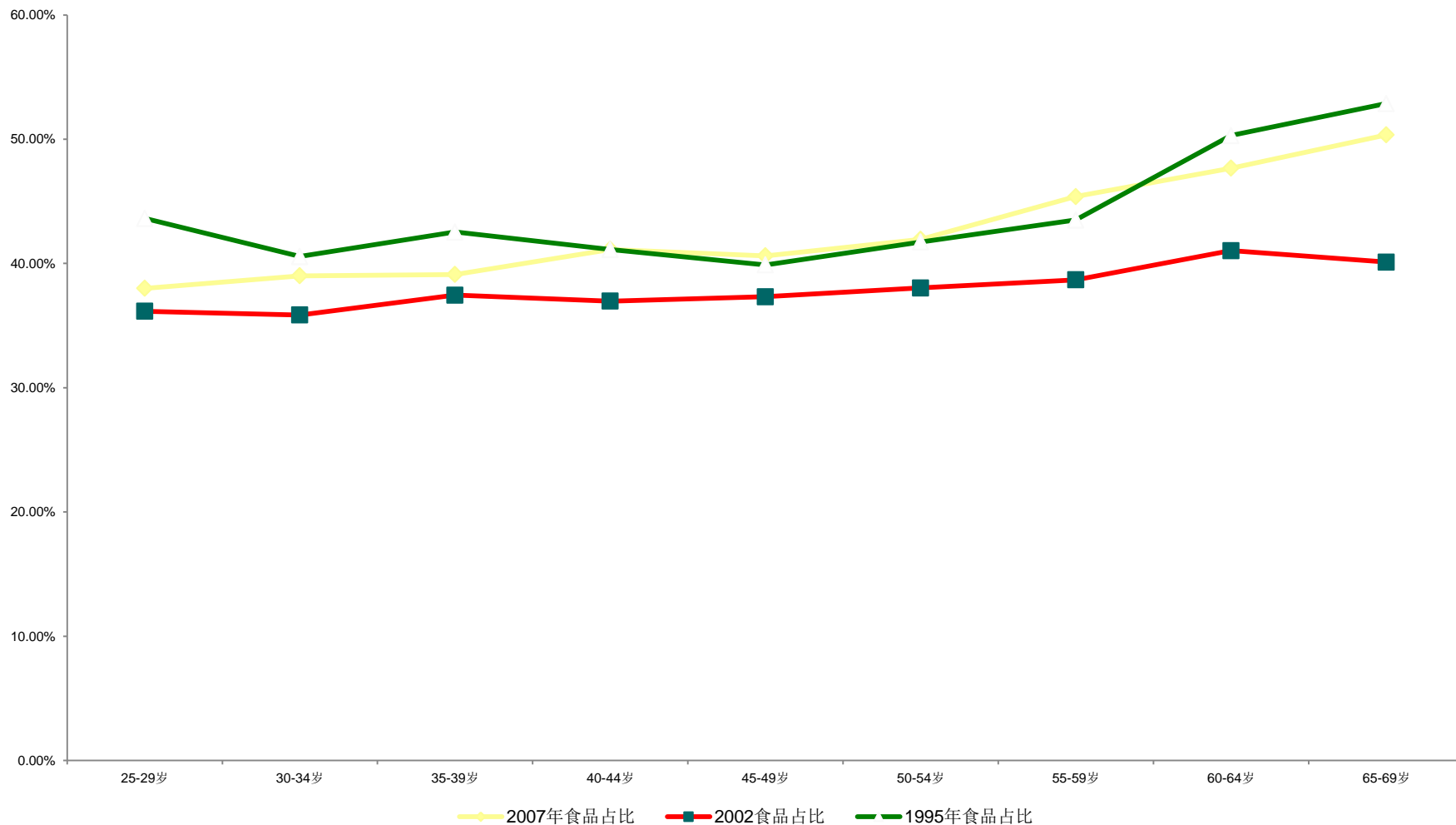


# Consumption structure with age of household —2007

Age of Head	Food	Clothing	Residence	Household Facilities	Health care	Transportation	Education Culture	Others
25-29	38.00	11.95	15.73	8.20	5.41	9.59	6.88	4.25
30-34	39.00	11.53	11.60	7.52	5.75	9.48	10.93	4.19
35-39	39.12	10.61	9.44	7.11	5.84	11.30	12.03	4.56
40-44	41.13	10.03	8.09	5.71	6.17	8.89	15.50	4.47
45-49	40.61	9.21	7.80	5.66	5.39	10.23	17.28	3.82
50-54	41.94	9.82	11.86	6.30	6.90	9.36	9.69	4.14
55-59	45.38	9.31	7.83	6.39	8.12	9.47	9.62	3.88
60-64	47.67	8.38	9.76	5.99	10.00	7.74	6.54	3.92
65-69	50.35	7.86	7.84	4.94	13.31	6.39	5.53	3.77



