

## A Study on the Evaluation of Urban Residents' Quality of Life in Daqing Based on Consumption Structure

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### Abstract

### Review Article

First of all, through the changes of consumption data of urban residents in Daqing since 2005, this paper analyzes the characteristics of rationalization of consumption structure of urban residents in Daqing. Then, starting from the consumption structure of urban residents, based on the material conditions of residents, using the change of consumption structure to analyze the living quality of urban residents in Daqing City. The results show that after 2010, the quality of life of residents in Daqing city has improved significantly, which is consistent with the rationalization of consumption structure of urban residents in Daqing city.

**Keywords:** urban residents; consumption structure; quality of life.

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## INTRODUCTION

The pursuit of the improvement of the quality of life is the inevitable result of the development of human society. People oriented', paying attention to residents' happiness index and improving the quality of life of residents has become one of the signs of social progress [1]. At the 19th National Congress of the Communist Party of China, the quality of life is closely linked with building a moderately prosperous society in an all-round way and realizing the Chinese dream. In the new historical period, consumption has gradually replaced the leading role of investment in economic transformation, demands of consumption have gradually become the main part of economic development.

A reasonable consumption structure is an important sign of improving the quality of life. The improvement of consumption structure is conducive to promoting the consumption of residents and improving the quality of life of residents.

Consumption structure refers to the proportion of various types of consumption expenditure in total expenditure [2], which can not only reflect people's living standards and quality of life, but also measure the level of economic development and social progress. The study of consumption structure started from Engel, whose Engel coefficient has made an important contribution to measuring a country or a family's

wealth. With the continuous development of economy, the per capita disposable income of residents is also increasing year by year, and the consumption structure of residents also shows obvious differences. With the continuous development of economy, the per capita disposable income of residents is also increasing year by year, and the consumption structure of residents also shows obvious differences. The expenditure of households or individuals on specific consumption items can reflect the current and future quality of life of residents to varying degrees. The consumption structure of residents not only reflects the degree of regional residents' consumption preference and sensitivity to factors such as residents' income and prices of consumer goods, but also reflects the quality of life of regional residents and the level of regional economic development [3]. A reasonable consumption structure is not only conducive to the improvement of the quality of life of residents, but also conducive to the transformation and development of resource-based cities.

### Analysis of consumption structure characteristics of urban residents in Daqing

By looking up the statistical yearbook of Daqing City, this paper analyzes the consumption data of urban residents in Daqing city since 2005, and obtains the current situation and changing characteristics of the consumption structure of urban residents in Daqing city.

**Trend characteristics of total consumption and per capita consumption level**

The data of total consumption value and per capita consumption expenditure of urban residents in Daqing City show an exponential growth mode, and the increasing range is increasing year by year. In the past 14 years, great changes have taken place in the consumption level of urban residents in Daqing. The per capita consumption expenditure increased from RMB8600 in 2005 to RMB22226 in 2016, an increase of about 1.6 times. From 2005 to 2010, the consumption level of urban residents in Daqing increased slowly; During the four years of 2011-2014, the consumption level of urban residents in Daqing developed rapidly, from RMB13000 per capita to RMB20000 per capita; In 2015-2016, the growth rate of residents' consumption

level slowed down compared with the previous stage, and the overall consumption level of the city achieved steady growth. Daqing's per capita disposable income increased steadily, from RMB13662 in 2005 to RMB41091 in 2018, an increase of about twice. Daqing's per capita disposable income increased steadily, from 13662 yuan in 2005 to 41091 yuan in 2018. It has increased by about 2 times. According to traditional economic theory, income level determines consumption ability. As incomes rise, their spending power also increases. When the income increases, the consumption ability also increases. The trend of per capita consumption expenditure and per capita disposable income of urban residents in Daqing is basically synchronous.

