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A Study of Resident Satisfaction and Factors That Influence Old Community Renewal Based on Community Governance in Hangzhou: An Empirical Analysis

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Abstract: In recent years, most Chinese cities have been implementing renewal projects to improve the quality of life in old communities. "How" and "what" to renew has attracted much attention from the government and scholars. "What to renew" is closely related to the needs of a city's population and should be determined by residents, while renewal effects are influenced by government action and the multiple parties that participate in a renewal project. Resident satisfaction should be used as the key indicator to measure the effects of renewal. Therefore, it is necessary to analyze resident satisfaction with the renewal of an old community and explore the factors that affect satisfaction. To address this question, we utilize an index system to measure resident satisfaction with community renewal on the basis of community governance and explore the impact of community governance on resident satisfaction by constructing an ordinal logistic regression model, based on the data collected in 19 communities in the city of Hangzhou, China. The regression results are analyzed, and corresponding countermeasures are proposed.

Keywords: old community renewal; community governance; resident satisfaction; influencing factor; ordinal logistic regression

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1. Introduction

Urban regeneration is one of the well-researched subjects in the urban policy literature, and the concept has evolved into a comprehensive urban policy where physical/environmental, economic, and social/cultural dimensions are fairly integrated together to provide a lasting solution to urban problems, so that physical/environmental (re)development is matched with economic growth as well as the social/cultural integration of all members of a community [1]. With the sustainable view that urban regeneration is not a "demolition and reconstruction" urban intervention, scholars have pointed out that community renewal has included improving public facilities [2,3], managing automobile traffic [4], enhancing the public environment [5], improving building design, increasing community safety, facilitating the formation of a community culture [6], and establishing long-term mechanisms that provide some degree of community self-governance [7,8]. Compared with previous approaches to renewal, community renewal is now more comprehensive and emphasizes the role that residents play in the process [9,10].

According to the Chinese Ministry of Housing and Urban-Rural Development, in 2019 there were approximately 170,000 communities in the country that were scheduled for renewal, a process that not only affects the lives of millions of people but also consumes large sums of money, labor, and material resources to drive economic development. Researchers have, therefore, made the question of how best to improve the renewal process and the resulting outcomes an urgent topic [11,12]. In 2020, Huang Yan, the deputy Minister of Chinese Housing and Urban-Rural Development, has pointed out at a Chinese government

meeting that, at present, the community renewal process in use in Chinese cities, which is vigorously promoted by the state, is an upgraded version of the previous approach to community transformation. The new approach avoids the problems associated with earlier construction projects that were designed to address minor issues with buildings but disrupted residents' lives rather than improving them over the long run.

As the importance of community participation in urban regeneration widely gains acceptance in most advanced countries [13–15], increasing calls for more civic engagement and collaboration have emerged among stakeholders in South Korea, mainly nurtured by critical reflection on the previous form of urban regeneration [16]. Nevertheless, community participation as a bottom-up approach in urban regeneration appears to succeed only in exceptional cases [17]. In contrast to the univocal endorsement of community participation, the level of participation remains low, being confined solely to information gathering from residents [18].

In China, community renewal was undertaken unilaterally by the government, which ran renewal operations from top to bottom, and the main input decades ago was direct financial capital. Since 2017, 15 cities including Guangzhou and Xiamen have proposed an innovative "bottom-up" model: after residents reach an agreement regarding a community renewal project, they can apply to undertake renewal and take the initiative to participate in the entire process of transformation, to achieve cooperative construction and carry out management, project evaluation, and shared responsibility. In 2019, the Hangzhou government issued an implementation plan for the renewal of pilot communities, clearly stipulating that to merit approval of a renewal plan, at least two-thirds of a community's property owners must favor the plan, which further illustrates the importance of resident participation. Therefore, we take Hangzhou as the research scope, aiming to provide policy reference for further renewal of other cities.

Participation by residents in renewal projects is directly affected by community governance [19–21]. Communities that adopt mechanisms to permit full participation by residents through participation channels will likely witness greater resident participation, and community governance is the guarantor of such participation mechanisms and channels [22–24]. Some scholars believe that community recognition, based on the common interests of a community, will encourage residents to participate in community governance voluntarily [25,26]. Participating in activities through which residents secure or maintain their rights and accept responsibilities, such as community elections and voting, as well as in activities that protect collective interests, contributes to the promotion of a community [27].

Intimacy among community members fosters a sense of community belonging, which promotes community autonomy [28], while neighborhood relations play a moderating role between participation awareness and actual participation [29]. The integration of community interests and community identity depends mainly on establishing participation mechanisms and strengthening identity relationships among community members [30]. Establishing such a mechanism depends, in turn, on community governance [23]. From this perspective, community governance not only initiates processes through which participation mechanisms are formed but also affects resident participation.

