

Study on the Residents Satisfaction Degree in the Urban and Rural Fringe in China—Based on Structural Equation Model¹

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Abstract:

Urban and rural fringe has very complicated characteristics in China. The high mobility of migrants and transitioning polices in this region are potential factors to impede social harmonious development. This paper reveals the satisfaction degree of residents in these regions by using method of random sampling of 1500 people in east, north and west of China. And by putting forward correlation analysis and SEM, It demonstrates different residents groups have great different evaluation of satisfaction. This paper indicates the main material satisfaction, spirital satisfaction and policy satisfaction factors, and their sub-factors and structure as well. It is found the residents have much complain about the employment, salary, entertainment and land policies. The overall satisfaction degree is only 61%. The residents' satisfaction degree provides not only an important basis for understanding the social community in this area, but also has reference value for how to improve the integrated development with urban-rural fringe and inner city.

Key Words: Urban and rural fringe; resident's satisfaction degree; Structural Equation Model (SEM)

1. INTRODUCTION

In the 20s of 20th Century, cities in western developed countries showed the trend of suburbanization, with a transitional zone forming between the urban and rural areas. This transitional zone is defined as the Urban and Rural Fringe by western scholars. In China, it is also known as the urban and rural connecting area as it locates between a built-up area and a purely agricultural hinterland. As a common community type on the process of urbanization in China, these communities display the Characteristics of both urban and rural lifestyles in the combined area, totally different from suburbs or countryside in the general concept (ZHEN Yan LU Kang-juan, 2006). For that urban and rural fringe locates around cities, it has a close relationship with the city proper in the aspects of politics, nature, population, economics, society and land utilization. Meanwhile, because of the administrative and economic relations, this area involves outskirts dominated by city governments in statistics. For this distinguished geopolitical character, it's commonly called as "the community on edge".

The urban and rural fringe is complicated in attributes. In China, the dual structure in urban and rural society is still being used. Despite the fact that non-agriculture industry and residents' occupation structure have already been realized in the urban and rural fringe, it's still a rural community in social attribute, which in turn leads to the disunity between the social attribute and the natural one in this area (Feng xiaoying, 2009). It also leads to the miscibility of lifestyle, in other words, with the civilized side of city life as well as way of life in rural areas. The existence of urban and rural areas "dual management system" contributes to the cross-cutting managerial system of land and domiciliary control (Gu Wenxuan, 2004). In the meantime, the urban and rural fringe is in the dynamic evolving process of either changing from a suburb to a city which is a real component of urban community; or another part of villages and small towns becoming part of the urban and rural fringe which is the new component of "the community on edge".

Because of the complex characteristics of the urban and rural fringe stated above, in fact, there are various potential social problems contained in the urban and rural fringe in China which can impede coordinated development, for example, the complexity and mobility of population structure, Conflicts between cadres and masses (ZHEN Yan LU Kang-juan, 2006), the complexity of the component of perception and the frequency of perception conflict, the gap between the wealthy and poor, the variety of the pattern and conflict of interests and so on (Tongxin, Weina,2009). In order to further understand the life condition of residents in this area, authors of this paper investigate and analyze their life satisfaction so that their subjective life perception can be accurately understood.

2. THE INDEX SYSTEM OF RESIDENTS' SATISFACTION IN THE URBAN AND RURAL FRINGE

Based on their respective life background and expectation, different groups and social classes have different living environment perception and satisfaction. The social satisfaction or well-being of residents is the overall subjective judgment of an area's objective condition. It's also residents' inside social perception. It is only when the social perception of different residents reaches a certain degree of coordination and all of them show a positive evaluation, objective conditions can be transformed into subjective recognitions, and a better social benefit can be achieved.

The social development depends on the advancements of material civilization, spiritual civilization and political civilization. Life satisfaction refers to the degree of subjective satisfaction achieved when each individual's life needs and expectations are fully met. The subjective mapping of residents in urban and rural fringe on some objective conditions such the stock of material resources, social system and cultural spirit reflects the subjective social perception of social benefit. Therefore we use three first grade indicators, material satisfaction, spiritual satisfaction and system satisfaction to construct a life satisfaction index system (Mao-kui Wang, Yu-song Yan, 2007; TSUNODA YASUKO; 2002; Zhang H, Ma J, 2008). For the secondary indicators in each primary indicator, please see Table 1.