**Table-1: Per capita consumption level of urban residents in Daqing**

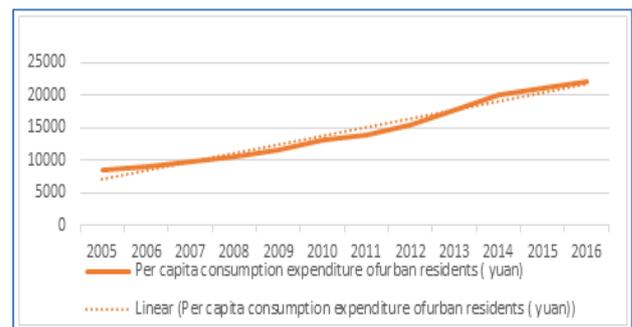
year	Total consumption of urban residents (Ten thousand yuan)	Per capita consumption expenditure of urban residents ( yuan)	year	Total consumption of urban residents (Ten thousand yuan)	Per capita consumption expenditure of urban residents ( yuan)
2005	1173148	8599.9	2011	3097200	13999.8
2006	1367735	9085.1	2012	3706623	15482.2
2007	1787575	9847.1	2013	4210753	17638.4
2008	2005879	10596.3	2014	4821313	20000.6
2009	2259133	11539.9	2015	5216452	21107.3
2010	2548117	13051.3	2016	5558379	22226

**Table-2: The growth rate of per capita disposable income in Daqing**

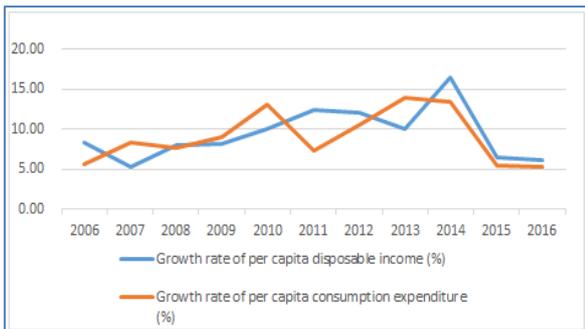
year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Growth rate of per capita disposable income (%)	8.3	5.3	8.0	8.1	10.1	12.4	12.1	10.0	16.4	6.5	6.1

Since 2005, the growth rate of per capita income of urban residents in Daqing has shown a trend of first growth, stable in the medium term and then declining. The growth rate of disposable income of urban residents in 2014 has accelerated significantly. And since 2014, the growth rate of urban residents' income is gradually higher than that of consumption, this gap is increasing with time. The growth rate of consumption expenditure in 2014 was swift and violent. The growth rate of consumer spending was rapid in 2014. In other years, the basic increase was not large, and the increase rate is presented fluctuating growth state. The per capita consumption expenditure and per capita disposable income are increasing at the same time, but its growth rate is slightly lower than that of per capita disposable income, and the fluctuation range is large. In 2011 and 2015, the growth rate of consumption dropped significantly. Especially in the past two years, the economy has entered a new normal. Affected by factors such as the slowdown of the domestic economy and changes in the economic structure of the province, the growth rate of per capita income and consumption expenditure is slow. On the whole, the per capita consumption expenditure of urban residents in Daqing is increasing with the increase of disposable income

In the long run, revenue growth is faster than consumer spending.



**Fig-1: broken line chart of per capita consumption expenditure of urban households in Daqing**



**Fig-2: Growth rate of per capita disposable income and per capita consumption expenditure in Daqing**

**(II) Analysis of average consumption tendency**

The average propensity to consume (APC) is the ratio of consumption to income, that is  $APC = C/Y$ . its main influencing factors are residents' current income and expectation of future uncertainty. The increase of average propensity to consume means that the residents' current income level is high. The expected factors of future uncertainty are few, and the amount of consumption in residents' income increases; On the contrary, it means that the current income level of residents is low, and there are many uncertain expectations about the future, so residents will increase savings and reduce consumption. The average consumption tendency of urban residents in Daqing is shown in Table 3.

