

Observation on the Attraction of Floating Population

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Abstract

This paper defined the attraction factor of floating population as income factor, consumer factor, work factor and family factor by using the method of factor analysis, based on the dynamic monitoring data of the floating population in 2014. Besides, Calculate attractiveness factor scores of each region and compare them. In addition, the method of cluster analysis was used to classify the type of attraction into four categories, and the characteristics of these four categories were analysed.

Keywords —Attraction; Influencing factors; Floating population

I. RAISE QUESTION

According to the third census data in 1982, the number of floating population in China was only 6.57 million, accounting for 0.66% of the total population. In 2005, the number of floating population reached 147.35 million (Duan Chengrong, 2009)^[1]. In 2008, China's floating population reached 2.01 billion (national population and family planning commission, 2010)^[2]. In just over two decades, the number of floating population in China increased from just 6.57 million to nearly 201 million, a 30.5 fold increase. The floating population's huge size, rapid growth, concentrate in a few provinces and more and more stable housing and employment in there, make a great challenge to the long-term and stable development of the urban areas.

Since the early 1990s, scholars study China's floating population from the characteristics of space and time of the floating population, floating population growth factors, the effect of the floating population to floating population policy and system design (Yu Taofang, 2012)^[3]. In recent years, the researches of the floating population in China are mainly concentrated in the flow of spatial pattern of the impact on regional economic development, population flow and migration policy areas (Zhang Yaojun, Cen Qiao, 2014)^[4].

However, There are relatively few studies on influencing factors of floating population in China. The research methods are mainly regression model and principal component analysis. The data are mainly from census and statistical year book. Besides, most of these studies generalize the influence factors

of the choice of the input field from the macro level, and do not further analyze the specific performance of these factors in the cities.

Why are the few migrant cities so attractive to floating population? What are the characteristics of these attractive types?

This article tries to answer these two questions from micro level, using the factor analysis and cluster analysis method to analysis the floating population attraction factor to define the type of floating population attraction, based on the dynamic monitoring data of the floating population in 2014.

II. BASIC IDEAS FOR THESIS RESEARCH

This paper has compiled a list of 13 indicators of the attraction of floating population, according to the national Wei Sheng Wei 2014 national dynamic monitoring data of the floating population. They are the floating population's scale, the average age, the average years of education, average age of first marriage, the average number of local families, the average monthly income of the local family, local average monthly total expenditure, personal average monthly revenue, average monthly average food spending, leave the domicile length, average into local length, average monthly rent payments, in the local average continuous working time.

Why are the few migrant cities so attractive to floating population? What are the characteristics of the attractive types? In order to answer these two questions from the micro level, based on the data of the original data and the 13 indexes of the various regions, this paper mainly analyzes the following:

Firstly, the flow phenomenon of floating population is analyzed.

Secondly, factor analysis is used to summarize the attraction factors of floating population. The scores of the attractive factors are also ranked.

Thirdly, the flow type of floating population is summarized by using cluster analysis method. At the same time, the characteristics of the flow type are analyzed respectively.

Fourth, integrate the attractive score and the type of flow into the land, rank the attraction of each district.

III. ANALYSIS PROCESS

The data used in this study are mainly related data of the national population and family

planning commission 2014 national dynamic monitoring survey. The survey respondents are 15-59 years of age and have a local residence for a month or more, and non-local (county, city) accounts of male and female migrants. The total sample size is about 198,000, involving about 500,000 floating population.

A. Analysis of Flow Phenomena

In order to reveal the partial flow phenomenon of floating population, this part mainly analyzes the time of the floating population living in the current residence and the total flow time of the floating population.

Firstly, a single sample T test is conducted on the living time of the floating population in the current land. we use 4.5 years as the reference standard for the single sample T test, because of the research of Cheng-rong Duan (2013), which shown that hobo leaves census register seat the average time of 4.5 years in 2010^[5], with the 2005 national 1% population sampling survey of the same indicators, as well as the fifth national census in 2000 'average time of floating population living in defined "generally consistent. the T test results are shown in table 3-1.