More particularly, one target of community renewal involves establishing long-term management mechanisms that provide for effective property management, community management regulations, rules of procedure for residents, and other factors that ensure that the results of a given transformation project can be sustained after the transformation. Since renewals projects affect livelihoods, properly designed community renewal involves a commitment to improving residents' lives, and resident satisfaction is an important indicator that can be used to measure the implementation of a renewal project [31]. Residents, of course, are key participants in community self-governance, and their behavior and perceptions while participating in renewal will inevitably be affected by community governance. Few studies have, however, systematically summarized the relationship between community governance and renewal effects. In addition to evaluating the effects

of reconstruction by reference to resident satisfaction, greater attention in this article will be paid to the factors that influence resident satisfaction and the relationship between community governance and renewal.

2. Literature Review

2.1. Urban Regeneration and Community Renewal

Urban regeneration has become an important tool in urban planning around the world to address issues such as urban decline, social poverty, and aging housing [1]. Abubakar and Mehmet conducted a survey on slum upgrading in Ghana, which effectively verified the improvement of local employment, the economy, and residents' quality of life due to urban regeneration [1]. It turns out that more and more scholars are paying attention to sustainable urban regeneration, which is mainly reflected in the organic renewal of buildings and the functional zoning of residential buildings [16,32]. At present, scholars are paying more attention to urban regeneration of social sustainability and architectural sustainability, with particular emphasis on policy formulation, multi-party collaborative governance, and impact on the environment [33,34]. Better well-being and social justice can be continued and provided by multi-involvement between existed occupants, landlords, developers, and government, without inflicting losses in business and economic growth [32]. Regarding urban regeneration strategies, a bottom-up strategic urbanism could promote the local potential to solve site-specific issues through so-called urban acupuncture [33]. Especially when considering the age, type, structure, and other characteristics of buildings or communities, the renewal scheme cannot be standardized, and this transformation mode is particularly important [33]. Elander Ingemar believes that sustainable urban regeneration often brings inequities, and citizen participation can help resolve the problems and disputes it brings [34]. María proposed a decision support model to help government departments make decisions in urban regeneration, prioritizing factors that have a greater impact on neighborhoods and buildings and using a SWOT method to analyze factors that have adverse effects on residents [33]. They evaluated vulnerable areas from four aspects: urban, building, socio-demographic and socio-economic, focusing on functional updates outside the residence, especially public areas. Jaroszyńska-Kirchmann and Anna D. sorts out and analyzes the problems and solutions in the update process of Mill Town in England. Lack of funding for rehabilitation and racial discrimination are the main problems. It can be found that building demolition and reconstruction cannot solve the housing problem of residents very well, even bringing about political and economic issues [35]. Pengcheng Xiang et al. proposed inclusive urban regeneration from two aspects of spatial planning and social construction, which is reflected in the organic combination of society and nature [36]. As pointed out by Pengcheng Xiang et al., environmental, social, and cultural factors affect urban regeneration [36]. Urban regeneration is not only the renewal of residential buildings but also the renewal and improvement of the social governance system [32,36]. For China, the community is the most basic unit of social governance and plays an important role in urban regeneration.

In this article, community renewal is not a method of large-scale demolition and construction, but a sustainable and organic renewal of the old community built before 2000, according to economic needs, social needs, and residential needs, considering the actual renewal cost. Community renewal involves not only improving infrastructure and community services but also building a community culture and social networks [37]. Communities that were completed before 2000 and that have been excluded from demolition plans for at least 10 years following construction completion are deemed to have poor facilities, even if the main structures remain largely intact, instilling in residents a strong desire for renewal. Referring to the Four-Year Plan for Comprehensive Renewal and Upgrade of Old Communities in Hangzhou (2019–2022) for its definition of community renewal, the old communities involved in our study include mainly two types: (1) old communities that were built before 2000 and have not undergone comprehensive renewal or demolition planning in the five years before and after the present time, and (2) communities that

were built after 2000 that need to be upgraded and renewed in accordance with residents' wishes. Renewal itself is defined as comprehensive improvement of infrastructure, housing conditions, community services, a community culture, and follow-up management.