**Table-3: Average consumption tendency of urban residents in Daqing**

year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Average consumption tendency of urban residents	0.63	0.61	0.63	0.63	0.63	0.65	0.62	0.61	0.64	0.66	0.62	0.61

The average consumption tendency of urban residents in Daqing City fluctuates back and forth between 0.61-0.65, with a small fluctuation range in 2005-2009 and a large fluctuation range in 2010-2016. The average consumption tendency of urban residents showed a slow upward trend from 2006 to 2010 years, and a significant downward trend from 2010 to 2012. After a slight increase in 2013, it shows a downward trend. In 2007, 2010 and 2013, there was a trend of callback, which generally fell evenly, which was basically consistent with Keynesian theory.

Especially since 2010, with the development of economy, people's living standard has been improved. The average consumption curve shows a downward trend with the change of time. People's consumption intention has declined, and the proportion of per capita consumption expenditure in disposable income has decreased. This shows that the living consumer goods, such as residence, household equipment and services, have been basically met by urban residents in Daqing City, and the high growth rate of consumption expenditure has begun to slow down gradually.

Although the average propensity to consume rose slightly in 2013, with the gradual marketization of housing, health care and education, the national economy entered the new normal, the growth rate of income slowed down, people's uncertainty about the future increased, resulting in more cautious and even reduced consumption. In addition, the income gap between the current residents continues to expand, forcing people's desire to consume to decline the average propensity of residents to consume has continued to decline.

**Analysis on the characteristics of rationalization of consumption structure**

**Engel coefficient**

Engel's coefficient is put forward by German statistician Engel. Engel's coefficient is the ratio of food expenditure to total consumption expenditure. Engel's coefficient can not only measure the consumption structure of residents, but also indicate the level of living standard. In the world, Engel coefficient is often used to measure the living standard of people in a country or region. FAO puts forward the standard of judging the rich and the poor according to Engel's coefficient, specifically: over 60% of Engel's coefficient is poverty, 50-60% is food and clothing, 40-50% is well-off, 30-40% is rich, and less than 30% is the richest.

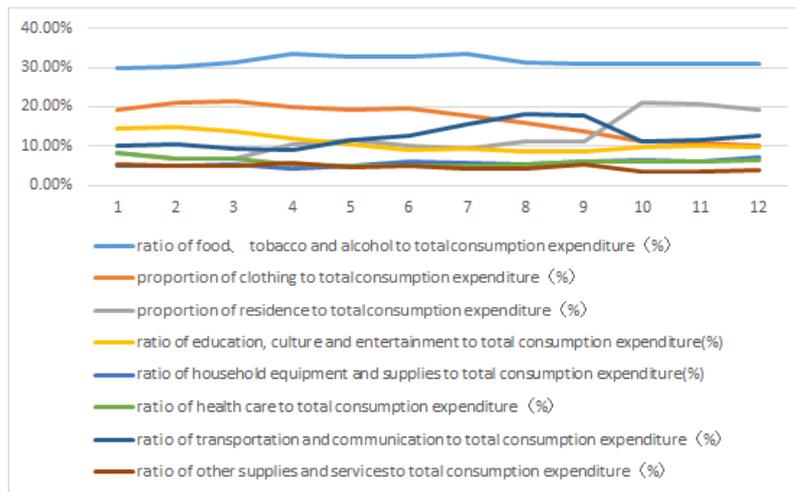
Engel's coefficient can be used as a reference for judging the living standards of residents in a certain area, but it is not an absolute basis. We use the Engel's coefficient of urban residents in Daqing city for vertical comparison, and the significance of Engel's law is more obvious. From 2005 to 2006, the Engel coefficient of urban residents in Daqing city is between 30% and 40%, which has entered a relatively rich stage. Between 2005 and 2008, Engel's coefficient rose directly from 29.7% to 33.3%. During this period, the per capita disposable income of urban residents in Daqing increased from 13661.9 yuan to 18180.8 yuan, an increase of 33.1%, and the per capita consumption expenditure increased from 8599.9 yuan to 11539.9 yuan, an increase of 34.2%. When we analyze the situation that the per capita disposable income and per capita consumption expenditure have increased greatly, but the Engel coefficient has increased, we find that the main reason is that the consumption concept of residents has changed. When the residents live in a

