

Village Community: A Planning Practice of Local Urbanization in Countryside Areas in Southwestern China

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Abstract

Introduction and objective: in countryside areas in Southwestern China, especially in Sichuan province, a large amount of villagers are still residing in the small, dispersed villages. These villagers are not able to lead the equal quality of lives as the citizens in Chengdu, the central city in Sichuan province. To solve this problem, this paper introduces a typical planning practice in Chengdu, which is called “village community”. Village community aims to realize local urbanization, by constructing the new-style village in the countryside, which still locals in the countryside areas, but has fulfilled the same functions of the urban communities. Two typical village communities in Chengdu are presented. **Material and methods:** key variables to improve the inclination of villagers to immigrate to village communities are interpreted. These variables are set up as the independent variable, and the rate of villagers residing in village communities (the number of villagers residing in village community divided by the number of the total villagers in the town) is set up as the dependent variable. These data are analyzed by using the statistic methods of correlation analysis and multiple regression analysis, in the SPSS software environment. **Results and Discussion:** the main factors that motivate villagers to immigrate to village communities are number of new village communities and Proximity to enterprises, which imply that housing condition and occupation are the first two important things for villagers.

Keywords: village community, Southwestern China, local urbanization

1 Research Background and Objective

Up to 2012, the rate of urbanization in china has exceeded 50%, nevertheless in countryside areas in Southwestern China, especially in Sichuan province, a large amount of agricultural people are still residing in the small, dispersed villages. These villagers are not able to lead the equal quality of urban lives, which contain the opportunities of jobs, education, medical treatment, and the agreeable infrastructures such as sewage factories, roadways, for instance. However, it's not realistic to push the villagers into cities, which have limited capacity of habitants. As a result, Chinese government intends to fulfill the urbanization of these villagers locally, which is defined as *local urbanization*. Local urbanization means that the villagers are still residing in the villages, but their life quality is as high as that of citizens. The villagers can

also work in the enterprises running in villages. This type of urbanization prevents villagers from rushing into cities, without occupation and housing, as the tragedies staging in the cities of Latin America.

A typical planning practice aiming at local urbanization is presented in this paper, which is defined as *village community*. Village community aims to fulfill *local urbanization*, by planning and building a new village, which still locals in the countryside areas, but has the whole urban functions, as apartments, primary schools, medical service centers, roadways, sewage factories. Village community is also close to enterprises, where the villagers work in. As a result, villagers who live in village communities are able to lead an urban life. These villagers can be named as *countryside citizens*.

As the strict land policy is running in China, farmland is forbidden to converse to built land, which can be used to construct buildings. But each villager possesses the private housing land, the area of which is so great, approximately 50-80m² by person. If villagers are willing to immigrate to village community, their housing lands can be collected and conversed to build the new village. Because villagers will be residing in the apartments, which means that the land area of residing is approximately 30-50 m² by person. The residual land can be used to build enterprises, infrastructures, public services, and so forth. In other words, village community does not need extra land, but has satisfied the land demand of urban functions. As the policy of land converse is allowed in China countryside area, the planning and building of village community is feasible, without offending the land policy.

2 Case Studies

The case of village community is selected from Chengdu, the center city of Sichuan Province, over 60% population of which is still residing in the country area in 2011. The problem is that most of the villagers who give up the agricultural work want to enter the center city to get higher-salary jobs, while there are not as much as the number of occupations as they need. As a result, they have to be engaged in some lower-salary and unstable jobs, such as carriers of burdens, waiters in small restaurants, and so on. They also cannot live in the center city, as the rent of housing is so high. Since that, they have to return to their home at villages every night, which are several miles far from the center city. This problem increases the commute cost of villagers, and results in heavier traffic jams on the roads connecting the urban area and the country area. Conclusively, local urbanization of villagers is what Chengdu needs right now. Therefore, the planning and construction of village community has been fulfilled in Chengdu in recent years. By 2011, 1,633 village communities are planned, and 1502 village communities are constructed; where over one million of villagers are already residing.