Material satisfaction reflects the mode of material production and conditions of material life; spiritual satisfaction reflects the situation of social intellectual production, intellectual life and entertainments; and institutional satisfaction reflects residential judgments about the reasonable degree of social and political systems. The three of them are respectively independent while closely related in a complete unit. The material indicator is a good basis for the spiritual and institutional ones while the latter two counteract with the former one. Good regional spiritual civilization provides intellectual impetus, intellectual support and ideological guarantee for the development of local material and institutional system. On the other side, a sound institutional arrangement is the basic regulation for the material and spiritual satisfaction. Therefore, the three indicators mutually beget each other.

About the choice of research sample, most urban and rural fringes in The Yangtze River Delta, Bohai coastal region and the northeastern region are selected. Questionnaire survey is used to collect all the needed statistics. We design the questionnaire according to each evaluation index. There are totally 60 questions. Each evaluation is rated 5 levels. 1 stands for "not satisfied at all" while 5 stands for "very satisfied". In the total 1800 distributed pieces of questionnaire, 1500 pieces are collected back; the rate of recovery is 83.3%. The number of valid recovered questionnaire is 1490 with an 82.8% effective rate.

Table I . Satisfaction Index System for Residents in the Urban and Rural Edge

Primary Index (Latent Variable)	Secondary Index (measured variables)	Implications
ξ_1 Material Satisfaction	X1 Infrastructure	The completeness of Water supply, electricity, heating, gas and community service facilities; Schools, health care, shops, banks around living places
	X2 Transportation	Traveling convenience
	X3 Life and Career Environment	Satisfaction of air quality, water quality and sanitation conditions
	X4 Employment	Employment Opportunities; salary
	X5 Goods Consumption	The variety of goods; the corresponding, consumption ability
	X6 Living Conditions	The degree of housing conditions
ξ_2 Spiritual Satisfaction	X7 Interpersonal Concordance	The harmonious relationships between people
	X8 Entertainment	Go to restaurants, fitness, cinema, sports and other activities
	X9 Intellectual Life	Go to libraries, museums, palaces etc.
	X10 Esteem	The sense of being respected by the society (experiencing a slight gap between rich and poor)
	X11 Self-Worth	Personal sense of the realization of self-worth
ξ_3 Institutional Satisfaction	X12 household registration system	The reasonable degree of existing household registration system
	X13 land system	The agreement of the self-recognized land system
	X14 Social Security System	The satisfaction of the charge of health insurance, Old-age security and medical care
	X15 Education System	Mainly the satisfaction of the education environment for children
	X16 Public Security	Residents' judgment about the whole local security situations

3. THE CORRELATION ANALYSIS OF SOCIAL SATISFACTION OF RESIDENTS IN THE URBAN AND RURAL FRINGE

According the basic information of questionnaire Objects, after related analysis, there are evident differences of satisfaction in groups of different genders, ages or educated level. For the correlation between respondents' group characteristics and satisfaction, please see Table 2.

As is showed in Table2, there are 4 pairs of factors who are significantly correlated with a correlation of over 0.5. Firstly, age and level of education is significantly negative correlated, which means the younger generation in the urban and rural fringe is better educated than the older one. Secondly, material, spiritual and institutional satisfactions are all negatively

correlated with each other. It further represents the interaction and consistency among the aspects of material, spirit and institution. It also demonstrates that the potential of human talents development has been gradually discovered in the urban and rural fringe with the advancement and improvement of national education standards in recent years.

There is no significant correlation between group characteristics and satisfaction, but they have similarly showed the positive or negative related effects: on the item of gender, let's set female as 0 and male 1. The factor of gender is negatively related with the three satisfaction index, which implies females are more satisfied with material, spiritual and institutional lives than males. It may also because men have higher expectations while women are easier to be satisfied.

On the item of age, it shows a positive relation with the three satisfaction judging indexes, which means older age groups have higher evaluation about the satisfaction of material, intellectual and institutional lives. On one side, the older people are more tolerate; on the other side, under the social developing trend, the older people's living standards are paid more attention to by each social status in the urban and rural fringe.