richer stage, they will pay more attention to nutrition and health in the aspect of food consumption, such as consuming some green and organic foods with higher price, which will lead to the rising of food consumption in the proportion of consumption, that is to say, Engel coefficient rebounds. In 2008-2011, Engel remained basically stable with little change, and was still in a relatively rich stage. At this stage, the per capita income and consumption of urban residents in Daqing city have increased steadily. The government has focused on ensuring and improving people's livelihood, and the expenditure on health care and education is relatively stable. From 2012 to now, Engel has shown a slow downward trend, which shows that with the increase of family income, most urban residents began to shift their consumption focus from food consumption to enjoyment consumption to meet leisure and entertainment. The decline of Engel coefficient indicates that the living standard of urban residents in Daqing city is constantly improving, which is closely

related to the achievements of recent economic transformation and development in Daqing city.

**The proportion of consumption expenditure to total expenditure of consumption**

According to the specific forms of residents in the whole consumption process, the consumption structure can be classified. At present, the most common classification method is to divide the consumption structure into eight categories: food expenditure, clothing expenditure, residential expenditure, transportation and communication expenditure, household equipment and supplies expenditure, health care expenditure, culture, education and entertainment expenditure and other expenditures. From the relative numerical point of view, calculate the proportion of all kinds of consumption expenditure in the total consumption, and measure the change of consumption structure of urban residents in Daqing city through the change trend of proportion.



**Fig-1: Changes of consumption proportion of urban residents in Daqing**

The proportion of clothing consumption of urban residents in Daqing city is decreasing. Since 2010, the proportion of clothing has declined significantly. However, with the increase of the total base of household expenditure, the absolute value of clothing consumption expenditure is still increasing. The decline in the proportion of clothing expenditure shows that the basic living consumption demand of urban residents in our city is decreasing and the quality of life is improving. The proportion of residential consumption is on the rise in general. From 2005 to 2013, the proportion of residential consumption increased steadily from 7% to 12%. In 2014, it increased significantly, reaching 21%. After that, it has been maintained at about 20%, indicating that the demand for housing of urban residents in Daqing is stable. The proportion of education, entertainment and culture decreased from 2005 to 2013, and increased steadily after 2013. With the continuous progress of society, the renewal cycle of knowledge is constantly shortened. Urban residents in our city continue to learn

to enrich themselves and improve their ability to adapt to social development. The proportion of traffic and communication is on the rise and then on the decline. The main reason is that the mobile phone has entered the intelligent era, the speed of upgrading is speeding up, the price of oil is rising and other factors, resulting in the short-term increase of communication consumption. However, with the increase of market saturation, the consumption of residents is more rational. After the short-term rise of traffic and communication consumption, it begins to decline and tend to be stable.

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traffic and communication consumption, it begins to decline and tend to be stable.

**Changes in consumption structure of urban residents in Daqing**

By using the consumption data of urban residents sorted out in Daqing statistical yearbook, this paper analyzes the changes of consumption structure of urban residents in Daqing City, which can better measure the changes of consumption structure of urban residents in Daqing city.

**The variation degree of consumption structure**

The variation degree of consumption structure is to measure the change degree of annual consumption structure of residents

$$R_x = \frac{\sum_{i=1}^8 |X_{ij} - X_{i0}|}{n}$$

$$H_i = \frac{|X_{ij} - X_{i0}|}{\sum_{i=1}^8 |X_{ij} - X_{i0}|}$$

$R_x$  The change degree of consumption structure,  $H_i$  is the contribution rate of consumption structure change,  $\bar{x}_{i1}$  is the proportion of item  $i$  in the consumption structure in period  $j$ ,  $\bar{x}_{i0}$  is the proportion of item  $i$  in the base period.  $n$  Represents the number of years in the investigation period.