Two village communities in Chengdu are presented. The first one is *Taiping Village Community*, located in Xinping Town, Xinjin County. This village community is built on the local site, close to the urban area of Xinjin County. The total size of the village community is

about 8hm², and the number of villager about 3000. All of the villagers have immigrated to the new apartments of six floors, and the personal housing area is about 40m². All of the work force are occupied, 85% of which occupy in the enterprises of secondary and tertiary industry. Besides, all the farm land of villagers is centralized to be running together by an agricultural cooperation founded by the villager themselves. The cooperation hires the 15% of the local work force who are still anticipate the agricultural work, and skilled farm workers from the outside. In order to raise the revenue, the economic crop is cultivated, such as organic vegetable and fruits. As a result, each villager does not need to anticipate the agricultural work, but enjoy the rent of land yearly paid by the cooperation. The personal revenue of villagers is over 7000 rmb in 2011.



Figure 1: bird-eye view and Google satellite map of Taiping village community^j

The second one is *Heming Village Community*, located in Liujie Town, Dujiangyan County. According to the unique landscape, this village community is not centralized to a single site, but is divided into seventeen clusters. Several buildings of two or three floors with traditional style are built, instead of apartments with modern style. About 86% of the villagers have immigrated to the new buildings. A license of the land property confirmation is certificated to each villager, which assurance the right of villager to use the farm land. As a result, villagers can rent their lands to the cooperation, or do the agricultural work themselves. In fact, almost all the farm land is centralized to the cooperation, which cultivates flowers and develops country tourism.

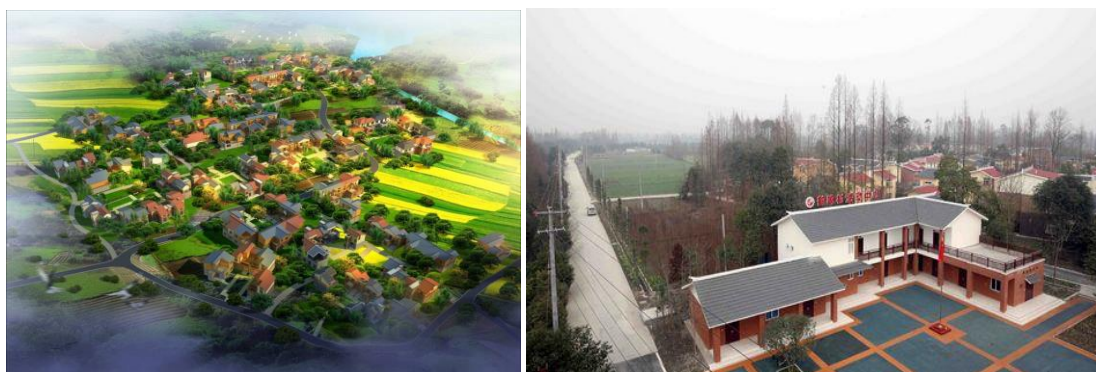


Figure 2: bird-eye view and the building picture of Heming village community^{jj}

3 Methods and Material

Village community contains various urban functions, but what are the most important ones to help improve the life quality of villagers, and which factors mostly impact the willing of villagers to immigrate to village communities? In order to know that, some related variables are selected to check and interpret. As most of village communities are located in towns which almost have small size, and village communities and towns have some conditions in common, some factors are based on towns. The factors include:

(1) **Number of new village community in town:** it explains how number of village communities influences the willing of villagers to immigrate to village community. In common sense, villagers incline to immigrate to new communities.

(2) **Proximity of town to central city:** it explains how proximity of town to center city influences the willing of villagers to immigrate to village community. It is represented by linear distance from town to central city. The higher distance it is, the lower the proximity is. As Chengdu is a radial city, and also has a radial road system, linear distance represents proximity of town to center city. In Chengdu, towns close to center city often develop better than the ones far from center city, and villagers in these towns often lead a better life.

(3) **Proximity of village community to roads:** it explains how condition of transportation of village community influences the willing of villagers to immigrate to village community. If village community is closer to roads, villagers can travel more conveniently. It is represented by linear distance from town to various levels of roads, including highway exit, province road, town road, and country road. If the distance is no more than 500m, then it is defined to close to roads, otherwise it is defined to be far from roads. This proximity is been quantified by given an estimation index.

(4) **Economic level of town:** it explains how economic level of town influences the willing of villagers to immigrate to village community. It is represented by GDP of town yearly.