# Food



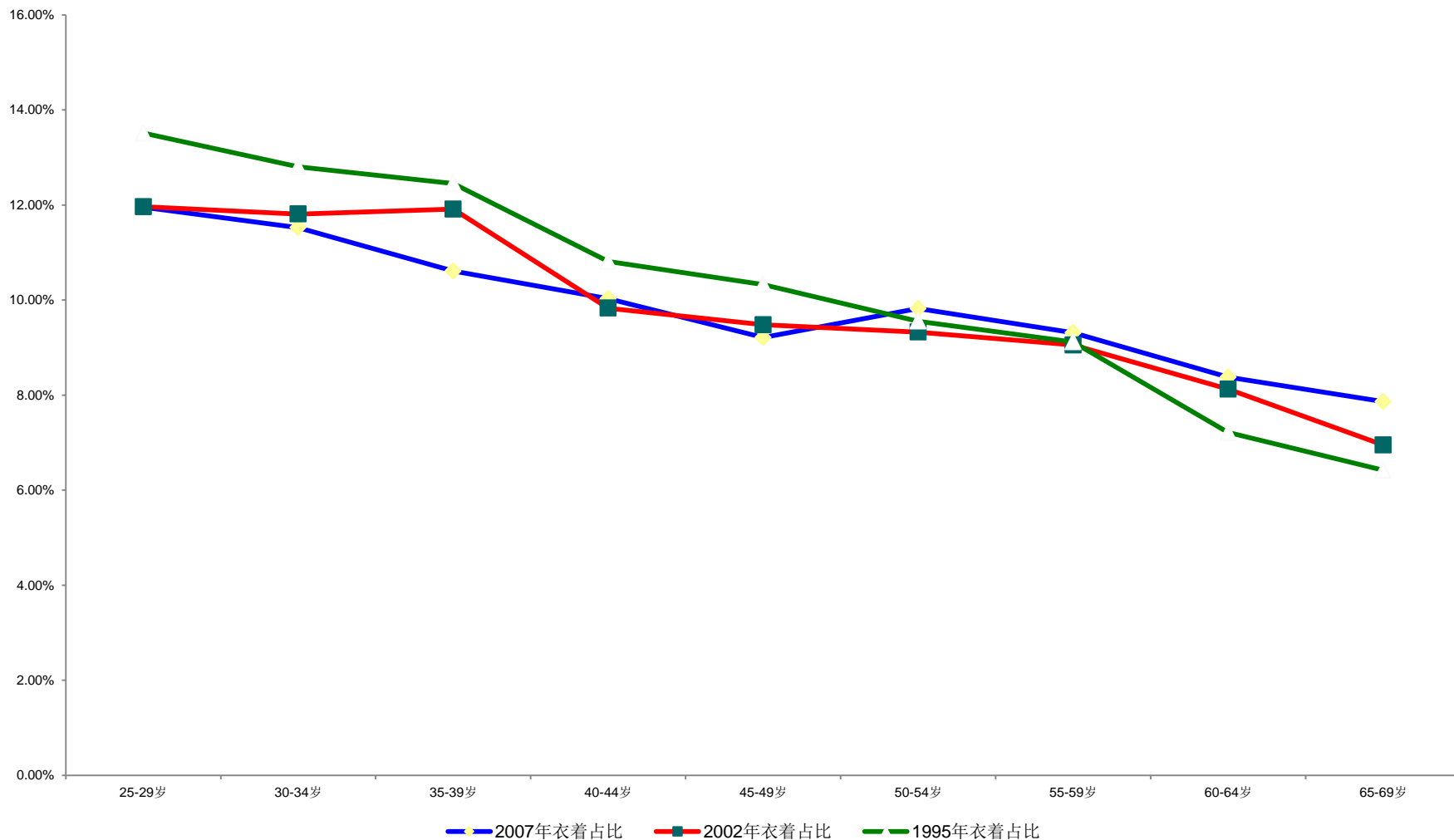


## Age structure of population and consumption

- Average share of food consumption is above 40%, the share of consumption varies with the age approximately in the form of U-shape during the period of working age, there is increase of share of food consumption post retirement.