2.2. Resident Satisfaction with Community Renewal and Factors That Influence Satisfaction

The gap between expectations for and the actual conditions preceding a renewal project directly determines residents' interests [16]. Therefore, the effects of renewal may influence resident satisfaction [4]. Studies have shown that improving infrastructure, for example, by providing parking, controlling traffic, and enhancing facilities, will increase resident satisfaction [32,33]. In addition, existing research shows that a community's environment has an impact on resident satisfaction [4,32]. The human (social atmosphere, neighborhood relations, safety, etc.) and natural (indoor and outdoor spaces) environments in which a community exists will influence resident satisfaction based on perceived value, and indoor space has a greater impact on resident satisfaction than outdoor space [34,35]. At the same time, Guo [38] and Wang [11] also confirmed that improving a community's environment by improving indoor and outdoor spaces has a significant impact on resident satisfaction. Moreover, renewal does not end with the completion of construction, as follow-up maintenance is also very important.

Resident satisfaction is not only an important indicator that can be used to measure the quality of life that community residents experience, but the construct is also used by scholars to measure the effects of community renewal. Regarding individual characteristics, differences in economic and social characteristics such as housing costs, consumption concepts, and income among residents of different regions have been found. During the renewal process, individual characteristics have played an important role in the process through which residents make choices that affect a renewal project [37,38]. For example, income differences drive differences in sensitivity to costs during the renewal process. High-income residents may be willing to invest more money in a project, but higher expenditures do not necessarily translate into greater satisfaction because satisfaction is a function of cost, process, and output factors [38]. Most residents of old communities are tenants, and many, if not most, are elderly. Shi [39] studied the impact of individual characteristics (gender, age, education, income, length of residency, etc.) on resident satisfaction from the tenant perspective and found that length of residency, property ownership status, and education will also affect resident satisfaction.

In addition, the clarity of renewal design and the renewal process will also affect resident satisfaction [40]. Heavy vehicular traffic and a constant flow of construction workers and other personnel during the renewal process increase noise and reduce safety, exerting a negative impact on residents. In addition, human factors, such as disputes, feedback, and information disclosure, are also likely to affect satisfaction [5].

2.3. Renewal of Old Communities Based on Community Governance

The concept of community governance originated in the application of governance theory in the field of community studies [41–44]. He [45] researched and analyzed the conflicts and difficulties existing in the basic structure of community governance in Shanghai, proposing that conflicts of interest in community governance exist mainly between an owners' committee, a community management organization, and, often, a property committee that acts on behalf of residents. As a special type of community involved in the transformation of Chinese urban grassroots governance, an old community becomes a problem because of its complexity and particularity [46]. The lack of government supervision and financial support hinders the development and renewal of old communities. In addition, a lack of participation in the process prevents residents from understanding renewal, shifting all the blame for their dissatisfaction on the renewal process [47]. In fact, the behaviors and attitudes of community management organizations, the subjective norms of residents, and the barriers to participation are among several factors that affect residents' participation in community governance of an old community [48]. Cognition,

understanding of a renewal project, and perceived behavior control have a direct impact on residents' willingness to participate in community renewal projects [49].

From the perspective of community governance, the factors involved in a renewal project, such as the behavior and attitudes of government agencies and policies, affect resident satisfaction [50]. In terms of community management, resident satisfaction is strong correlated with community management methods and characteristics [31,38]. Owners' committees and community management organizations are also crucial, especially in relation to resident trust in community organizations [51]. Li et al. [31] showed that residents' cognition and behavior impacts satisfaction with community renewal, arguing that a strong sense of community belonging and a high degree of understanding of and support for a sponge-style community renewal policy are the main factors that drive satisfaction in young people higher. In addition, residents who participate in the renewal process also experience greater satisfaction [47]. Therefore, changes in the mode of governance and greater participation by residents are conducive to improving resident satisfaction [52].

In summary, the satisfaction that residents experience following the renewal of an old community depends on how residents' perceptions factor into their evaluations of project success and their behavior, based on community governance [45,53], which is also an important factor. It is, therefore, important to explore the factors that influence resident satisfaction with the renewal of old communities. Guided by our review of existing research and surveys, the following hypotheses are proposed:

Hypothesis 1 (H1). *Individual characteristics affect resident satisfaction with the renewal of an old community.*

Hypothesis 2 (H2). *Community governance affects resident satisfaction with the renewal of an old community.*

Hypothesis 3 (H3). *The renewal process affects resident satisfaction with the renewal of an old community.*

Hypothesis 4 (H4). *Renewal effects affect resident satisfaction with the renewal of an old community.*