Table II. Correlation between Respondents' Group Characteristics and Satisfaction

	1	2	3	4	5	6
1 Pearson Correlation Sig.(2-tailed) N						
2 Pearson Correlation Sig.(2-tailed) N	-.066 .527					
3 Pearson Correlation Sig.(2-tailed) N	.216* .035	-.683** .000				
4 Pearson Correlation Sig.(2-tailed) N	-.124 .230	.117 .261	.020 .844			
5 Pearson Correlation Sig.(2-tailed) N	-.089 .391	.140 .179	-.132 .204	.546** .000		
6 Pearson Correlation Sig.(2-tailed) N	-.266* .028	.196 .059	-.076 .466	.662** .000	.596* *	.000
1. Sex 2. Age 3. Education 4. Material Satisfaction 5. Spiritual Satisfaction 6. Institutional satisfaction						

*Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

On the item of Literacy, it has a slight positive relation with institution satisfaction. Since spiritual satisfaction is negatively related to institutional satisfaction, despite the fact that residents in different degrees of education have the relatively consistent expectation as well as evaluation in material life, In the spiritual and institutional dimensions, the higher education people receive, the more expectation they ask for, thus the less satisfied they feel. With an increasing number of people in high quality, it is needy for people in the urban and rural area to accelerate the construction of spiritual and institutional civilization in order to further upgrade the overall degree of residents' life satisfaction.

4. METHODOLOGY

Based on the questionnaire survey, we want to reveal the main groups' satisfactions in this area. and then take use of the Structural Equation Model (SEM) to further explore the social perception structure of the entire residents and find out the influence of each indicator to the entire satisfaction structure.

1. Structural Equation Model (SEM) of Residents' Satisfaction in the Urban and Rural Fringe

Structural equation modeling (SEM) is a statistical technique for testing and estimating causal relationships using a combination of statistical data and qualitative causal assumptions. Factor analysis, path analysis and linear regression all represent special cases of SEM (Karl Joreskog, Dag Sorbom, 1974).

The variables in SEM are mainly classified into latent variables (which are not measured directly) and measured indicators (which are measured directly). The distinction between these two types of variables is whether the variable regresses on another variable or not. In this sample, three primary indexes, namely material satisfaction, spiritual satisfaction and institutional satisfaction are latent variables. Secondary indexes are measured indicators. See Figure 1.

Two main components of models are distinguished in SEM: the structural model and the measurement model. The measurement model shows the relations between latent variables and their indicators:

$$\chi = \Lambda \chi \xi + \delta \tag{1}$$

$$y = \Lambda y \eta + \varepsilon \tag{2}$$

Where χ is the vector consisting of exogenous indicators; y is the vector composed of the endogenous indicators; δ is the error term of exogenous indicator χ ; ε is the error term of endogenous indicator y ; $\Lambda \chi$ is the relationship between exogenous indicators and exogenous variables; Λy - is the relationship between the endogenous indicators and the endogenous variables.

The structural model shows potential causal dependencies between endogenous and exogenous variables:

$$\eta = \beta\eta + \Gamma\xi + \zeta \quad (3)$$

Where η is the endogenous latent variable ε is the error term vector of endogenous variables; B and Γ are the path coefficients, B refers to the relationship between endogenous latent variables, and Γ refers to the influence of exogenous latent variables on endogenous latent variables; ζ is the error term of SEM.

We estimate the model parameters by fitting the model estimated covariance $\Sigma(\theta)$ and the sample covariance S . Then we use the maximum likelihood (maximum likelihood, ML) method to construct the fitting function of model estimation covariance and sample covariance, after iteration, we get the optimal parameter estimation of the fitting function.

The SEM set in this paper consists of: measurement models, reflecting the relationship between latent variables and measured indicators; structure models, reflecting the structural relationships between latent variables. In the SEM set in this paper, the parameters we need to estimate include: structural equation coefficients of exogenous latent variables and endogenous latent variables, measurement equation coefficients of identified variables and latent variables, estimated error term of identified variables (reflecting the size of the residual error), estimation between the error term and the covariance of the error term (reflecting the association between identified variables). This model consists of three latent variables, each of which has corresponding explicit indicators, thus there are 16 in total. Meaning and attribution of each factor are shown in Table 1 where each measurement error is set from e1 to e16. AMOS operates directly on the raw data to provide non-standardized and standardized estimation results. We construct causal path diagram as is shown in Figure 1, denoted as M1.

2. Testing of SEM

To ensure the validity of the model data sources, we conduct data reliability and validity analysis. After the confirmation of the validity of basic data, we calculate 16 correlation matrixes of observed variables and 16 means and standard deviations of observed variables.