(5) **Revenue level of villagers in town:** it explains how revenue level of villagers influences in town influence the willing of villagers to immigrate to village community. It is represented by personal revenue yearly.

(6) **Size of town center:** it explains how size of town center, which in other side means the developing level of town center, influences the willing of villagers to immigrate to village community. It is represented by the size of built area of town center.

(7) **Proximity to enterprises:** it explains how proximity to enterprises influences in town influence the willing of villagers to immigrate to village community. If village community is closer to enterprises, villagers can commute to enterprises more conveniently. It is represented by linear distance from town to various enterprises, including industry sites, tourism sites and agricultural sites. If the distance to these sites is no more than 500m, then it is defined to close to enterprises, otherwise it is defined to be far from enterprises. This proximity is been quantified by given an estimation index.

(8)Capacity of primary schools in town: it explains how capacity of primary schools in town influences the willing of villagers to immigrate to village community. It belongs to public service facilities. It is represented by the number of student positions in primary schools.

(9)Capacity of medical service centers in town: it explains how capacity of capacity of medical service centers in town influences the willing of villagers to immigrate to village community. It belongs to public service facilities. It is represented by the number of medical care beds in hospitals and clinics.

(10)Capacity of sewage factories in town: it explains how capacity of sewage factories in town influences the willing of villagers to immigrate to village community. It belongs to public infrastructure. It is represented by the daily ability of sewage factories dealing with sewage.

These variables are set up as the independent, and the factor **inclination of villagers immigrate to village communities** (the number of villagers already residing in village communities divided by the number of the total villagers in town) is set up as the dependent variable. 169 towns of Chengdu (which has 223 towns in total) are selected to be the samplings, so the sampling rate is 75.8%.

The data of these variables are collected from Bureau of Planning in Chengdu, in 2010. These data are analyzed by using the statistic methods of correlation analysis and multiple regression analysis, in the SPSS software environment.

Table 1 Variables and their contents

Variables	Estimation index	Variable Abbreviations
Number of new village community in town	Number of villager community constructed in town	Cq
Proximity of town to central city	Linear distance from town to central city (km)	Cd
Proximity of village community to roads	Close to highway exit: 9 Close to province road: 7 Close to town road: 5 Close to country road: 3 Far from roads 1	Tr
Economic level of the town	GDP of the town (million RMB)	Ec
Revenue level of villagers in town	Personal revenue per villager by year	Pi
Size of town center	Size of built area of town center(km ²)	Ua

Proximity to enterprises,	Close to industry sites: 8 Close to tourism sites: 6 Close to agriculture sites: 4 Far from enterprises: 2	ln
Capacity of primary schools	Number of student positions in primary schools	Ei
Capacity of the medical service centers	Number of medical care beds in hospitals and clinics	Hi
Capacity of sewage factories in the village community	Daily ability of sewage factories dealing with the sewage(ton/d)	Wi
Dependent variable: inclination of villagers immigrate to village communities	Number of villagers residing in village community divided by number of total villagers in town (%)	Pc

4 Analysis and Results

The analysis model is:

$$Pc = f(Cq, Cd, Ec, Pi, Ua, ln, Ei, Hi, Wi, Tr) \quad (1)$$

As the independent variables have different dimensions, they are standardized by converting to the natural logistic form, and then the model can be demonstrated as the linear from:

$$\ln Pc = \beta_0 + \beta_1 \ln Cq + \beta_2 \ln Cd + \beta_3 \ln Ec + \beta_4 \ln Pi + \beta_5 \ln Ua + \beta_6 \ln ln + \beta_7 \ln Ei + \beta_8 \ln Hi + \beta_9 \ln Wi + \beta_{10} \ln Tr \quad (2)$$

$\beta_0 - \beta_{10}$ are the constant.

These variables are input into the SPSS software environment and seven independent variables are finally reserved: Revenue level of villagers in town(Pi), Number of new village community in town(Cq), Proximity to enterprises(ln), Capacity of primary schools(Ei), Proximity of town to central city(Cd), Size of town center(Ua), Proximity of village community to roads(Tr).