3. Methodology

Ellen and Elander adopted qualitative methods for community planning, sustainable development, renewal contents, etc. [34,54]. However, more scholars have adopted quantitative methods to study the satisfaction of renewal [4,5,41,51]. Quantitative methods may have certain advantages in studying the influencing factors of satisfaction. To explore the relationship between resident satisfaction and our explanatory variables, most scholars have adapted their regression models to reflect the types of dependent variables that have been included in previous studies [55]. Since some independent variables are also ordered discrete variables, such as family size, we take resident satisfaction as the dependent variable and treat it as an ordered multi-categorical variable to construct an ordinal logistic regression model. The logit equation is as follows:

$$\ln(-L(\theta)) = \alpha'_n + \sum_{k=1}^{K} \beta'_{nk} x_{nk} \ (n = 1,\ 2,\ 3,\ 4,\ 5)$$

This formula is a log-likelihood function, which is the final expression of the model. is joint distribution function and is a constant. X_{nk} denotes the independent variables (n = 1, 2, . . . , 5; k = 1, 2, . . . , 25), and nk is the coefficient of X_{nk}.

3.1. Variables

Based on literature review, we classify indicators that may affect satisfaction with the renewal of an old community into four categories: individual characteristics, community governance, the renewal process, and renewal effects. Specifically, "individual

characteristics" include the respondent's income, age, family situation, living situation, etc. "Community governance" includes the characteristics of the government, community management organizations, and residents' self-government organizations in the process of transformation, such as work capacity and credibility of community management organizations and owners' committees, government messaging, and subsidies. In addition, it also includes residents' awareness and participation in the renewal, such as residents' attitudes towards policy, residents' willingness to participate in community governance, and whether to participate in a renewal. "Renewal process" specifically includes renewal costs, channels for expressing resident opinions, influence of the renewal process, and openness and transparency of the renewal process. These are also important factors that other scholars have focused on affecting satisfaction with renewal. "Long-term mechanisms" plays an important role in the renewal of old communities, which are also one of the important mechanisms for community governance. Specifically, it includes the four long-term mechanisms of housing conditions, community environment, infrastructure, and maintenance.

The dependent variable is resident satisfaction with the renewal of an old community (Y). We measure resident satisfaction on a Likert-type scale with values ranging from 1 through 5, with higher numbers denoting greater satisfaction. The definitions of our variables are presented in Table 1.

Table 1. Variables and assignments.

First-Level Indicators	Secondary Indicators	Assignments
Individual characteristics	Gender (X_1)	1 = male, 2 = female
	Age (X_2)	1 = 20–29, 2 = 30–39, 3 = 40–49, 4 = ≥50 years
	Income (X_3)	1 = 3000 RMB and below, 2 = 3001–6000 RMB, 3 = 6001–9000 RMB, 4 = 9001–12,000 RMB, 5 = 12,001 RMB and above
	Education (X_4)	1 = junior high school and below, 2 = high school/technical secondary school, 3 = junior college, 4 = bachelor's degree and above
	Family size (X_5)	1 = live alone, 2 = two, 3 = three, 4 = four and above
	Job (X_6)	1 = professional technician/teacher/doctor, 2 = business managers, 3 = corporate staff, 4 = self-employed, 5 = private, 6 = staff of institutions, 7 = retirees, 8 = other
	Housing property rights (X7)	1 = renting, 2 = own housing
	Length of residency (X_8)	1 =less than 1 year, 2 = 1–5 years, 3 = 5–19 years, 4 = 20 years and above
Community governance	Government messaging (X_9)	1 = never heard, 2 = know a little, 3 = general, 4 = know more, 5 = know very well
	Government subsidies (X_{10})	1 = very low, 2 = low, 3 = general, 4 = much, 5 = very much
	Credibility of community management organization (X_{11})	1 = very low, 2 = low, 3 = general, 4 = high, 5 = very high
	Work capacity of community management organization (X_{12})	1 = very poor, 2 = poor, 3 = general, 4 = capable, 5 = very capable
	Credibility of owners' committee (X_{13})	1 = very low, 2 = low, 3 = general, 4 = high, 5 = very high
	Work capacity of owners' committee (X_{14})	1 = very poor, 2 = poor, 3 = general, 4 = capable, 5 = very capable
	Residents' attitudes towards policy (X_{15})	1 = very unsupported, 2 = unsupported, 3 = general, 4 = supportive, 5 = very supportive
	Residents' willingness to participate in community governance (X_{16})	1 = very unwilling, 2 = unwilling, 3 = general, 4 = willing to participate, 5 = very willing to participate
	Whether to participate in a renewal (X_{17})	1 = no, 2 = yes
Renewal process	Renewal costs (X_{18})	1 = very low, 2 = low, 3 = general, 4 = high, 5 = very high
	Channels for expressing resident opinions (X_{19})	1 = very dissatisfied, 2 = dissatisfied, 3 = general, 4 = satisfied, 5 = very satisfied
	Influence of the renewal process (X_{20})	1 = very dissatisfied, 2 = dissatisfied, 3 = general, 4 = satisfied, 5 = very satisfied
	Openness and transparency of the renewal process (X_{21})	1 = very low, 2 = low, 3 = general, 4 = high, 5 = very high
Long-term mechanisms	Housing conditions (X_{22})	1 = very dissatisfied, 2 = dissatisfied, 3 = general, 4 = satisfied, 5 = very satisfied
	Community environment (X_{23})	
	Infrastructure (X_{24})	
	Maintenance (X_{25})	