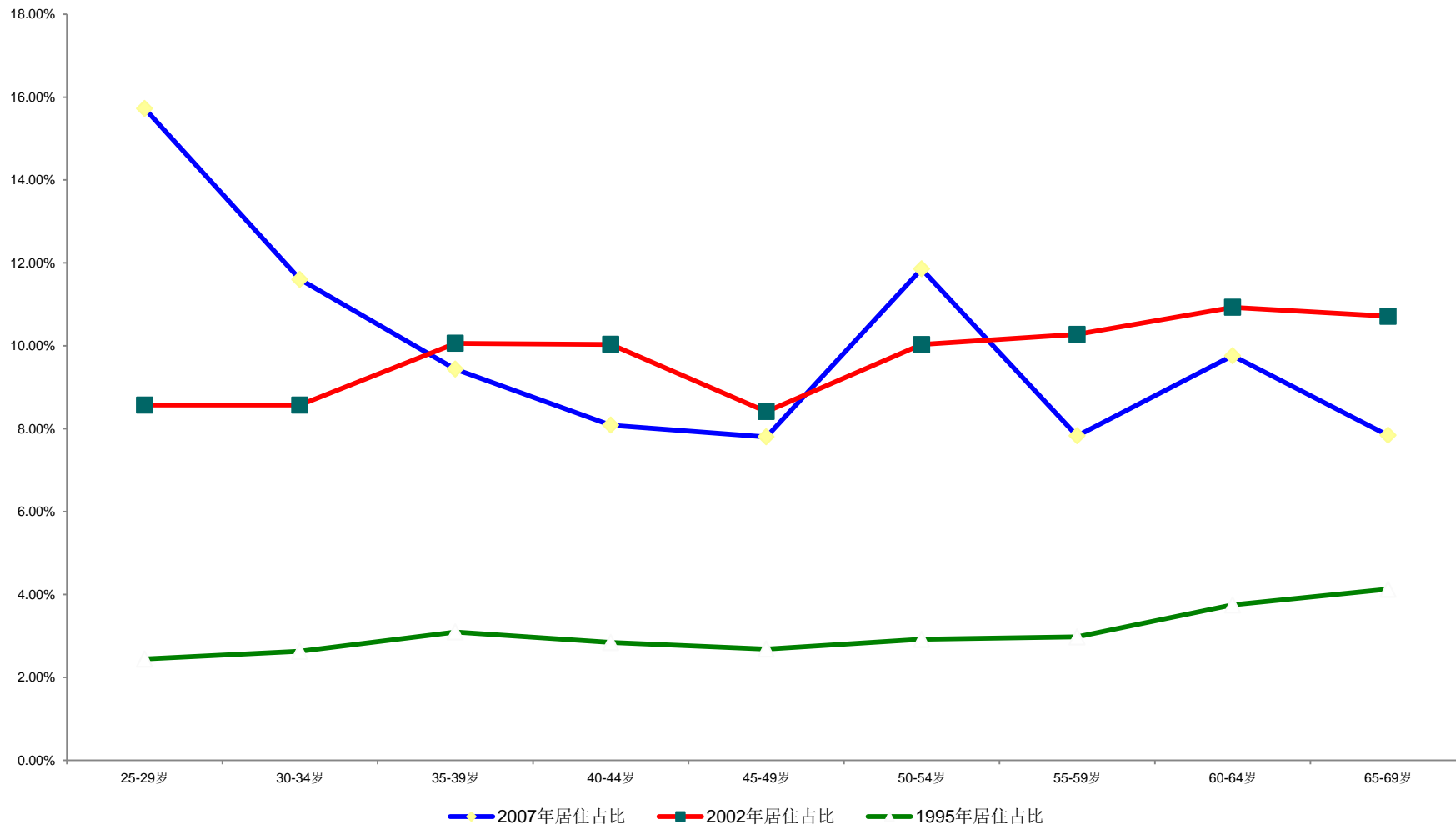


# Clothing





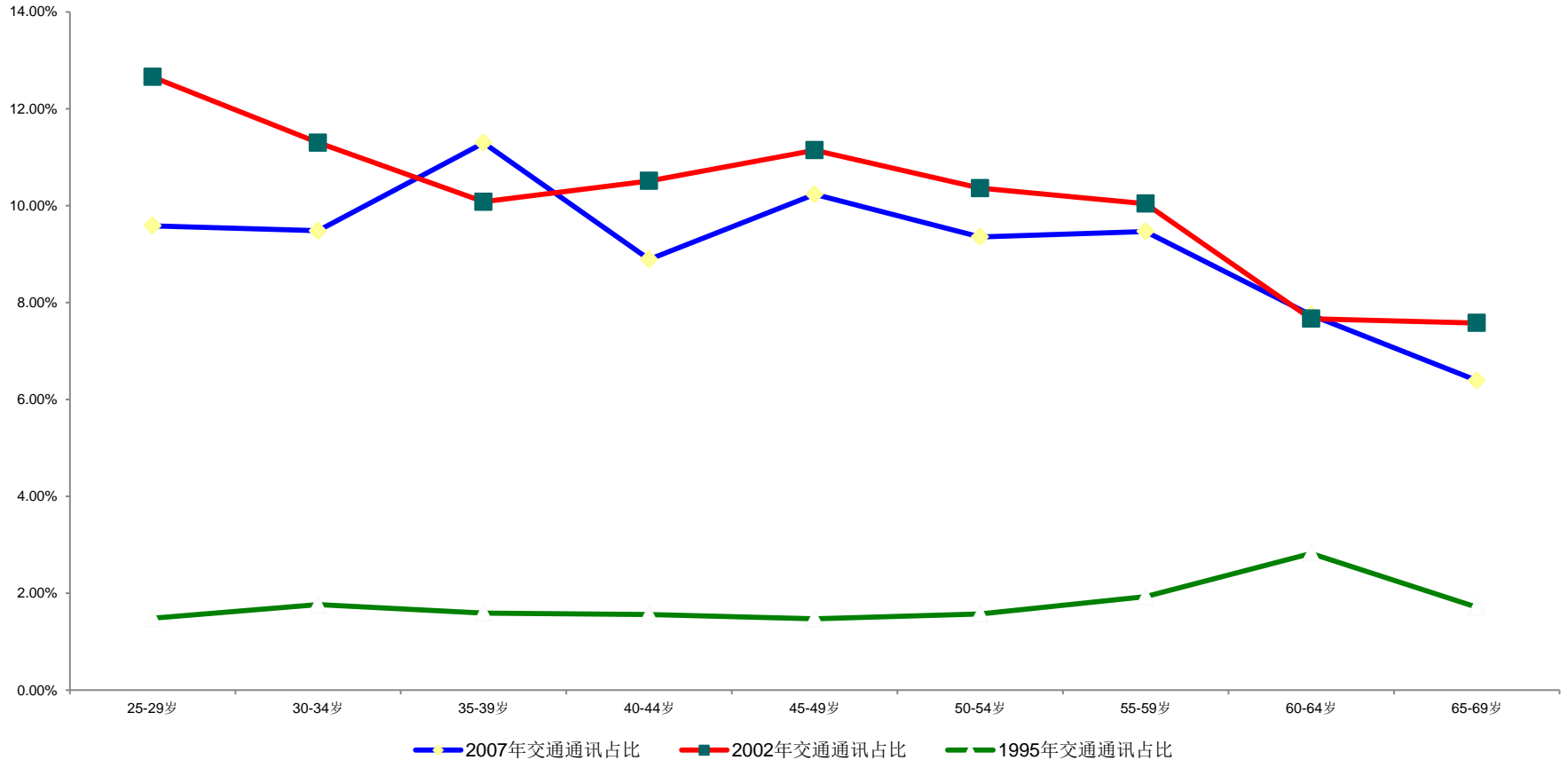
# Residence







# Transport and Communication



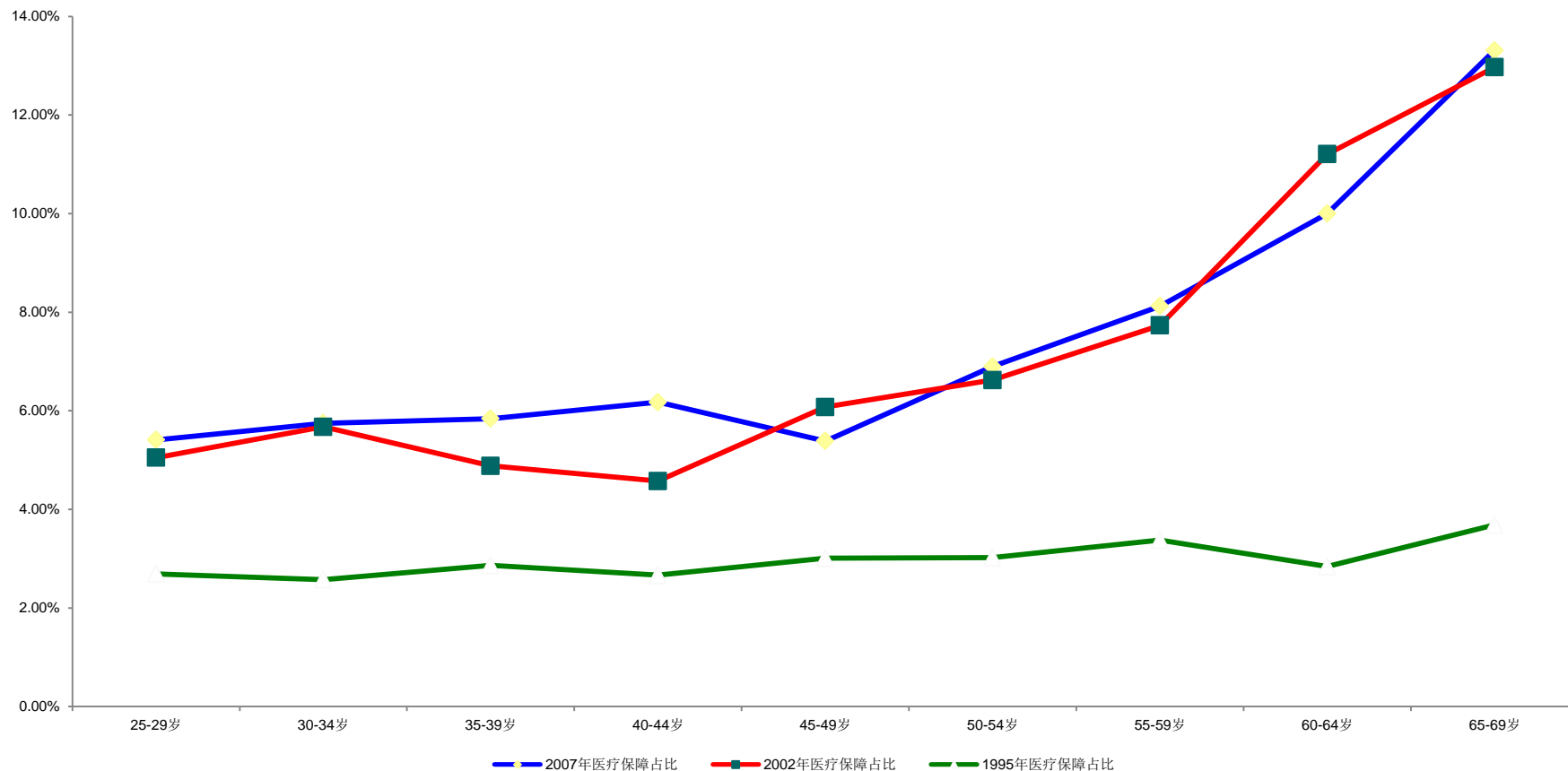


## Age structure of population and consumption

- The share of consumption of clothing, residence, transport and communications shows a declining trend with the growth of age.