Table 3-1 : The T-Test of Current Residence Time
One-sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean		
time	198795	5.27	4.73	0.01061		
One- sample Test				Test value = 4.5		
	t	df	Sig.(2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
	19879					
time	72.6	4	0	0.77	0.75	0.7916

Remark:Time is The amount of time flowing into the region Secondly, Analysis the time of the floating population living in the current residence and the amount of time the floating population leaves the home place. The results based on the flow time grouping are shown in table 3-2.

Table 3-2 The Flow of the Floating Population

Group (year)	Time of living in the present			Time of leaving the domicile		
	Frequency	Effective percentage	cumulative percentage down to the top	Frequency	Effective percentage	cumulative percentage top to the down
<2	61419	30.9	100	13690	6.9	99.7
2-5	61347	30.9	69.2	41699	21	92.8
5-10	45995	23.1	38.3	57981	29.2	71.8
10-15	20389	10.3	15.2	45278	22.8	42.6
>15	9646	4.9	4.9	39320	19.8	19.8
Total	198795	100		198795	99.7	

B. Factor Analysis Process

Using SPSS software, 13 indexes are analyzed. the output results show that under the significance level of 0.01, the correlation between the variable matrix can't be a unit matrix. Therefore, the factor analysis of the attraction factor can be made.

KMO value is 0.607, although the effect is not optimal, but greater than 0.5 is acceptable. so four common factors are extracted, the cumulative variance contribution rate is about 80%. The factor analysis of the rotational component matrix is shown in table 3-3.

Table 3-3 Factor Analysis Roation Component Matrix of the Attraction Factor

component	1	2	3	4
SV				
personal average monthly revenue	0.935	-0.038	0.037	0.081
average monthly income of the local family	0.827	0.436	0.123	0.187
average monthly rent payments	0.756	0.36	-0.294	-0.159
average age of first marriage	0.554	0.435	0.066	-0.278
leave the domicile length	-0.052	0.767	0.379	0.202
average monthly average food spending	0.403	0.75	0.14	0.195
local average monthly total expenditure	0.602	0.739	-0.018	-0.022
average years of education	0.178	0.634	-0.445	-0.32
average continuous working time in	0.177	0.181	0.911	0.018

the local				
average into local length	-0.009	0.045	0.907	-0.006
the average age	-0.471	-0.027	0.651	-0.397
average number of local families	-0.136	-0.048	-0.054	0.829
floating population's scale	0.392	0.354	0.017	0.655

Remark: SV is Standardized variable

C. Clustering Analysis Process

Factor analysis explains the main reasons for the inflow of floating population in the provinces. However, the attractiveness and category of the floating population may differ between the two neighboring provinces. so we use cluster analysis to divide the provinces of the same attraction of floating population into a category.

Through the comparison of various clustering method, the distance between samples is calculated by Euclidean distance. The distance between samples and small classes, small classes and small classes are calculated by Ward's method.

The results of q-type clustering using SPSS software are shown in figure 3-1.