The result of the multiple regression analysis is that:

$\ln pc = -0.263 \ln Pi + 0.599 \ln Cq + 0.570 \ln ln - 0.362 \ln Ei - 0.193 \ln Cd + 0.167 \ln Ua + 0.447 \ln Tr$ (3) the relation coefficient value $r^2 = 0.890$, and the results passes the student's t test, under the 95% confident interval. It indicates that this equation has an excellent linear relation. Besides that, the result nearly fits the normal distribution.

The result of coefficient correlation check shows that these variables do not have the correlation, except Cd and Pi (0.659). This verifies the hypothesis that in Chengdu, towns close to center city often develop better than the ones far from center city, and villagers in these towns often lead a better life.

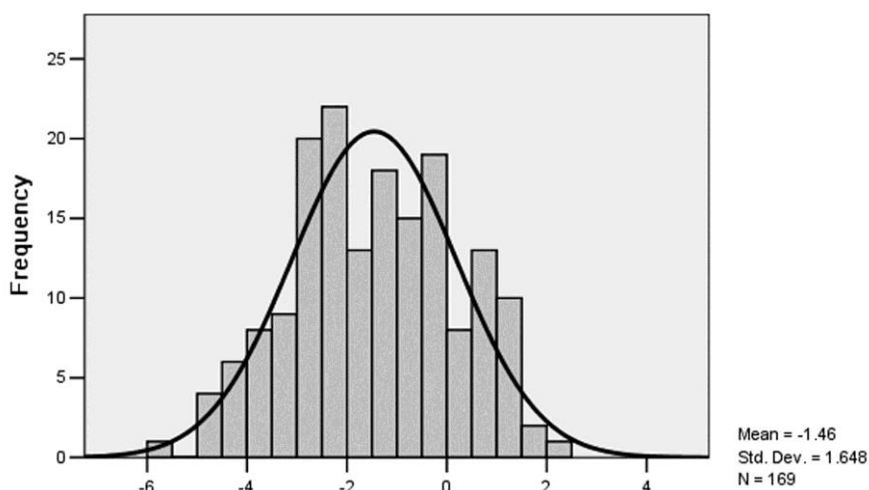
Table 2 the coefficient result

Name	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std.Error	Beta		
(Pi)	-.263	.074	-.903	-3.2540	.001
(Cq)	.599	.070	.425	8.555	.000
(In)	.570	.162	.333	3.511	.001
(Ei)	-.362	.060	-1.073	-6.050	.000
(Cd)	-.193	.074	-.248	-2.612	.010
(Ua)	.167	.072	.337	2.301	.023
(Tr)	.447	.217	.320	2.057	.041

Table 3 the coefficient correlations matrix

Name	(Pi)	(Cq)	(In)	(Ei)	(Cd)	(Ua)	(Tr)
(Pi)	1.000	.000	0.133	-.493	-.659	-.176	-.484
(Cq)	.088	1.000	.046	-.168	-.141	-.167	-.016
(In)	-.133	.046	1.000	-.032	.096	-.456	.027
(Ei)	-.493	-.168	-.032	1.000	.124	-.290	-.061
(Cd)	-.659	-.141	.096	.124	1.000	.327	.051
(Ua)	-.176	-.167	-.456	-.290	.327	1.000	-.179
(Tr)	-.484	-.016	.027	-.061	.051	-.179	1.000

Figure 3 Histogram of the regression standardized residual



5 Discussion

The result indicates the weights of each independent variable, which imply its importance to the willing of villagers to immigrate to village community. Among these factors selected, Cq, In,

Tr, Ua have positive impact, and Cd, Pi, Ei have negative impact.

The variable of Number of new village community in town (Cq) has the most positive impact (0.559), which indicates that the planning and construction has a great impact on the willing of villagers to immigrate to village community. It is proved that villagers have great inclination to the new communities, because new communities always have good housing condition.

The variable of Proximity to enterprises (In) has also the high positive impact (0.570), which indicates that proximity to enterprises is also very important for the villagers residing in village communities. As most of villagers occupy in enterprises, as a result, the closer village communities are to enterprises, the more villagers are willing to immigrate to village communities, as it's more convenient for them to commute.

The variable of Proximity of village community to roads (Tr) has a positive impact of 0.447, which is also reasonable. If proximity of village community to roads is poor, villagers incline to still live in the ancient house, where it is closer to farmland, and still occupy in agricultural work. If proximity of village community to roads is poor is better, then villagers are able to travel to other places to work, like enterprises of secondary and tertiary industry, even to town center or the center city.