# Health care and Medical Services



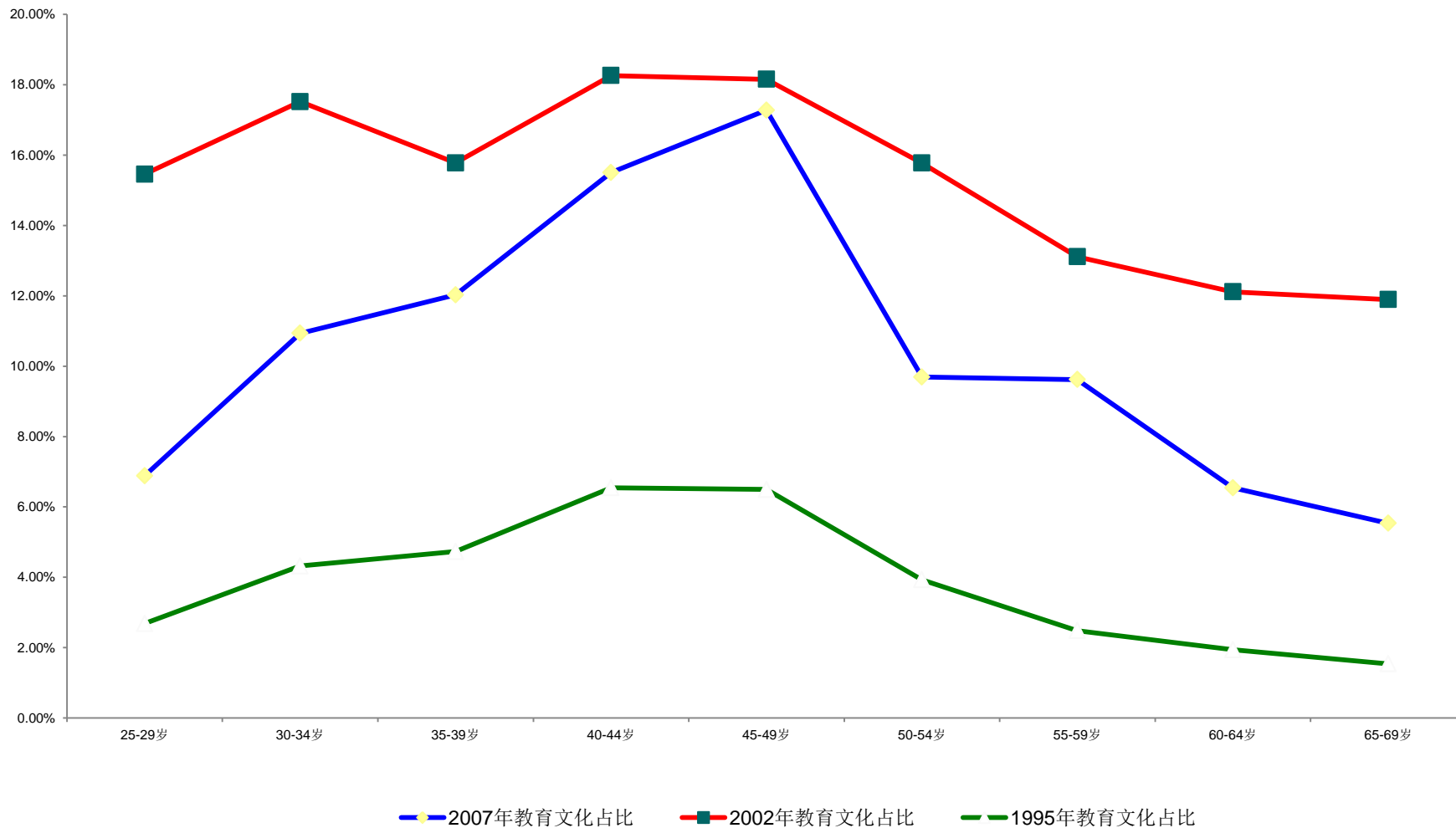


# Age structure of population and consumption

- **The consumption structure of the old people is different explicitly with the young people, the age of the head of households has important impact on consumption structure, with the consumption of health care and medical service within the eight large categories of consumption of urban household, the share of health care and medical service is around 5.41% for the group with age of the head of households around 25-29 years, while this figure is 13.31% for the group with age of the householder around 65-69 years**
- **The share of expenses on health care and medical services increases with the increase of age, and it rises relatively faster post the age of sixty.**