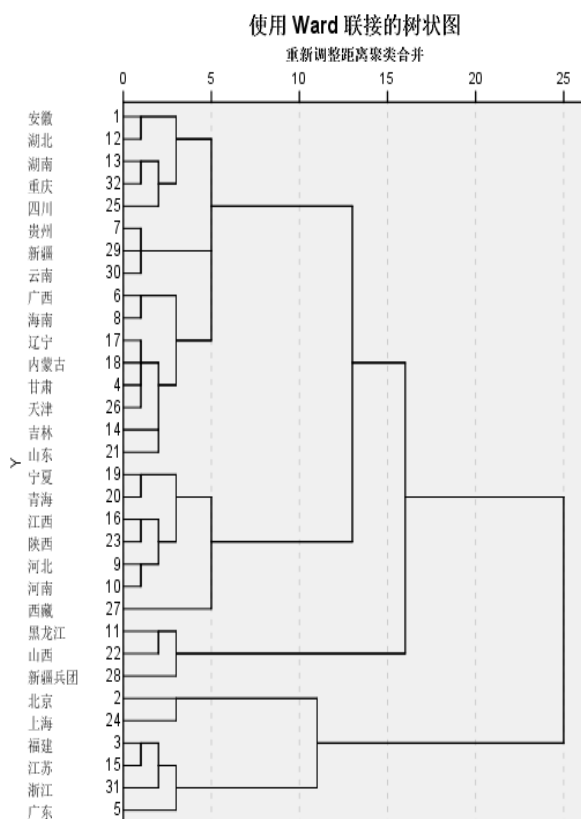


Fig 3-1 Cluster Analysis Tree Diagram

IV. CONCLUSION

A. The Floating Population Tends to be in a State of Flux

It can be seen from table 3-1 that the average time of the floating population living in the current residence is about 5.2 years. which can be considered that is no significant difference with 4.5 years in the 95% confidence interval. This means that over the last 20 years, the floating population has been living in a very stable time.

According to table 3-2, The effective percentage of time flowing into the local area is 38.3% over five years, 15.2% over 10 years, and 4.9% for 15 years. it is only a slight difference compared to 37.45%, 15.41%, 4.97%, which was obtained with the data of 2011 by cheng-rong duan (2013) [5]. This is another way of saying that in the past five years, the floating population has been living in a very stable time.

The average time of the floating population leaving their domicile is 9.76 years. That's less than twice the average time of living in the current residence, which is 5.2 years. it shows that after the floating population left the domicile, less than two cities were changed on average. so we know that the floating population has stable residence, weak liquidity and tends to a statue of not flow after choosing a certain city.

The table 3-2 shows that the proportion of people leaving the domicile is 71.8% over five years, the effective percentage for 5-10 years is 29.2%, for 10-15 years is 22.8%, more than 15 years is 19.8%, missing value is less than 5%. The data shows the likelihood that the floating population may leave the domicile and linger longer and longer in other cities.

B. The Attraction Factor Of The Flow

1) Four Types Of Common Factors

According to table 3-3, the inflow attraction factor of floating population can be concluded to four categories.

The first common factor can be called the income factors that are attractive to the ground. Because it has larger load on personal average monthly revenue, average monthly income of the family ,average monthly rent payment, average monthly total expenditure. which can reflect the phenomenon that flows for high wages.

The second common factor can be called the attractive factors of consumption. Because it has larger load on leave the domicile length, average monthly food spending, average monthly total expenditure, average years of education. which can

reflect the phenomenon that the floating population's consumption habits and lifestyle are changed.

The third common factor can be called work factors that are attractive to the ground. Because it has larger load on average into local length, and the local average continuous working time. which can reflect the phenomenon that the floating population have stable work in the local.

The fourth common factor can be called family factors that are attractive to the ground, which has larger load on the average number of local families and the floating population's scale.

2) The Ranking of Factor Scores

The calculation formula of Thompson factor score is: $\hat{F} = A'R^{-1}X^*$ [6]

The score of the attractive factor can reflect the performance of the common factor of floating population in different regions. Besides, with the variance contribution rate as the weight, the scores of each factor are combined together, and the total score calculated can reflect the overall attraction level of each region. If the factor score is positive, the factor in the province performs better than the national average; If the score is negative, it is worse than the national average.

This paper focuses on areas that are attractive to floating population. Therefore, the scores in income factor, consumer factor, work factor, family factor and comprehensive factor above the national average are listed as follows:

There are 15 provinces, which income factor scores are higher than the national average. The score according to the order from high to low is: Shanghai, Beijing, Tibet, Gansu, Guangdong, Jiangsu, tianjin, shaanxi, shandong, qinghai province, anhui, hubei, fujian, zhejiang, Hainan. Besides, Shanghai and Beijing, in particular, have a much higher income than other provinces. Chongqing, heilongjiang, sichuan and xinjiang have the lowest incomes.