The Goodness-Of-Fit indicators of SME include (Alice M. L. Chong,2003):

- (1), The minimum of X^2 is zero, but there is no upper limit. As a good model, X^2 should be as small as possible. When X^2 is clear, we consider the model not fitting the situation well.
- (2), GFI. It is the index of goodness-of-fit, ranging from 0 to 1, but there is a meaningless negative number in theory. In accordance with convention, to accept the model, GFI should be equal to or greater than 0.90.
- (3), TLI. It is the Tucker-Lewis coefficient, also known as Bentler-Bonett non-normative fit index (NNFI). TLI does not guarantee its values range between 0 and 1. TLI close to 1 indicates a good fit.

(4),RMSEA. It is the mean root square error of approximation. By convention, if the RMSEA is less than or equal to 0.05, the model fit well; if RMSEA is less than 0.08, there is an appropriate model fit.

According to the calculation of software, please see Tab.3 for Summary of goodness-of-fit related to M1.

Table III. Summary of Goodness-of-Fit Related to M1

Goodness-Of-Fit Indicators	X ²	P	RMSEA	TLI	CFI
M ₁	187.923	0.000	0.076	0.858	0.859

As we can see from Tab.3, expect RMSEA is acceptable; rest goodness-of-fit indexes have not reached the ideal standards. Therefore, the model does not fit well and is unacceptable. Further modification is needed.

3. Modification of SEM

According to the model the results of the initial simulation run, in accordance with revised index table, select the adjustment variables. After two amendments to the original model, namely, remove X9; allow X12 being related with X13, we get the verified model structure and model M3. As the M3 fitting results shown in Table 4, it meets the requirements, so the model can be accepted.

Table IV. Summary of Goodness-of-Fit Related to M3

Goodness-Of-Fit Indicators	X ²	P	RMSEA	TLI	CFI
M3	119.390	0.010	0.051	0.938	0.905

The Modified model diagram is shown in Figure 2. The relationship between each variable and the rate of interaction can be seen from Figure 2, which enables us to identify the key factors affecting urban and rural residents' satisfaction.

The Vice-Chancellor is the full-time resident head of the University and is its principal academic officer. He or she is elected by Grace of the Regent House on the nomination of the Council, for a period of up to seven years. The office may not be held with the headship of a College or any other University post. The current Vice-Chancellor is Alison Richard.

The Vice-Chancellor provides academic and administrative leadership to the University in relation to its overall mission and the policies established by the Regent House, Council and General Board. He or she represents its members externally and leads development and fundraising campaigns which are vital to the future financial health of the University. The Vice-Chancellor has important ceremonial duties, chairs or appoints deputies to chair most University committees, and serves on many national and international bodies.

There are five Pro-Vice-Chancellors and a number of Deputy Vice-Chancellors to whom specific duties and areas of responsibility are delegated. The Vice-Chancellor has a small personal secretariat who also oversees many aspects of the University's external relations.