# Education, Culture and Recreation Services



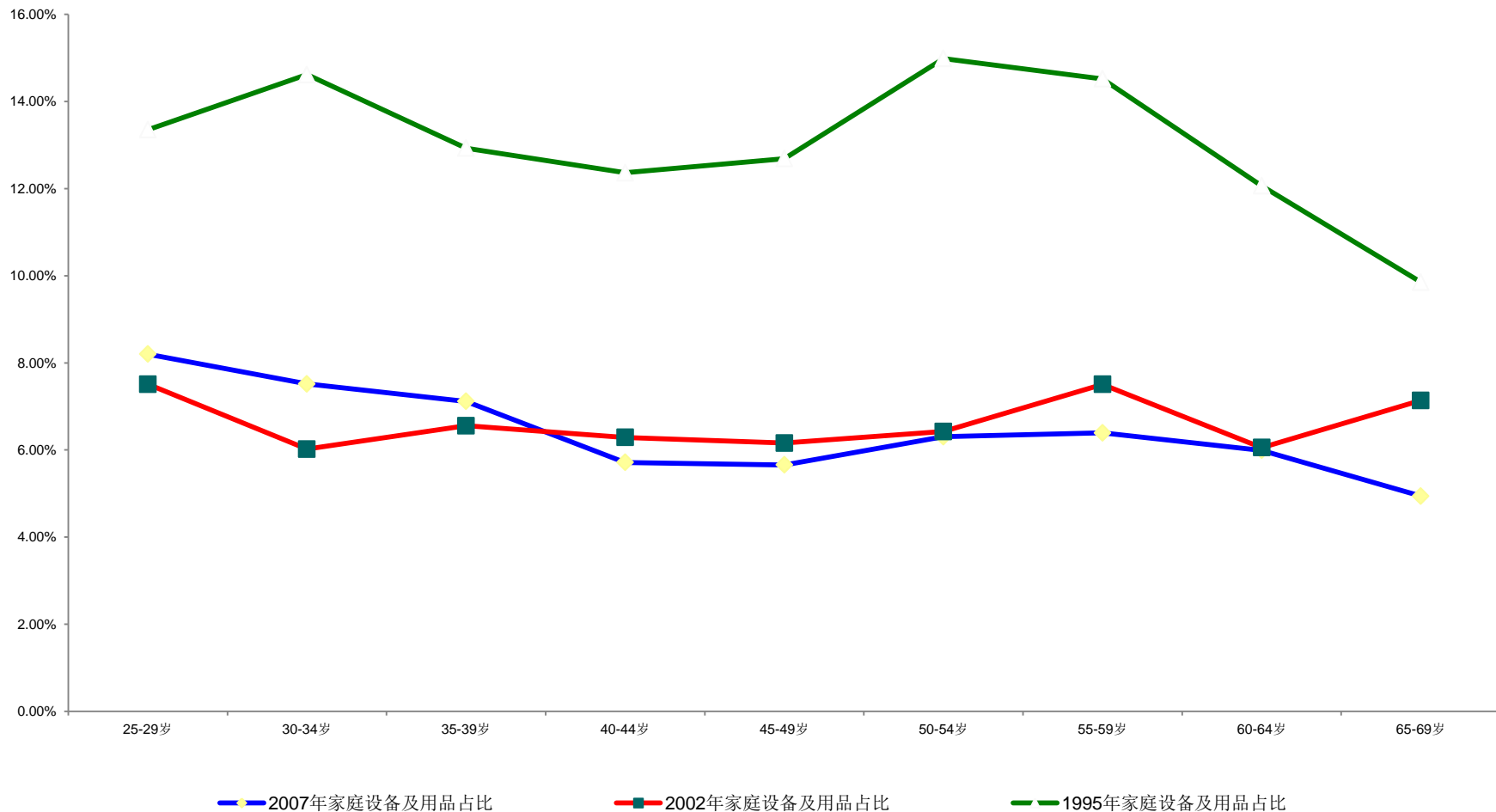


# Age structure of population and consumption

- The share of expenses on education, culture and recreation service varies with changing age in the shape of inverted U, peak appears in households with the age of the head around 45-49 years