The variable of Size of town center (Ua) has a positive impact of 0.167, which indicates the influential of size of town center on village communities. As plenty of village communities are close to town center, and the size of town center represents the developing level of town center, the greater the town center is, the more inclination of villagers immigrate to village communities, aiming to work at town center and share the town facilities.

The variable of Revenue level of villagers in town (Pi) has a negative impact of -0.263. The reason is that, according to the census of Chengdu (2011)ⁱⁱⁱ, among the average total revenue of villager per year, the fractions of salary revenue, family commercial revenue(including farming revenue) and property revenue are 31.2%, 56.3%, 12.5%; and the fraction of farming revenue is 41.3%. This structure of personal revenue indicates that farming revenue is still the most important revenue for villagers. Because only 43.7% of farm land in Chengdu has been conversed and centralized, 56.3% of farm land in Chengdu is still cultivated by villagers themselves, individually. As a result, villagers incline to live in ancient houses in order to cultivate their farm land more easily, but not to immigrate to new village communities.

The variable of Proximity of town to central city (CD) has a negative impact of -0.193, which means that villagers residing close to the center city incline to immigrate to village communities. The reason is that villagers residing close to the center city usually do not occupy in agricultural work, but in secondary and tertiary industry. As a result, residing in new village communities is more convenient as their lives are totally urbanized. Oppositely, villagers residing far from the center city still occupy in agricultural work, as there are not as many enterprise as they need in towns. Therefore, they still prefer to reside in their ancient houses.

The variable of Capacity of primary schools in town (EI) has a negative impact of -0.362. That means the higher capacity of primary schools; the fewer villagers incline to immigrate to village communities. The reason is that there are still plenty of primary schools located in villages, which close to villagers' houses but commonly have small size and low quality. If these primary schools are merged into greater ones, the new primary schools will have greater size and higher quality, and villagers prefer to reside in village communities, as the new primary schools are usually close to village communities.

The variables excluded by SPSS are Capacity of medical service centers in town (Hi), Capacity of sewage factories in town (Wi) and Economic level of town (Ec). It indicates that these variables have no relationship with the dependant variable of Inclination of villagers immigrate to village communities (PC). The reason why Capacity of medical service centers in town is excluded is that almost all villages have their own media centers or clinics with small size and low level, that means villagers can share the basic medical service neighbor to their houses. As a result, they do not need to immigrate to village communities which are often located beside high-level hospitals. The reason why Capacity of sewage factories in town is excluded is that sewage factories in town mainly deal with the sewage in town center, while the sewage from villagers is treated by themselves, by pouring the sewage into rivers, pools and farm land directly, or treated by small sewage stations simply. The reason why Economic level of town is excluded is that most of the GDP of town is from the industrial parks, which do not hire many local villagers.

6 Conclusion

The main factors that motivate villagers to immigrate to village communities are number of new village communities and Proximity to enterprises, which imply that housing condition and occupation are the first two important things for villagers. These two factors are also the fundamental urban functions that a city provides to citizens. Villagers incline to immigrate to village communities mainly because these village communities have good housing condition and close to the enterprise where they can work. As a result, a feasible way to improve local urbanization is to plan and build high standard village communities, especially with good housing conditions. The surplus land after land conversion and centralization can be used to build enterprises, which can provide more suitable jobs for villagers, especially in secondary and tertiary industry, which helps improve the salary revenue of villagers. This also helps villagers to leave from farm lands, and improve their property revenue.

Besides that, village communities would better be close to roads and town centers, which improve the commute of villagers, and help villagers to share the urban facilities in town centers. The public facilities and infrastructures in villages as primary schools, media centers or clinics, small sewage stations, should be centralized and merged into something of greater size and higher level, and moved beside to village communities. As a result, villagers can

share the better public service and infrastructures.

Endnotes:

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- ⁱ The left figure is from Bureau of Planning in Chengdu, the right figure is from Google Map.
 - ⁱⁱ These figures are from Bureau of Planning in Chengdu.
 - ⁱⁱⁱ These data is from the Census of Chengdu (Yearbook of 2011).

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