3.2. Data

Based on lists of old Hangzhou communities that are scheduled to be renewed, we ruled out remote communities and those slated for small-scale renewal projects. We eventually selected 19 old communities from among the 65 pilots. The survey area is distributed mainly in Xihu District, Shangcheng District, and Gongshu District in Hangzhou. Based

on the number of residents in a given community, we randomly selected 10% of each focal community's residents to form a sample, from which we collected questionnaires in the field. We expected to distribute 1520 questionnaires, but, in the end, we collected 1023 questionnaires. After excluding questionnaires from which important information was missing, we identified 868 valid questionnaires, for a response rate of 84.6%.

The questionnaire is divided into three parts. The first part of the questionnaire is basic information, including gender, age, education, family size, job, and other basic information such as housing property rights, length of residency, and whether they are members of the owners' committee or members of the old community renewal work committee, as well as the way to obtain information about the old community renewal. It mainly studies whether individual characteristics affect the renewal satisfaction. The second part is the investigation of the old community renewal, including the residents' attitudes towards policy, the residents' willingness to participate in community governance, and whether to participate in a renewal. It also scores the government messaging, the government subsidies, the credibility and work capacity of community management organizations and owners' committee, openness and transparency of the renewal process, etc. It evaluates the satisfaction of the residents in the renewal process, mainly studying the influence of the renewal process and community governance factors on the renewal satisfaction. The third part is the investigation of the renewal effect of the old community. The residents evaluate the overall renewal effect, water and electricity supply, network communication, firefighting facilities, lighting facilities, landscape planting, elevator installation, and other renewal contents, as well as the timeliness of equipment damage repair and other subsequent maintenance. The end of the questionnaire is about residents' views, concerns, and suggestions on renewal.

We tested and confirmed the reliability and validity the results of our analysis. We next performed statistical analysis of the data and resident satisfaction with community renewal. We report the results in Table 2.

Residents of old communities are mostly elderly and most have retired. Their main income is retirement funds. Thirty-eight percent of residents have completed junior high school, with few elderly people having received higher education. Among households in old communities, families with three members outnumbered others, followed by families of four, two, and one, in that order. Elderly residents typically live alone or as couples. Most of their children have established new families and moved out of their communities, perhaps because many dwellings in these old communities are small. Although living conditions in old communities are poorer than conditions in newer communities, some tenants favor old communities for their superior geographical locations and lower rents. One-quarter of residents in old communities are renters. Some migrate from other cities to work in Hangzhou, and some are college students who have just graduated and are looking for work. Some communities that had been built more than 15 years prior to the time of our study were converted from rural areas, so most residents had resided in those communities since they were built. Thirty percent of surveyed residents had lived in their communities for more than 20 years, and sixty percent had lived in their communities for more than 5 years. Only 1 in 10 residents had lived in their communities for less than one year.

In addition, cross-analysis results indicate that elderly residents of old communities are more likely to report being satisfied with their communities—as the age of respondents rises, satisfaction also tends to rise. In terms of income, residents with incomes of 3000 RMB/month or lower are generally highly satisfied, but as income increases satisfaction tends to decrease. In terms of education, most residents who had not been educated beyond junior high school reported higher satisfaction, followed by those with bachelor's degrees or above and those who had completed some high school/technical secondary school education. From the perspective of time of residency, the longer respondents had lived in an old community, the higher their satisfaction. In addition, respondents who had participated in a renewal project and had received greater recognition for that renewal work were more satisfied with their communities.

Table 2. Socioeconomic and transitional characteristics of residents in the survey.