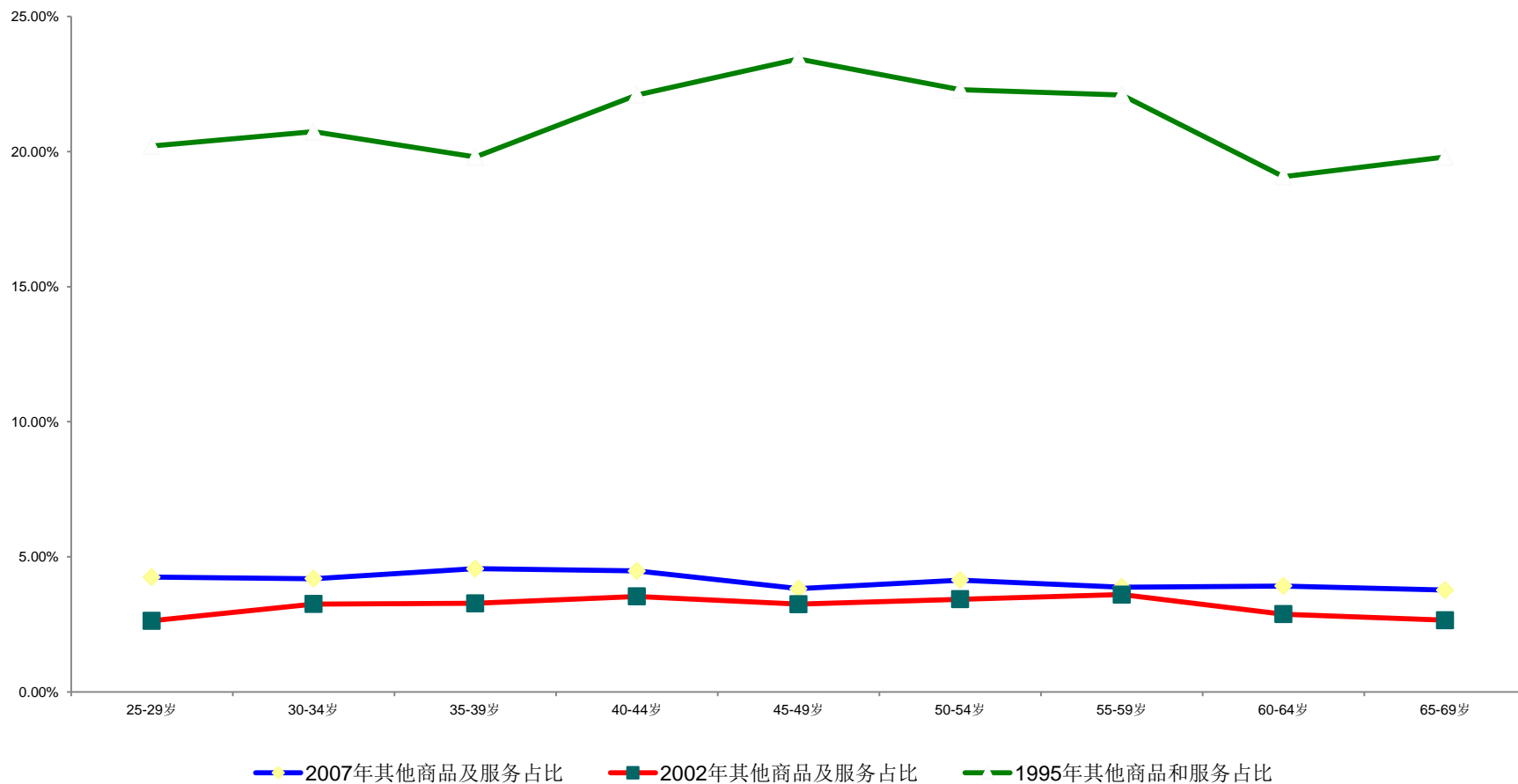


# Household Facilities, Articles and Services





# Others







# Age structure of population and consumption

- Analysis of data from 1995-2007 shows that there is not much change of share of food and clothing in the consumption structure with the changing of structure of age, but there are relatively faster changes of share of expenses on health care and medical service, education, transport and communication , residence of consumption structure with the changes of age structure of the population.



# Several aspects of positive analysis and results



# Methodology

$$C = \alpha + Y\beta + H\delta + \varepsilon \dots \dots \dots (4.1)$$

- C: Saving rate or share of expenditure on some consumption
- Y: Income of households
- H: such as age of head of households, size of households, age structure of households, region
  - Household groups: below 40, 40-60, above 60
  - age structure of households: share of members of household include age 0-6、7-15、16-22、23-64、above 64



## Urban area

	(1)	(2)	(3)	(4)
	Saving rate	Saving rate	Saving rate	Saving rate
<b>LOG (income)</b>	0.0618***	0.0569***	0.126***	0.0313***
	17.62	15.75	12.39	6.61
<b>Size of household</b>	-0.00903	-0.0086	-0.0737***	-0.0139
	(-1.53)	(-1.31)	(-3.52)	(-1.69)
<b>Age of head below 40</b>	-0.242***	-0.188***	-0.592***	-0.0893**
	(-9.91)	(-6.51)	(-8.01)	(-2.63)
<b>Age of head 40-60</b>	-0.285***	-0.237***	-0.641***	-0.135***
	(-12.40)	(-8.93)	(-9.08)	(-4.16)
<b>Eastern region</b>	-0.0266*	-0.0582***	-0.0973***	-0.0173
	(-2.32)	(-3.82)	(-3.35)	(-1.05)
<b>Central region</b>	0.017	0.115***	-0.0442	0.0196
	1.47	7.32	(-1.47)	1.22
<b>Share of member age</b>	-0.311***	-0.186**	-0.453**	-0.333***
<b>0-6</b>	(-5.53)	(-2.76)	(-2.78)	(-4.23)
<b>Share of member age</b>	-0.340***	-0.136**	-0.564***	-0.312***
<b>7-15</b>	(-8.61)	(-2.73)	(-5.05)	(-5.63)
<b>Share of member age</b>	-0.317***	-0.323***	-0.536***	-0.188***
<b>16-22</b>	(-8.33)	(-7.15)	(-5.25)	(-3.33)
<b>Share of member age</b>	-0.388***	-0.288***	-0.844***	-0.227***
<b>23-60</b>	(-12.69)	(-8.37)	(-8.87)	(-5.19)
<b>2002 dummy variable</b>	-0.0777***			
	(-6.56)			
<b>2007 dummy variable</b>	0.0957***			
	7.75			
<b>Number of samples</b>	15851	4904	4067	6880
<b>Adjusted R-squared</b>	0.127	0.431	0.058	0.045