There are 17 provinces, which consumption factor scores are higher than the national average. the score according to the order from high to low is: guangdong, sichuan, guangxi, anhui, hubei, chongqing, Shanghai, hainan, fujian, hunan, Beijing, Inner Mongolia, liaoning, heilongjiang, shandong, guizhou, zhejiang.

There are 17 provinces, which work factor scores are higher than the national average. the score according to the order from high to low is: heilongjiang, xinjiang production and construction corps, Shanghai, shanxi, xinjiang, Inner Mongolia, yunnan, Beijing, tianjin, liaoning, jiangsu, sichuan, guizhou, fujian, zhejiang, gansu and jilin.

There are 13 provinces, which family factor scores are higher than the national average. the score according to the order from high to low is: zhejiang, guangdong, fujian, guizhou, yunnan, xinjiang production and construction corps, jiangsu, jiangxi, henan, qinghai, ningxia, xinjiang, sichuan.

There are 16 provinces, which comprehensive factor scores are higher than the national average. the score according to the order from high to low is: Shanghai, guangdong, Beijing, zhejiang, jiangsu, fujian, hubei, yunnan, xinjiang, Inner Mongolia, anhui, guizhou, gansu, hainan, heilongjiang, tianjin.

C. The Type of Attraction

According to figure 4-1, the type of attraction is divided into four categories.

Category one: guangdong, zhejiang, jiangsu, fujian, Shanghai, Beijing;

Second category: xinjiang corps, shanxi, heilongjiang;

The third category: Tibet, henan, hebei, shaanxi, jiangxi, qinghai and ningxia;

The fourth category: shandong, jilin, tianjin, gansu, Inner Mongolia, liaoning, hainan, guangxi, yunnan, xinjiang, guizhou, sichuan, chongqing, hunan, hubei and anhui.

By Using OLAP cube to make further analyze on the attraction type, and analyze the attraction scores, we know that:

The first category includes six provinces, with the largest floating population of about 24,000, accounting for 71.7%, much higher than other classes. These provinces also have the highest average years of education, the latest average age of first marriage. Average incomes and spending levels are also highest. In addition, the scores of the integrated factor of the attraction of the land are in the top six, indicating that the class has the strongest attraction to the floating population.

The second category consists of three provinces. Compared with other categories, the average age of such migrants is 37.48, three to five years higher than other classes. Besides the average flow of this class to the local time is the largest and closest to the average working time, and the standard deviation is very small. In addition, the three provinces of the class are located in the top four of the most attractive working factor scores, which shows that the working population of such areas is most stable. In particular, the coal resources in shanxi and heilongjiang are abundant, and the xinjiang army is one of the largest reclamation areas in the country, which brings together a relatively stable floating population.

The third category consists of seven provinces, with the scores of the family factors in

qinghai, ningxia, jiangxi and henan attracting slightly higher than the national average. The seven provinces, in terms of the overall attractiveness of the integrated factor, income factor, consumption factor, and work factor score, are all below the national average. It shows that the region has the weakest attraction to floating population. It may be that the overall economic development level of this kind of region is not high and the employment opportunities are relatively few, so the area is mainly for floating population.

The fourth category contains the most provinces, with 16. The most prominent feature of

this class is that it is more diffuse in the factor score of the attraction factor. The provinces in the comprehensive factor, income factor, defined the attractive consumer factor, work factor, family factor score, there are some higher than the national average, there are some below the national average. Among them, hubei, yunnan, xinjiang, Inner Mongolia, anhui, guizhou, gansu, hainan and tianjin, nine provinces have scored slightly higher than the national average. The above analysis shows that the region's attractiveness to floating population is generally average.

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