	No. of Residents	%
Gender		
Male	335	38.6
Female	533	61.4
Age		
20–29	157	18.1
30–39	164	18.9
40–49	127	14.6
≥50	420	48.4
Income		
≤3000 RMB	231	26.6
3001–6000 RMB	327	37.7
6001–9000 RMB	163	18.8
9001–12,000 RMB	83	9.6
≥12,001 RMB	64	7.4
Education		
Junior high school and below	320	36.9
High school/technical secondary school	183	21.1
Junior college	147	16.9
Bachelor's degree and above	218	25.1
Family size		
1	98	11.3
2	196	22.6
3	332	38.2
≥4	242	27.9
Housing property rights		
Own housing	633	74.9
Renting	218	25.1
Length of residence		
≤1 year	93	10.7
1–5 years	252	29.0
5–19 years	263	30.3
≥20 years	260	30.0
Total	868	100

4. Empirical Analysis

4.1. Stepwise Regression

Before the ordinal logistic regression analysis, we use stepwise regression to eliminate the influence of collinearity on the regression results. According to the implementation process of stepwise regression, if the newly introduced explanatory variable not only changes R^2 but also has a significant impact on the signs of the regression coefficients of other variables, it is believed that the introduction of this explanatory variable will cause the regression model to have multicollinearity. If one of the two variables with obvious multicollinearity can be well-explained by the other, then only the variables that have a greater impact on the explained variable are retained in the model. The model with the best degree of fit that passes the F test and the residual sum of squares is the smallest that should be selected. The selected model in Table 3 contains the final selected variable group of stepwise regression. All variables are significant, and the signs before the variable coefficients are consistent with expectations, indicating that these 12 variables are ultimately significant variables without multicollinearity.

Table 3. Results of stepwise regression.

	B	Std. Error	Standard B	t	Sig.
Constant	−1.01	0.126		−7.992	0.000
Credibility of owners' committee	0.162	0.042	0.154	3.878	0.000
Infrastructure	0.180	0.027	0.173	6.739	0.000
Maintenance	0.144	0.027	0.142	5.407	0.000
Residents' attitude towards policy	0.174	0.026	0.149	6.703	0.000
Length of residence	0.125	0.022	0.110	5.682	0.000
Community environment	0.112	0.025	0.119	4.558	0.000
Work capacity of owners' committee	0.162	0.040	0.160	4.097	0.000
Whether to participate in a renewal	0.211	0.061	0.069	3.448	0.001
Residents' willingness to participate in community governance	0.087	0.024	0.094	3.665	0.000
Renewal cost	−0.073	0.020	−0.095	−3.612	0.000
Government subsidies	0.061	0.025	0.065	2.483	0.013
Work capacity of community management organization	0.069	0.029	0.067	2.386	0.017

The relative importance and influence for resident satisfaction with renewal of the variables are as follows in order of coefficients: infrastructure, work capacity of owners' committee, credibility of owners' committee, residents' attitude towards policy, maintenance, community environment, length of residence, residents' willingness to participate in community governance, whether to participate in a renewal, work capacity of community management organization, government subsidies, and renewal cost.

Although "housing property rights" is screened out by stepwise regression, it is considered meaningful in practical applications [39]. Therefore, the variable set of ordinal logistic regression consists of 13 variables.

4.2. Parallel Line Test

As shown in Table 4, the chi-squared is 1125.696 (sig. < 0.05), which means the model fits the data well. The significance of the parallel line test of the regression model is 0.888 (>0.05). The model, therefore, passed the parallel line test.

Table 4. Model Fitting information and the parallel line test.

Model	−2 Log Likelihood	Chi-Squared	df	Sig.
Null hypothesis	2378.92			
General	1253.224	1125.696	62	0.000
Intercept only	1253.224			
Final	1090.284[b]	162.940[c]	186	0.888

4.3. Empirical Results

Although the housing property rights are excluded from the results of the stepwise regression in Table 3, housing property rights have more important practical significance in the research process [39]. Therefore, SPSS is used to perform an ordinal logistic regression and explore the influence of these 13 variables on resident satisfaction with a community renewal. The results are reported in Table 5 (taking the last class as the reference class).

Table 5. Results of ordinal logistic regression.