## Rural area

	(1)	(2)	(3)	(4)
	Saving rate	Saving rate	Saving rate	Saving rate
<b>LOG (income)</b>	0.664***	0.154***	0.217***	1.632***
	11.23	14.36	13.89	8.83
<b>Size of household</b>	-0.211***	-0.0154	-0.0939***	-0.458*
	(-3.30)	(-1.07)	(-4.95)	(-2.28)
<b>Age of head below 40</b>	-2.848***	-0.647***	-0.963***	-7.640***
	(-7.87)	(-8.14)	(-9.28)	(-6.42)
<b>Age of head 40-60</b>	-2.607***	-0.753***	-0.982***	-6.630***
	(-7.62)	(-10.57)	(-9.77)	(-5.77)
<b>Eastern region</b>	-1.272***	-0.299***	-0.211***	-3.357***
	(-6.18)	(-6.31)	(-3.60)	(-5.24)
<b>Central region</b>	-0.593**	-0.228***	-0.134*	-1.589*
	(-2.97)	(-4.78)	(-2.45)	(-2.55)
<b>Share of member age 0-6</b>	0.289	-0.247	-0.126	0.494
	0.3	(-1.07)	(-0.43)	0.18
<b>Share of member age 7-15</b>	-0.942	-0.769***	-0.11	-2.031
	(-1.52)	(-5.11)	(-0.62)	(-1.09)
<b>Share of member age 16-22</b>	-0.526	-0.274*	-0.195	-2.369
	(-0.94)	(-2.30)	(-1.24)	(-1.26)
<b>Share of member age 23-60</b>	-3.503***	-1.149***	-1.410***	-8.526***
	(-6.29)	(-10.37)	(-8.54)	(-4.21)
<b>2002 dummy variable</b>	-0.607**			
	(-3.09)			
<b>2007 dummy variable</b>	-1.047***			
	(-4.70)			
<b>Number of samples</b>	25126	7966	9190	7970
<b>Adjusted R-squared</b>	0.005	0.033	0.022	0.01



# Results 1

- Per capita income of the households is an important factor of saving rate of households, the influence of regressive coefficient of income of rural households to saving rate is higher than that of the urban households explicitly



## Results 1

- The expense of education, health care and medical services have an explicit negative influence on saving rate.
- The higher the share of the households with the members in the age group around 0-6 years, 7-15 years, 16-22 years will have relatively high share of educational expense, because persons in these periods of age are in the period to be educated. Therefore, the higher the share of these age groups , the higher will be the share of educational expense of consumption of the households and the lower the saving rate.



# Results 1

- In respect to the urban households, the share of the variable of age group of members with 0-6 years, 7-15 years and 16-22 years of the urban households has a negative influence to the saving rate of urban household, i.e., the higher the share of age group of members with 0-6 years, 7-15 years and 16-29 years, the lower will be the saving rate of the households





# Results 1

- In respect to the share of variable of old people aged 60 years and above, basically it will have a negative influence to saving rate of both urban and rural households, and mostly, it is statistically significant. This negative impact can illustrate the saving rate of households will be decreased due to increase of share of ageing members of households post structural change of population in coming future.



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<b>Number of samples</b>	25126	7966	9190	7970
<b>Adjusted R-squared</b>	0.005	0.033	0.022	0.01



## Results 2

- In respect to results of share of food of consumption structure, all coefficients of income variables are negative, i.e. the share of food of consumption structure of both urban and rural households are decline in accompanying with the rise of income



## Results 2

- In respect to results of share of clothing of consumption structure, this share of urban households decreases in accompanying with the increase of income, while this share of rural households increases in accompanying with the increase of income, i.e. clothing is an inferior goods to the urban households while it is a normal goods to the rural households. By the mean time, the share of clothing consumption of young households of both urban and rural are higher than the share of old households in correspondence.



# Results 2

- With regard to the share of consumption of health care and medical services, this share is in decrease in accompany the increase of income, but the coefficient is relatively small, the coefficient of income variable is -0.057. The influence of income variable of rural households to the share of health care expense of consumption structure is statistically insignificant. The share of health care and medical services of consumption structure of young households is generally lower than that of old households. The variable of share of population of different ages influences the share of health care consumption explicitly, especially the variable of share of population aged sixty years and above is statistically significant, and all coefficients are positive, it is 0.05 and 0.03 for urban and rural households respectively.



## Results 2

- With regard to the share of educational consumption, this share of both urban and rural households is rising in accompany the increase of income of the households, and the share of educational consumption of young households of both urban and rural are higher than this share of consumption of old households: In addition, the variable of share of population with members of age group 16-22 years of both urban and rural households are statistically significant, the higher the share of members of age group around 16-22 years of the households, the higher will be the share of educational expense of consumption of households.



# Results

- Results of study show: the change of household demographic structural variables such as household income, scale of household, and share of household members of different age do have certain influences on consumption structure and saving rate of the households





Thank you very much!