The change degree of consumption structure of urban residents in Daqing since 2005 is calculated, he results are as follows:

**Table-4: Change degree and contribution rate of consumption structure of urban residents in Daqing City (%)**

	2005-2007		2008-2010		2011-2013		2014-2016	
	The variation degree	Contribution rate						
food	1.6	19.05%	0.7	6.03%	2.3	16.67%	0.2	3.23%
clothes	2.3	27.38%	0.3	2.59%	3.9	28.26%	1	16.13%
medical care	1.3	15.48%	0.5	4.31%	1.8	13.04%	1.9	30.65%
transportation and communication	0.8	9.52%	2.9	25.00%	0.7	5.07%	0	0.00%
Education, culture and entertainment services	0.3	3.57%	1.9	16.38%	0.3	2.17%	0.7	11.29%
living	1.4	16.67%	0.5	4.31%	1.4	10.14%	0.7	11.29%
Household equipment supplies and services	0.5	5.95%	3.9	33.62%	2.3	16.67%	1.5	24.19%
other supplies and services	0.2	2.38%	0.9	7.76%	1.1	7.97%	0.2	3.23%
Total variation	8.4		11.6		13.8		6.2	
Annual variation	1.05		1.45		1.725		0.775	

Since 2005, the Engel coefficient of urban residents in Daqing has been fluctuating around 30%, which shows that the transition from well-off to rich has been completed. From 2005 to 2007, the average annual change of consumption structure of urban residents in Daqing city was 1.05 percentage points, and from 2008 to 2010, the average change was 1.45 percentage points, of which the biggest change was household equipment supplies and services, transportation, communication, education, culture and entertainment services. The popularity of electronic equipment and household vehicles is the main reason for the high degree of consumption change at this stage. At the same time, with the continuous improvement of living water, more and more urban residents invest more funds to obtain higher quality cultural and educational resources and participate in recreational activities, so as to enrich the

industrial and cultural life of residents. During 2011-2013, the average change was 1.73 percentage points. During this period, Engel's coefficient decreased slowly, and the change of consumption structure was large, mainly reflected in the change of clothing, food and household equipment supplies and services. Residents who have reached the stage of affluence begin to pursue better fabrics and brands in terms of clothing, and strengthen their health awareness. More residents begin to pay attention to the purchase of green food and health care products other than medical insurance. In 2014-2016, the average annual change is 0.78 percentage points. In this stage, Engel coefficient is stable around 31%. Urban residents are rich in life, and the consumption structure of residents is improving day by day. The rational consumption awareness of residents is also constantly

improving, and the change degree of consumption structure is relatively low.

#### Contribution rate of changes in consumption items

Using the proportion of the change degree of a certain kind of consumption in the total change degree of consumption, we can get the contribution rate of the change of consumption items, further analyze which consumption items affect the change of consumption structure, and understand the extent of its influence.

**Table-5: living, enjoying and developing consumption contribution rate of urban residents in Daqing**

	2005-2007	2008-2010	2011-2013	2014-2016
Living consumption	63.10%	12.93%	55.07%	30.65%
Enjoying consumption	48.81%	40.52%	57.97%	70.97%
developing consumption	27.38%	37.07%	26.09%	33.87%

The main purpose of survival consumption is to solve the problem of food and clothing; enjoyment consumption is to meet the needs of enjoyment and development after meeting the needs of survival; development consumption is to seek better and higher development of consumer demand. The contribution rate of living consumption change of urban residents in Daqing city shows a fluctuant downward trend, which shows that the living standard of urban residents in Daqing city is still steadily improving. The contribution rate of development-oriented consumption change shows an obvious upward trend, and the volatility of Enjoyment-oriented consumption change is declining, which shows that while the material life of urban residents in our city is improved, they pay more attention to the development of education, culture and spiritual life, which fully reflects the rich spiritual and cultural achievements brought by the construction of civilized cities in our city.

Based on the above analysis, the development consumption has become the main driving force of urban residents' consumption growth in our city. Since 2005, the consumption structure of urban residents in Daqing has been improved and gradually developed to rationalization.