Variables		B	Exp (B)	Standard Error	Wald	Sig.
Resident satisfaction (Y)	Very dissatisfied	−6.08	——	0.912	44.472	0.000
	Dissatisfied	−3.072	——	0.857	12.84	0.000
	General	0.313	——	0.863	0.132	0.717
	Satisfied	3.833	——	0.871	19.355	0.000
Individual characteristics						
Housing property rights	Renting	−0.578 *	0.561	0.242	5.697	0.017
Length of residence	≤1 year	−1.715 **	0.180	0.350	23.973	0.000
	1–5 year	−0.879 **	0.415	0.257	11.732	0.001
Community governance						
Government subsidies	Low	−1.157 **	0.314	0.375	9.498	0.002
	General	−0.601 *	0.548	0.286	4.42	0.036
Work capacity of community management organization	Very poor	−2.697 **	0.067	0.702	14.755	0.000
	Very low	−1.789 *	0.167	0.901	3.947	0.047
Credibility of owners' committee	Low	−1.683 **	0.186	0.547	9.46	0.002
	General	−1.664 **	0.189	0.371	20.073	0.000
	High	−0.995 **	0.370	0.298	11.162	0.001
	Very poor	−1.753 *	0.173	0.826	4.498	0.034
Work capacity of owners' committee	Poor	−2.244 **	0.106	0.53	17.897	0.000
	General	−1.151 **	0.316	0.354	10.564	0.001
	High	−1.426 **	0.240	0.293	23.694	0.000
	Very unsupported	−5.363 **	0.005	0.985	29.638	0.000
Residents' attitude towards policy	Unsupported	−1.921 **	0.146	0.497	14.939	0.000
	General	−0.853 **	0.426	0.281	9.211	0.002
Residents' willingness to participate in community governance	Very unwilling	−2.015 **	0.133	0.494	16.661	0.000
Whether to participate in a renewal	No	−1.366 **	0.255	0.282	23.414	0.000
Renewal cost	Very low	0.906 **	2.474	0.370	5.979	0.014
Long-term mechanisms						
Community environment		0.395 **	1.484	0.092	18.388	0.000
Infrastructure		0.745 **	2.106	0.104	51.193	0.000
Maintenance		0.442 **	1.556	0.104	18.15	0.000

Notes: * $p < 0.05$; ** $p < 0.01$ (non−significant variables have been excluded).

4.4. Discussion

According to the results of stepwise regression, all factors have a positive and significant influence on resident satisfaction with a community renewal, except for renewal cost. The importance of variable is determined by the absolute value of the standard coefficient in stepwise regression. Among them, infrastructure has the greatest impact, followed by work capacity of owners' committee, credibility of owners' committee, residents' attitude towards policy, maintenance, community environment, length of residence, renewal cost, residents' willingness to participate in community governance, whether to participate in a renewal, work capacity of community management organization, and government subsidies. In addition, the influence of these variables in the ordered logistic model is also significant.

In order of the influence of variables, the resident satisfaction with a community renewal and its determinants are examined by three categories of variables: community governance, long-term mechanisms, and individual characteristics. Community governance, containing credibility of government subsidies, owners' committee, residents' willingness to participate in community, whether to participate in a renewal, work capacity of owners' committee, community management organization, and renewal cost, has significant effects on resident satisfaction with a community renewal, followed by long-term mechanisms including infrastructure, maintenance, and community environment. Individual characteristics, including length of residence and housing property rights, also play an important role in resident satisfaction with a community renewal. Next, we will analyze the regression results according to the importance of the factors.

4.4.1. Community Governance

Although renewal of old communities in Hangzhou does not require residents to participate, government messaging and policies play a very important role. We, therefore, included government behavior indicators within the scope of community governance. The effects of government messaging on resident satisfaction are not significant in this empirical analysis, but government subsidies proved to be an important factor that affects resident satisfaction with a renewal project, indicating that government funding is a fundamental driving force for community renewal. Whether residents are satisfied with a renewal depends mainly on the source of funds and implementation. This is consistent with findings from extant studies [34,56]. As mentioned above, the elderly are more sensitive to the costs of renewal. If they need to spend more money to improve the quality of the living environment, they may be more likely to form a negative attitude towards a renewal project. Property owners who rent out their houses usually oppose renewal projects because they are not direct beneficiaries of such a transformation, unless they can earn a higher rent from a renewal than they pay in costs to support follow-up management, thereby ensuring the disbursement of funds through multiple channels.

The capacity of owners' committees and community management organizations to work effectively is reflected in problem-solving, dispute coordination, safety management, and other activities during a renewal project. As the work capacity of an owner's committee and community management organization improve, resident satisfaction with a community renewal project rises. Especially when owners' committees or community management organizations are ineffective, the negative impact on renewal satisfaction is greater. As an autonomous organization of residents, an owners' committee is responsible for supervision, management, and other daily matters. The credibility of an owners' committee, therefore, represents recognition by residents and affects residents' expectations regarding a renewal project on an emotional level. An effective owners' committee or community management organization will be trusted by most residents, which will have a positive effect on a renewal and vice versa. Community governance is a guarantor and intermediary force for promoting a renewal project. Therefore, to ensure the success of a renewal, it is necessary to improve autonomy and emphasize the reputation and work capacity of an owners' committee or community management organization as well as to acknowledge the importance of residents' opinions regarding follow-up tasks.