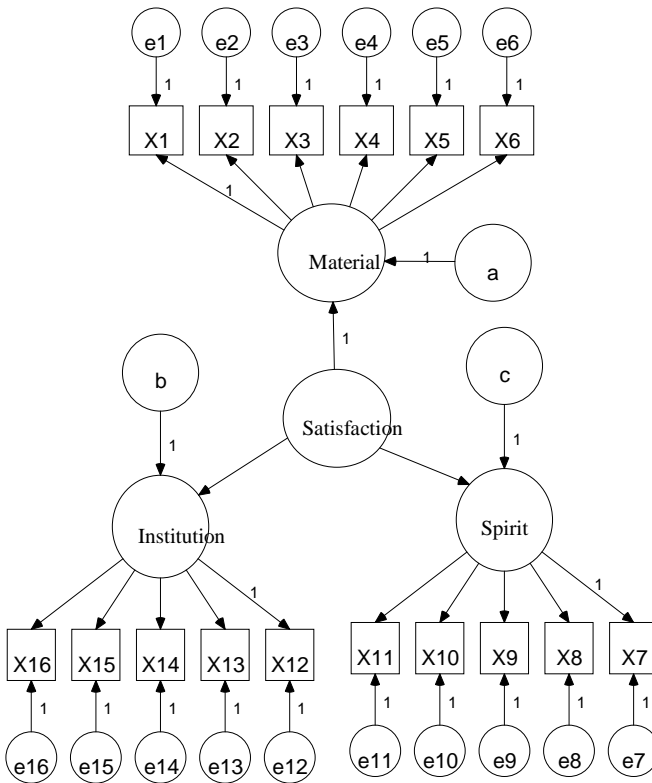


Fig.1 SEM M₁ of residents' life satisfaction in the Urban and Rural Edge

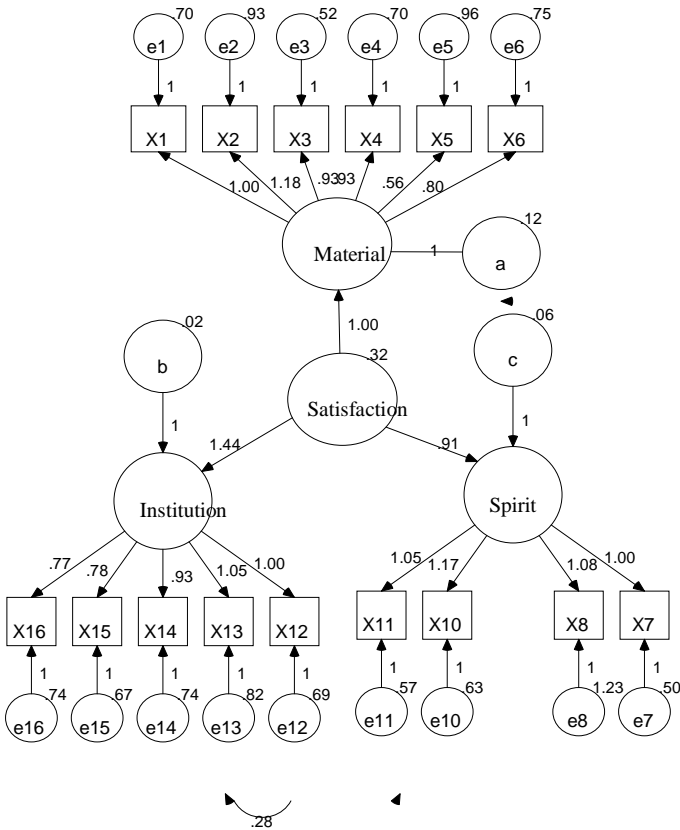


Fig.2 SEM M₃ of residents' life satisfaction in the Urban and Rural Ed

5. RESULTS

Figure 2, the coefficient between variables represents a variable degree of changes in other variables caused by the change of one variable. In general, the coefficient is over 0.80, so each two variables affect each other strongly. This model has a high degree of fit, and the relationship between variables is significant.

1. Relationship among Latent Variables

The subjective perception of satisfaction of residents in the urban and rural fringe consists of three latent variables, namely material satisfaction, mental satisfaction and satisfaction with the system constitutes. The coefficient between the latent variable expresses the changing degree of the overall satisfaction caused by the change of one variable. The three coefficients in this model are all over 0.90, indicating the material, spiritual and institutional variables have a strong influence on the overall satisfaction degree. The institutional variable has the strongest

affect in general reaching 1.44. The material influence is in the second place with 1.00 and the spiritual one is 0.91.

We can reach the conclusion here that residents in the Chinese urban and rural area do not only in pursuit of rich material life but also the spiritual life in current. The urban-rural institutional arrangements determine the allocation of resources and affect behaviors of residents, businesses and government. It is the most primary elements affecting residents' sense of well-being. Therefore, it is important to pay attention to the completion and perfection of local institution in order to improve overall residential satisfaction.

2. Relationship between Latent Variables and Measured Variables

Through the analysis of the relationship between latent variables and observed variables, we can find out which observed variables have crucial relations with latent variables and then we can carry out a comparison between the observed variables.

Material satisfaction has six explicit targets and all of them are significant. They are: supporting infrastructure, convenient transportation conditions, work-life environment, employment, consumption and housing. In the six indicators, the first three indicators have a stronger impact on material satisfaction, reach 1.00, 1.18 and 0.939 respectively. However, the employment earning is not the only important factor to determine the material condition as is thought. This also indicates that in the current circumstances, improving the basis of urban-rural residents living facilities, traffic conditions and the environment of work and life can be more effective in improvement of residents' satisfaction.