#### Establish a quality of life evaluation index system based on consumption structure

The study of quality of life began in the United States in the 1930s. In 1958, John Kenneth Galbraith, an American economist, first proposed the concept of quality of life (QOL) in his book *wealthy society*. Later researchers designed a set of indicators including subjective feelings and objective conditions to evaluate the quality of life, of which consumption, income and social security are the most important indicators.

According to the general consumption law, the consumption items are divided into three levels: survival type, enjoyment type and development type. Survival consumption mainly includes food, clothing and residence; development consumption mainly includes transportation, communication, education, culture and entertainment services and health care; enjoyment consumption mainly includes household equipment and services and other supplies.

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#### Influencing factors of residents' quality of life based on consumption structure

The quality of life of residents is the result of economic, social and ecological factors. The economic factors of a country and a region play a decisive role in the quality of life of residents in the region. Economic factors include not only economic development, but also local residents' income level and consumption expenditure structure. Income is the most important factor affecting the consumption of residents. Income affects the quality of life of residents by influencing consumption ability, so income is also an important variable affecting the quality of life [4]. The reasonable consumption structure of a region or country is the main embodiment of the improvement of the living material level of residents. The indicators closely related to the social security situation of residents' consumption, such as per capita GDP, per capita disposable income of urban residents, Engel coefficient, consumer price index, living consumption expenditure of urban residents, per capita disposable income, etc., are considered as the influence of consumption theory on residents Important factors of quality of life.

#### Establish a quality of life evaluation index system based on consumption structure

Select the economic indicators related to residents' income and consumption structure, and construct the evaluation index system of residents' quality of life based on consumption structure.

**Table-6: Evaluation system of residents' quality of life based on consumption structure**

Subsystem	Index layer
Resident income	Per capita GDP
	Per capita disposable income
	Per capita savings
Household consumption	Engel coefficient
	Consumer price index
	Consumption rate
	Per capita consumption expenditure
	Proportion of per capita living consumption expenditure
	Per capita consumption of education, culture and entertainment services

According to the data of Daqing City Yearbook, the income and consumption data of urban residents in Daqing city from 2005 to 2016 are clustered, and Euclidean distance is used to cluster. The results show that 2005-2009 is a category, 2010-2016 is a category, combined with the size of specific economic indicators data, we found that after 2010, the quality of life of residents in our city has significantly improved, which is consistent with the rationalization of the consumption structure of urban residents in our city.

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**Appendix**

**Table-1: Consumption proportion of urban residents in Daqing**

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
ratio of food、 tobacco and alcohol to total consumption expenditure (%)	29.70	30.10	31.30	33.30	32.70	32.60	33.30	31.20	31.00	31.00	31.00	30.80
proportion of clothing to total consumption expenditure (%)	19.10	21.20	21.40	19.90	19.20	19.60	17.80	16.00	13.90	11.20	10.90	10.20
proportion of residence to total consumption expenditure (%)	8.10	6.90	6.80	10.60	11.60	10.10	9.40	11.10	11.20	21.10	20.70	19.20
ratio of education, culture and entertainment to total consumption expenditure(%)	14.50	14.90	13.70	11.80	10.50	8.90	9.40	8.70	8.70	9.80	9.90	9.80
ratio of household equipment and supplies to total consumption expenditure(%)	5.10	4.80	5.40	4.30	4.80	6.20	5.70	5.40	6.00	6.30	6.20	7.00
ratio of health care to total consumption expenditure (%)	8.30	6.80	6.90	5.40	4.80	4.90	4.80	5.20	6.20	5.90	6.20	6.60
ratio of transportation and communication to total consumption expenditure (%)	9.90	10.30	9.40	8.90	11.70	12.80	15.40	18.00	17.70	11.10	11.60	12.60
ratio of other supplies and services to total consumption expenditure (%)	5.30	5.00	5.10	5.80	4.70	4.90	4.20	4.40	5.30	3.60	3.50	3.80