We find that, reflecting residents' perceptions and behaviors, "attitude towards policy", "willingness to participate in community governance", "whether to participate in the renewal", and "renewal cost" all have a significant impact on resident satisfaction with a community renewal project. Residents' willingness to participate in a renewal project is influenced by their perceptions of the value and costs of renewal and further affects their active participation. On the other hand, residents' awareness of a renewal determines their attitudes when participating [31,50]. At present, however, low or no participation by residents in community projects is the main cause of resident dissatisfaction. Therefore, a government and a community should encourage residents to participate in community governance and follow-up renewal management, while at the same time carrying out activities and related educational programs for residents to improve the overall quality of resident participation.

4.4.2. Long-Term Mechanisms

The exp(B) of the effects of community environments, infrastructure renewal, and sustaining satisfaction with community renewal projects are greater than 1 (sig. < 0.05), indicating that the effects of community environments, infrastructure, and maintenance have a significant impact on resident satisfaction. These are also factors that have a greater impact on residents' satisfaction with the renewal. This finding supports hypothesis 4. The overall effect of a renewal project is the core factor that affects resident satisfaction most directly. Infrastructure affects residents' daily lives and is vital to enabling a renewal project to meet residents' basic living requirements, so the impact of infrastructure on residents is

greater. Maintenance also has a significant impact on satisfaction with a renewal project, but actual satisfaction is not high, primarily reflecting the lack of a long-term management mechanism, which makes subsequent maintenance difficult.

Our regression results indicate that the impact of the renewal process on daily life, the openness and transparency of the process, and the unobstructed expression of opinions are not significant factors in resident satisfaction (sig. > 0.05). That is, resident satisfaction is not related significantly to the renewal process. Therefore, we did not find evidence supporting Hypothesis 3.

4.4.3. Individual Characteristics

Housing property rights and length of residence have a significant influence on resident satisfaction with renewals of old communities. Long-term residency is associated with resident satisfaction with a community renewal. As the length of residency increases, neighbors become more familiar with each other, giving them a stronger sense of community belonging, and the positive subjective feelings created magnify the effects of the renewal in the minds of residents. Furthermore, residents who have lived for more than 20 years in a given community are mostly elderly, with needs that are easily met. The elderly are accustomed to the status quo, even when living conditions are not very good, and they exhibit greater tolerance for the effects and influence of a renewal project. The elderly are, however, more sensitive to changes in a community, so a small improvement can bring great satisfaction [32]. Resident satisfaction among the elderly with a renewal project is, therefore, higher. The exp(B) for "tenants" is 0.561 (<1), meaning that the tenants' odds ratio for "more satisfied" is 0.561 greater than that of the owners, which indirectly indicates that satisfaction among resident property owners in a renewed community is greater than tenants' satisfaction, primarily because of a stronger sense of ownership among resident property owners and greater enthusiasm for a renewal project [35,37]. Voting rights and potentially higher revenues from a community reconstruction project belong to property owners, but tenants, whose opinions and suggestions are rarely adopted, are affected directly. Policies or actions should be developed to encourage tenants to participate in renewal projects, to improve their sense of community belonging.

5. Conclusions

According to our analysis of this study's regression results, time of residency as well as the cognition and behavior associated with participating in the renewal process are positively correlated with resident satisfaction, which is consistent with existing research findings [33,40]. We find a positive correlation between government behaviors, especially government subsidies, and resident satisfaction, a finding that echoes findings reported in other studies [11,40]. Resident satisfaction with community renewal in Hangzhou is positively correlated with the behavior of community management organizations and owners' committees. This conclusion supports the presence of a relationship between community governance and resident satisfaction with community renewal. Satisfaction with a renewal is positively correlated with the effects of renewal but has nothing to do with the renewal process. This is partly consistent with the conclusion of Liu [4]. In addition, we find that housing property rights also have an impact on resident satisfaction with the renewal of old communities. Residents with housing property rights in a community are more satisfied, while renter satisfaction must be improved.

The renewal of an old community is designed to improve living conditions in such a community and increase happiness among its residents. Transformation of infrastructure and the community environment should be the key focus of renewal [11]. Quality control and supervision of renewal projects should be enhanced, which requires improvement of the working capacity of owners' committees and community management organizations. Although most residents we surveyed participated in voting on renewal projects according to government regulations, their willingness to participate actively remains low. In follow-up renewal management, the government should begin with the disbursement of funds,

then establish a long-term management mechanism for community managers and owners' committees, and encourage resident participation.

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