Spiritual satisfaction latent variables consist of four explicit indicators, namely, interpersonal relationships, leisure and entertainment, be respected, and self-actualization. The four indicators have similar impacts on mental satisfaction, respectively 1.00, 1.08, 1.17 and 1.05. Among them, the impact of being respected is the highest, which also shows that urban-rural residents are more in need of recognition and accreditation from the outside world, which in turn will enhance their self-perception.

Institutional satisfaction is mainly composed of household registration system, land system, the social security system, education system and social security indicators. Among them, the household registration system, land system and social security system have strong affects in general, which means the fairer and more equitable the household registration, land and social security system are, the more satisfied residents feel.

3. Satisfaction of Residents in the Urban and Rural Fringe

After the theoretical model is verified, we can calculate both the overall and separate scores of residential satisfaction in the urban and rural area by the survey data.

The approach is to first calculate the average score of satisfaction in 15 aspects, and then divide the mean value of each scale by the maximum 5, afterwards, we can get the satisfaction score in each aspect, namely:

$CSI = \sum(x_i/5)$, get the overall satisfaction score after averaging each item, namely:

$CSI = \sum(x_i/5)/15$, were each indicator is weighed equally. The satisfaction of residents' observed variables in the Urban and Rural Edge is shown in Tab.5. The satisfaction of total residents' social life in the Urban and Rural Edge is shown in Tab.6

Table V. the Satisfaction of residents' observed variables in the Urban and Rural Edge

residents' observed variables	satisfaction n/%	residents' observed variables	satisfaction/%
Infrastructure X1	67.8%	EsteemX10	63.3%
TransportationX2	61.5%	Self-WorthX11	59.5%
Life and Career Environment X3	62.8%	household registration systemX12	58.7%
EmploymentX4	48.6%	land systemX13	56.7%
Goods ConsumptionX5	60.6%	Social Security SystemX14	59.0%
Living ConditionsX6	62.6%	Education SystemX15	65.9%
Interpersonal Concordance X7	69.9%	Public SecurityX16	65.5%
EntertainmentX8	52.2%		

Table VI .The Satisfaction of Total Residents' Social Life in the Urban and Rural Edge

Overall satisfaction	Satisfaction degree/%
satisfaction About the society	61.0%

As we can see from Tab.5 and Tab.6, currently the overall satisfaction of residents in Chinese urban and rural area has just reached the basic level with a barely passed score 61%, which means residents accept the current situation in general. However, there is large room for the improvement of the residents' sense of well-being in this area if there are more supports, devotion and concerns. What needs to be noticed is that employment and wages have the lowest satisfaction score 48.6%, leisure and entertainment 52.2% and land system 56.7%. Therefore, the best way to upgrade satisfaction of residents is to raise income levels, improve the quality of spiritual life and make a better land system.

6. CONCLUSION

The urbanization level of China has rapidly improved from 30% in 2001 to 44.99% in 2008(from Chinese statistic year book). With Olympic Games and World Expo such big international events hold in China, the big cities in China draw lots of attention. At the same time, the central government's decision to solve the agricultural, peasant and villages' issues,

absorb the focus to villages. However, the urban and rural fringe as an immigrant reservoir agglomerated many people there. The multi-hierarchy residents under transitioning policies in this area have many social conflicts. From this resident's satisfaction survey, we revealed that different residents groups have great different evaluation of satisfaction: In items of gender, it is negatively related with the three satisfaction index, which implies females are more satisfied with material, spiritual and institutional lives than males. In items of age, it shows a positive relation with the three satisfaction judging indexes, which means older age groups have higher evaluation about the satisfaction of material, intellectual and institutional lives. Generally, from the residents' statistics: material, spiritual and institutional satisfactions are all negatively correlated with each other. In the spiritual and institutional dimensions, the higher education people receive, the more expectation they ask for, the less satisfied they feel. It is needy for people in the urban and rural area to accelerate the construction of spiritual and institutional civilization in order to further upgrade the overall degree of residents' life satisfaction. It is found the residents have much complain about the employment, salary, entertainment and land policies. The employment and wages have the lowest satisfaction score 48.6%, leisure and entertainment 52.2% and land system 56.7%. Overall satisfaction of residents in Chinese urban and rural area has just reached the basic level with a barely passed score 61% is not high. The best way to upgrade satisfaction of residents is to raise income levels, improve the quality of spiritual life and make a better land system. Therefore, how to improve the integrated development between the urban and rural area with the inner city should get more notice.

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